

# Training Based on Orem's Model on Knowledge, Attitude and Self-efficacy of Mothers in Preventing Domestic Accidents

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## Introduction

One of the most important universal needs of humankind is the need to avoid dangers and prevent accidents. Throughout history, accidents have always been threatening human health and life. These two are also the second leading cause of mortality in all ages in addition to being the major cause of mortality in below 40 years age group. Each year, over 5 million people die in accidents and many others become disabled (1). Among the accidents, domestic ones have a high incidence rate and children and adolescents experience them more than other age groups. This is, on the one hand, because these groups spend more time than the others at home, and on the other hand,

because parents and caregivers often consider home a safe environment for children and adolescents. However, among the two groups, children are more susceptible to accidents due to physiological constraints, process of growth and specific behavioral characteristics. From among the children, those below five are more vulnerable to domestic injuries such that more than 50% of accidents occur for children of this age group on a yearly basis (2). In 2010, 42 accidents led to unexpected death of children 1-59 months in Southern Khorasan Province. Among them, traffic accidents with 40% ranked first and aspiration, burn, poisoning, drowning, with held the next ranks with 19%, 11.9%, 9.5% and 9.5% rates

## Abstract

**Background and Aim:** Accidents can happen to children more than other age groups. Given their specific behavioral and physiological traits, children require care on the part of adults. This study aimed to evaluate the effects of two educational methods based on Orem's self-care model, i.e. storytelling and lecturing, on knowledge, attitude and self-efficacy of mothers of children 1 to 59 months in terms of domestic accidents prevention.

**Methods:** This study was conducted on 60 mothers of 1- to 59-month children in Birjand. The educational interventions through storytelling and lecturing were performed in 4 sessions with 30 participants in either of the two groups. Knowledge, attitude, and self-efficacy of the mothers were evaluated by a researcher-made questionnaire both before and after the intervention. The data were analyzed by chi-square, independent t test and paired t test at  $\alpha=0.05$  level.

**Results:** The age means of mothers in the lecture and storytelling groups were  $28.36\pm 4$  and  $29.63\pm 6$  years and those of children were  $25.46\pm 17$  and  $20.26\pm 16$  months respectively. The difference between the two groups was not significant in this regard. Following the lecturing intervention, the total mean scores of knowledge, attitude and self-efficacy increased respectively from  $15\pm 1.6$  to  $20\pm 1.5$  ( $P<0.001$ ),  $93.8\pm 9$  to  $101\pm 7$  ( $P=0.001$ ), and  $59\pm 5.3$  to  $61.3\pm 5.4$  ( $P=0.02$ ). Similarly, in the storytelling group, the mean scores before and after the intervention increased respectively from  $12.8\pm 2.7$  to  $19.4\pm 1.6$  ( $P<0.001$ ) for knowledge, from  $92.4\pm 12$  and  $98\pm 9.3$  ( $P=0.03$ ) for attitude, and from  $54.4\pm 5.5$  to  $57.7\pm 6.3$  ( $P=0.001$ ) for self-efficacy. Mean score changes of knowledge for mothers in the story-telling group ( $4.9\pm 1.6$ ) was significantly greater than that of the lecture group ( $6.5\pm 2$ ) ( $P=0.002$ ). However, there were no significant differences between the two methods in terms of attitude and self-efficacy mean score changes.

**Conclusion:** In teaching the principles of domestic accidents prevention to children, both lecturing and storytelling approaches proved effective. Although there was no significant difference between the two groups in attitude and self-efficacy scores, storytelling could contribute to higher levels of knowledge than lecturing.

**Keywords:** Health education, Storytelling, Lectures, Orem, Domestic accidents

respectively. In 2011, this number reached 26 incidents out of which traffic accidents with 50% had the first rank, and poisoning, drowning, aspiration, and choking, with 26.9%, 15.3%, 7.6% and 7.6% respectively took the next positions. According to this report, the highest incidence rate of accidents in the country was related to Birjand Province with 42.8% accidents in 2010 and 26.9% in 2011. Such a high percentage shows the necessity for planning and implementing prevention programs in this city (3).

Although domestic accidents result in death, disability and excessive economic costs for the health system of many countries, they are easily preventable. Training offered to caregivers – as the agents of self-care for this group – can lead to the creation of a healthy environment for the children. According to Dorothea Orem, self-care consists of the set of activities and learned, conscious, and intentional behaviors which individuals perform in relation to themselves, their family and their close relatives to maintain health. Therefore, self-care behavior is affected by one's set of skills and knowledge. Moreover, promoting self-care behavior requires motivation, self-care demand (which is influenced by previous attitudes and experiences), and conscious competence (that can be achieved by increasing knowledge, skill and self-efficacy) (4). Due to physiological limitations and specific behavioral characteristics of children, self-care demand is not developed in children thereby limiting their self-care ability. This is why the child requires to be cared for by another person who is fully developed in terms of thinking ability, skills, knowledge, and motivation. Among caregivers of children, mothers spend most of their time with them, making them front line agents in child care. Hence, empowering mothers can lay the ground for the health of a child who suffers from self-care deficit – a problem that has been emphasized in a few studies (5,6).

