Assessment the Effect of Educational Intervention on Preventive Behaviors of Home Accidents in Mothers with Children Less than 5- Year Based on Protection Motivation Theory (PMT)

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Abstract

Background: The accidents are the leading cause of morbidity and mortality among children in in the world. The aim of this study was to determine the effect of Educational intervention on promotion of prevention behaviors of home accidents in mothers with children less than 5- year based on protection motivation theory (PMT) in 2015.

Materials and Methods: In this controlled interventional study 190 mothers with children less than 5 years were participated (95 in intervention group and 95 in control group).The data collection tool was researcher made questionnaire based on the structures of PMT. After done pre-test and the results obtained from it, appropriate educational intervention designed and was conducted only in intervention group. Then two months after the educational intervention, evaluation was done and data analysis was using SPSS-20.

Results: Statistically significant difference was found between mean scores of all structures of PMT in intervention and control groups after the educational intervention (P<0.05). There was a significant difference between the mean scores of all structures of PMT in intervention group in before and after the educational intervention (P<0.05); whereas no significant difference was seen between mean scores of all structures in control group in before and after the educational intervention (P>0.05).

Conclusion: The results of this study showed that PMT can be used as a framework in designing educational programs in order to promotion of prevention behaviors of home accidents in mothers with children less than 5- year.

Key Words: Accidents, Childhood, Injury, Protection-Motivation Theory, Mother.

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1- INTRODUCTION

Accidents are considered as one of the major causes of death and disabilities in people less than 45- year in worldwide (1, 2). Also, injuries due to accidents as the first cause of death in children less than 5- year were considered (3, 4). Road accidents, drowning, burns, falling and poisoning are the most common causes of death and injuries in children in the world (4). Indeed, injury caused by accidents is one of the most risks that threatening children's health. But for various reasons such as lack of knowledge as well as general opinion that they are haphazard less importance is given to it (5, 6).

In Iran, 64 percent of accidents that happen in children due to domestic accidents, in this between respiratory obstruction and drowning are the most common causes of death in children less than 5- year with %12.8 and %12.1 respectively. Some studies showed that the majority of deaths occurred at home. Since reducing the burden of injuries is an international health goal, hence requires a collaboration of the different fields of science. Indeed all injuries have a common feature; it is their avoidable (7).

Various theories of health education can be used at personal, interpersonal, and social levels to design an effective training plan for promoting safety and preventing from accidents injuries in children. Among these models, protection motivation theory (PMT) is one of the models which for investigate the factors influencing on the motivation and ultimately behavior is used (8). This theory was presented by Rodgers in 1975 to explain the effects of fear on attitudes and healthy behaviors. In this model, it is assumed that acceptance of health behavior (protective behavior) recommended against heath risk is a direct action of person's motivation for protecting oneself. Rodgers stated that fear influences on protection motivation (or intend to do protective behavior against

health risk) through five constructs and finally the protection motivation raises health behavior. These five construct include:

1. Perceived vulnerability: person has believed that he or she is vulnerable against the health risk.
2. Perceived intensity: person has believed that the risk is serious.
3. The perceived response efficacy: a person expecting that a compatible response (protective behavior against a health risk) can remove risk.
4. Perceived response costs: person's estimation of any cost (e.g. money, person, time, attempt) that is associated with protective behavior, and
5. Perceived self-efficacy: person has believed that he or she can successfully carry out protective behavior (5).

Protection Motivation Theory is partially based on the work of Lazarus (1966) and Leventhal (1970) and describes adaptive and maladaptive coping with a health threat as a result of two appraisal processes. A process of threat appraisal and a process of coping appraisal, in which the behavioral options to diminish the threat are evaluated. The appraisal of the health threat and the appraisal of the coping responses result in the intention to perform adaptive responses (protection motivation) or may lead to maladaptive responses (9, 10).

Previous studies have provided considerable support for the protection motivation theory constructs in predicting the behavior. This theory has been used in quitting smoking, preventing from diseases, physical activities, and diets (11, 12). Considering the above explanation and given that studies conducted about the effectiveness of protection motivation theory on children's accidents and injuries in Iran is limited, the aim of this study was to determine the effect of educational intervention on promotion of prevention behaviors of home accidents and injuries

in mothers with children less than 5- year in Joibar city (Iran) based on protection motivation theory.