Training is one of the effective ways of empowering individuals and, in fact, the basis for all kinds of learning whose main goal is widespread change of behavior and performance. Training can be offered in a variety of methods, and the trainer should opt for the best way of training based on the available resources, circumstances and learners' characteristics and needs (7). One of the conventional methods of training is lecturing. Over 60% of training in health centers in Southern Khorasan is based on this method. However, lecture-based learning is not sustainable and the training offered would be forgotten within 8 weeks (8). Another method of training is storytelling. Similar to lecturing, this method can also be performed with limited resources and can cause long-lasting changes in an individual's attitude and behavior. For example, in a study by Nikmanesh and Kazemi, storytelling-based optimism training reduced children's depression, continuing for 6 months following the study (9). Storytelling also creates learning opportunities and attracts emotions and imagination. Thus, it seems that using this method for educating mothers, despite the possibility of applying it using similar facilities with those employed in lecturing, can enhance learning and change

their attitudes.

As it was mentioned above, domestic injuries have a high incidence rate in children and empowering parents can be conducive in preventing them. The current researchers performed searches in databases including Iranian Research Institute for Information Science and Technology, Barakat Knowledge Network System, SID, Magiran, and Medlib using the keywords "domestic accident," "lecturing," "mothers," "Orem." However, they could not find any investigation concerning the effects of storytelling and lecturing on mothers' empowerment in preventing domestic accidents despite the increasing number of studies in this area. Therefore, this study aimed to investigate the effect of training by storytelling and lecturing on the empowerment of mothers in terms of preventing domestic accidents consisting of suffocation, drowning, poisoning as well as burn, which have the highest incidence rates among the domestic injuries happening for children in Southern Khorasan Province.

### Methods

As a randomized, controlled, field trial, this study was conducted based on Orem's theory and involved mothers of children 1-59 months in Birjand city. Building on the study by Sajadi Hazaveyee and Shamsi (10), the sample size was calculated based on the following formula:

Given that the least significant difference in Sajadi Hazaveyee and Shamsi' study was assumed 10 (10), such a difference was similarly considered as 10 for this study. According to the calculations, the required number of samples in each group was 27 ( $n=27$ ) according to the above formula. To increase precision and as regards the risk of sample attrition, 30 samples were allocated to each group. Finally, 60 mothers of children 1 to 59 months who attended the health centers of Birjand participated in this study.

To select the required samples, Birjand city was primarily divided into two geographical regions of north and south. Afterwards, the list of health stations for each region was extracted from the data available in health centers. In each region, based on a simple randomized method, one health station was selected for implementation of lecturing method and another to receive storytelling. At each station, the names of mothers who were eligible for the study were listed, and finally 60 samples were selected from the list. The inclusion criteria for the research were willingness to participate in the study, having the ability to read and write, spending at least 16 hours on child care per day, not being widowed or divorced, having no history of hospitalization for mental disorders and accidents involving children in the family, having at least one child within 1-59 months of age, and lack of background diseases such as autism, diagnosed ADHD, severe developmental disorders and mental retardation. After selecting every mother from the list, they were telephoned and thus invited to participate in the study if they wished. In general, if a mother was unwilling to participate in the study, another one was selected and replaced for her.

The instrument used in the study was a researcher-constructed questionnaire which was designed using the various scientific resources under the supervision of experts (Table 1). The questionnaire focused on 3 domains as knowledge, attitude and self-efficacy and 4 problems or accidents including burning, drowning, suffocation, and poisoning. The first part of the questionnaire consisted of demographic information and consisted of 9 items. The second part consisted of 22 knowledge items which included 4 categories i.e. drowning (5 items), suffocation (5 items), burn (6 items) and poisoning (6 items). In this section, the correct answers were scored "1" and the wrong ones received "0." In sum, it was possible for an individual to obtain a score from 0 to 22. Part 3 included 24 items on attitude focusing on accidents as drowning (6 items), suffocation (6 items), burns (7 items) and poisoning (5 items). The questions of this section were designed based on the 5-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree). The scoring of this section ranged from 1 to 5 depending on the type of item. In brief, a maximum of 120 scores and a minimum of 24 could be taken by each mother. Part 4 contained 14 items centering the mother's self-efficacy in self-care for the child. This part was designed based on Sherer's General Self-efficacy Standard Scale and in conformity with the 5-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree). The scoring of this part ranged from 1 to 5 where one could obtain the minimum score of 14 and the maximum score of 70. The total score of mother empowerment was obtained by calculating the sum of scores for each category; each mother could get a score ranging between 38 to 212.