2- MATERIALS AND METHODS

2-1. Study design and population

This study was a controlled interventional study. The study population consisted of mothers with children under 5 years old referring to health centers of the Joibar city, North of Iran, in 2015. Initially, for calculate the sample size a pilot study was conducted, finally considering the attrition, minimum sample size required in two control and case groups 190 mother was estimated (95 in case group and 95 in control group).

Of the three urban health centers in this city, two centers were selected randomly. A center as case group and a center as control group were considered. Among the mothers of active health records with children under 5 years old in selected centers, 95 file randomly selected from each center through random numbers table. Inclusion criteria consisted of having children less than 5 years, having active health records at the Centre, would like to participate in the program, regular participation in training sessions and complete a questionnaire. Exclusion criteria included not having children less than 5 years of study, location changes and loss to follow up during the study.

2-2. Measuring tools

Data collection tool in this study, researcher-designed questionnaire with interview about the prevention of accidents and injuries in children less than 5 years was based on protection motivation theory. This questionnaire consisted of 10 questions about the demographic characteristics, 4 question about perceived vulnerability, 6 questions about perceived intensity, 4 questions about perceived response efficacy, 5 questions about perceived response cost and 4 questions

about self-efficacy about prevention of home accidents and injuries in mothers with children less than 5- year. The answers to these questions were evaluated based on Likert scale. Minimum and maximum score in the section of perceived vulnerability was 4 to 20, perceived intensity of 6 to30, perceived response efficacy of 4 to 20, perceived response cost 5 to 25 and self-efficacy of 4 to 20. Also the questionnaire consisted of 15 questions about the behavior. Minimum and maximum score in the section of behavior was 0 to 15. Quantitative content analysis method used for evaluating validity of questionnaire. So that the questionnaires were placed at the disposal of 10 health education and safety specialist and their comments were taken. Questions with content validity index of less than 0.7 and questions with content validity ratio less than 0.6 were excluded.

The reliability of the questionnaire was measured by Cronbach's alpha after it was completed by 20 individual. Results were as follow: perceived vulnerability %83.5, perceived intensity %90.3, perceived response efficacy %72.1, perceived response cost %72.5, self-efficacy %87.2, and performance %75. Evaluation before and two months after educational intervention in both intervention and control groups were carried out by completing questionnaire. It should be mentioned that the control group did not receive any intervention.

2-3. Methods

The numbers of mothers were 15 in each training session; In fact mothers of group intervention were divided into 6 subgroups. Educational intervention was conducted by student with the cooperation staff of health centers. The educational intervention consisted of two educational sessions with one week interval about prevention of home accidents and injuries in mothers with children less than 5- year. Each session was consisted of 45 minutes

of education. In the two educational sessions, about the goals of educational intervention were explained and training packages were delivered to mothers. Then according educational needs of predetermined, about events and its types, relationship growth and development of children with the occurrence of injuries, ways of their prevention and also addressing the possible risk factors was explained. A detail of each educational session is as follows:

The first session was convened with the aim of increase perceived vulnerability, perceived severity in the field of prevention of accidents in children under 5 years. A method of teaching was lecture with the approach of question and answer in groups of 15 people. Educational tools were including white boards, marker, educational images and pamphlets.

The second session was convened with the aim of increase self-efficacy (role models, simplification and persuasion), response efficacy of mothers and behavior to prevention of domestic injuries in children. A method of teaching was discussed in small groups (Each group had 5 mothers). Educational tools were including short educational video, whiteboard and marker.

Two months after running the educational intervention program, two intervention and control groups completed the questionnaire again. In this study before obtaining informed consent and voluntary for mothers participating in the research, study objectives was described and make sure that the information remain confidential.

2-4. Data analyses

The data collected and introduced into SPSS- 20 software then following statistical tests were used for analysis: Independent T-test used for compare relationship between the mean scores of Protection Motivation Theory structures and behavior in the intervention and control groups before and after the intervention. Paired t-test used to investigate the association between mean scores of the named variables in each group, before and after intervention. Chi-square test was used to examine the association between qualitative variables. Pearson linear coefficient test used for investigate the correlation between Protection Motivation Theory structures and behavior. Linear regression model applied for prediction of Protection Motivation Theory structures in behavior.

3- RESULTS

In this study, 140 mothers with children less than 5- year were examined. The mean age of mothers in the intervention and control groups 28.39 ± 5.39 and 29.15 ± 5.09 year, respectively. The proportion of mothers with a college education in the intervention and control groups 33.7 and 44.2 percent, respectively. The proportion of housewife mothers in the intervention and control groups 76.8 and 83.2 percent, respectively. Based on Chi-square results, there was no statistically significant difference between two groups under study regarding qualitative demographic variables (including child' gender (P=0.82), maternal education (P=0.26), paternal education (P=0.09), maternal occupational (P=0.27), paternal occupational (P=0.14), and child care giving status (P=0.12).

Results of independent sample t-test also showed that there is no statistically significant difference between two groups regarding quantitative demographic variables (including household size (P=0.55), number of children less than 5 year (P=0.60), maternal age (P=0.32), and paternal age (P=0.58)). Results of these tests indicated that two intervention and control groups are similar in their demographic variables. In general, results of these tests indicated that two intervention and control groups

were similar in their demographic variables and this matching has been done appropriately. Pearson linear correlation coefficient test before educational intervention showed that there was a significant correlation between perceived intensity and perceived vulnerability (r= 0.299; P <0.001), efficacy of perceived response with perceived vulnerability (r= 0.128 ; P <0.001), and perceived intensity(r= 0.376 ; P <0.001), self-efficacy with perceived response efficacy(r= 0.270 ; P <0.001), perceived efficacy cost with perceived vulnerability (r= - 0.215 ; P <0.001) and perceived intensity (r= - 0.254; P <0.001).

Yet, there was no significant correlation between mothers' behavior and any protection motivation theory constructs (**Table.1**). According to linear regression model, validity rate of behavior predicting model by protection motivation theory constructs was 0.59 and among these the role of perceived vulnerability was (β =0.333) more than other variables (**Table.2**).

Results showed that before educational intervention, the mean scores of protection motivation theory structures and behavior had same status and t-test did not show any statistically significant difference between the intervention and control groups (P>0.05). Yet, after the intervention, results showed that mean scores of protection motivation theory constructs were statistically significant between intervention and control groups (P<0.05). That is, in all cases, the status of variables was more desirable in intervention group versus control group (**Table.3**).

On the other hand, paired t-test results showed that mean scores of protection motivation theory constructs were increased as compared to before educational intervention in the intervention group and this difference was statistically significant (P<0.05). Yet, no statistically significant difference was seen in control group before and after the intervention regarding mean constructs scores (P>0.05) (**Table.3**).

Table1: Correlation coefficient matrix of PMT constructs before educational intervention

Constructs	Perceived vulnerability		Perceived intensity		Perceived response efficacy		Self-efficacy		Perceived efficacy cost		Behavior	
	r	P.V	r	P.V	r	P.V	r	P.V	r	P.V	r	P.V
Perceived vulnerability												
Perceived intensity	0.229	0.00										
Perceived response efficacy	0.128	0.00	0.376	0.00								
Self-efficacy	-0.044	0.545	-0.009	0.901	0.270	0.00						
Perceived efficacy cost	-0.215	0.00	-0.254	0.00	0.104	0.515	0.047	0.520				
Behavior	-0.083	0.257	-0.85	0.246	-0.005	0.044	0.034	0.626	0.109	0.134		

r= Correlation coefficient; P.V: P-value.

Table 2: PMT structures in prediction of behavior by Linear Regression model

Independent variables	Standardized β	P-value	R^2	Dependent variable
Perceived vulnerability	0.333	0.001		
Perceived intensity	0.074	0.415		
Perceived response efficacy	-0.105	0.240	0.59	Behavior
Self-efficacy	0.244	0.001		
Perceived efficacy cost	0.112	0.130		

Table 3: Comparison the mean scores of PMT constructs in intervention and control group before and after intervention

Groups	Constructs	Before intervention		After intervention		Paired T test
		SD	Mean	SD	Mean	
Intervention group	Perceived vulnerability	14.32	3.04	18.48	1.26	0.001
	Perceived intensity	20.42	3.71	25	3.70	0.001
	Response efficacy	16.48	2.72	17.75	2.16	0.001
	Self-efficacy	15.32	2.43	18.15	1.33	0.001
	Response cost	16.66	3.84	16.92	3.48	0.01
	Behavior	7.89	2.36	12.91	2.11	0.001
Control group	Perceived vulnerability	15.3	2.30	15.11	2.07	0.19
	Perceived intensity	20.89	4.04	20.94	3.87	0.37
	Response efficacy	15.90	2.42	16.16	2.29	0.46
	Self-efficacy	15.18	2.45	14.76	2.61	0.39
	Response cost	15.68	3.73	16.02	3.51	0.58
	Behavior	8	2.46	8.07	2.38	0.3
Independent sample t- test	Perceived vulnerability	0.22		0.001		
	Perceived intensity	0.40		0.001		
	Response efficacy	0.12		0.001		
	Self-efficacy	0.58		0.001		
	Response cost	0.09		0001		
	Behavior	0.74		0.003		

4- DISCUSSION

This research aimed to examine the effect of educational intervention on promotion of prevention behaviors of home accidents and injuries in mothers with children less than 5- year in Joibar city (Iran) based on protection motivation theory (PMT) was conducted. In the present study, the mean scores of prevention behaviors of home accidents and injuries in mothers before educational intervention in two groups did not show statistically significant differences, but after the educational intervention this difference was statistically significant, these results were consistent with other similar studies which have been carried out in this field (11-13). For example, in one study conducted in Iran by Masoudi et al., two months after educational intervention, protective behaviors against the harmful effects of sun exposure in the intervention group compared to the control group significantly were increased (11), this reflects positive impact of educational interventions in improving safety behaviors of mothers.

In this study, the all structures of perceived vulnerability, perceived intensity, perceived response efficacy, perceived response costs and perceived self-efficacy had role in predicting behavior. Among them, perceived vulnerability and self-efficacy played a more important role. In other studies which protection motivation theory was applied, again, these two constructs played the most significant role in predicting behavior (14-20). For example, in one study by Shekhi et al., structures of perceived barriers, knowledge and self-efficacy as a predictor of maternal behavior in the prevention of domestic accidents in children less than 5 years were identified based on the Health Belief Model (20).

Results also showed that mean scores of protection motivation theory significantly had increased in intervention group after educational intervention in all constructs. Yet, there was no significant difference in control group before and after the educational intervention in any constructs. These results are consistent with other studies which have been carried out in this field (21-23), indeed it approves the educational intervention is effectiveness to promote preventive behaviors. The results of this study is consistent with the results of various studies that have shown self-efficacy and perceived response efficiency are crucial factors in do health behaviors (24-26). One of the ways for improves people's self-efficacy in do health behaviors is reducing obstacles that in route of doing it behavior are located. Moreover, whatever one's belief in one's own ability to complete health behavior is further; her or his motivation will increase for health behavior and whatever person knows further vulnerable in the face of threats, will be further complete heath behaviors (14-18). At current study, mean scores of perceived response efficacy and perceived response costs constructs in intervention group mothers was higher after the educational intervention compared with before education. It correlated with the results of other studies (23 -25).

4-1. Limitations of the study

One limitation of this study was an invisibility of maternal behavior, which inevitably data were collected through self-report, this may be lead to bias in the results. Perhaps the most important limitation of this study related to time interval between interventional education and final evaluation; indeed there was no possibility of closer examination impact of educational intervention on the incidence rate of injuries after the intervention in intervention and control groups.

5. CONCLUSION

The results of this study support the effectiveness of educational intervention based on protection motivation theory. It induces promotion of prevention behaviors of home accidents and injuries in mothers with children less than 5- year. Thus, this theory can be used as the basis for educational interventions. This pattern can be applied to formulate training plans in health centers to shift mothers' attitude and behaviors regarding the prevention from domestic accidents and injuries.

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGMENTS

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