Face and content validity were used to determine the validity of the questionnaire which was also approved by 10 faculty members of the Faculty of Nursing and Midwifery, School of Public Health, and Emergency Centre of Birjand University of Medical Sciences and staff experts of the Health Center of Southern Khorasan province. In other words, the questionnaire was designed by the researchers based on reliable sources and similar studies; suggestions by the qualified faculty members were later applied on it. The reliability of the questionnaire was calculated using Cronbach alpha ( $\alpha=0.8$ ). To this end, the questionnaires were completed by 20 mothers outside but similar to the mothers under the current investigation. Before the intervention, the scores of knowledge, attitude and self-efficacy of mothers were measured using the questionnaire, the self-care educational needs of the mothers as the self-care agent of children were calculated and those who did not give the right answer to all questions about a category were invited to participate in the related

sessions (that is, only mothers who obtained less than 100% of score in a category were allowed to participate in training sessions).

The educational content was prepared on the basis of the identified needs before the intervention and with reference to reliable scientific resources. To do this, the scenarios related to the most common child-related accidents in Southern Khorasan were turned into stories. In the next stage, the educational interventions were implemented within one week for four sessions in each health station (each session related to a single accident). The interventions were performed by an instructor with a bachelor's degree in nursing. In the storytelling group, a real story, focusing on a specific category of accident, was recounted entailing the most common accidents which had happened for a child in Southern Khorasan with an emphasis on its location. Then, the training sessions continued by presenting preventive measures that could be taken to avoid these accidents. In the lecturing group, the intervention was performed without the aid of educational media such as power point. The educational content for both groups included an introduction to the principles of preventing the common accidents in the province like suffocation, poisoning, drowning as well as children's burn. Typical exclusion criteria for this study included absence more than one session and unwillingness to continue participation in classes, neither of which happened during the study. At the end of the training sessions, the questionnaires of knowledge, attitude and self-efficacy were completed by the participants. Finally, data analysis was conducted using statistical tests as chi-square, independent and paired *t* test at the significance level  $\alpha=0.05$ .

**Results**

The age means of the mothers in both lecturing and storytelling groups were  $28.36 \pm 4$  and  $29.63 \pm 6$  years respectively. In the same way, children's mean age in the two groups ranged from  $20.26 \pm 16.20$  to  $25.46 \pm 17$  months. In other words, the two groups were similar in terms of the mean age of the mothers, mean age of the children as well as other demographic variables and there was no significant difference between them (Table 2).

According to the paired *t* test results, lecture-based training could increase the mothers total score of knowledge, attitude and self-efficacy significantly in all of the accidents (Table 3). Similarly, the results of this test showed that training by storytelling could significantly increase the mean of the total score of mothers' in the three domains concerning all types of accidents. However, training by storytelling could not change the attitude towards drowning and suffocation significantly (Table 3).

**Table 1.** The scaling instrument

	Domains	Categories of the Accidents				Total Scores in Each Domain
		Burning	Drowning	Suffocation	Poisoning	
Scoring from 0 to 1	Knowledge	0-6	0-5	0-5	0-6	0-22
Scoring from 1 to 5	Attitude	7-35	6-30	6-30	5-25	24-120
Scoring from 1 to 5	Self-efficacy	-	-	-	-	14-70

With a comparison of the changes in the mean score of the two intervention groups, the independent *t* test revealed that increase in the total score of mothers' knowledge was significantly higher in storytelling than that of lecturing, but there was no significant differences between the two methods in terms of attitude and self-efficacy. Moreover, as regards the changes in knowledge scores in each accident, compared with lecturing, the effect of storytelling was significantly higher in case of burns (Table 3).

## Discussion

This study was based on Orem's theory of self-care and focused on children's health. Although multiple researches have concentrated on various aspects of this topic, most of them have applied Orem's theory to issues related to children's health while discussing the needs associated with deviation from children's health. However, in addition to investigating Orem's theory with a view to health diversion prevention, the present investigation perceives children's health to be related to their common and developmental needs.

As children need to be cared for by adults due to physiological limitations, specific behavioral characteristics and properties associated with the process of growth and development, the role of mothers becomes obvious in child care and during the self-care process. Furthermore, many factors such as maturity, skills, values, knowledge and motivation affect self-care and defects in the aforementioned cases causes children to have a limited self-care level which necessitates caring for them by other individuals (11).

The importance of empowering parents to take care of children and prevent domestic accidents have been emphasized in various studies. For example, Gaines and Schwebel (5) and Shahraki et al (6) stressed the importance of self-care and particularly mother's empowerment as the chief caregivers of the children.

The present study demonstrated the positive effects of training on mothers ability to prevent accidents to children. In this study, the intervention by both storytelling and lecturing could increase the total score of mothers' knowledge as well as their score in each of the accidents under investigation. Other studies which have focused on children's health with the aim of empowering mothers also have shown the positive impact of training on parents' empowerment. For example, in a study by Megeid and El-Sayed, mothers caring for children who suffered

from diabetes, were trained using the lecturing method. According to the given study, intervention resulted in a significant increase in knowledge and attitude scores (12). Many studies have also revealed the positive effect of training on different aspects of child care. For instance, according to a study by Mirbazegh et al, administering training programs based on lecturing along with question and answer as well as distribution of informational brochure could improve the nutritional behaviors that lead to cancer in mothers. According to the mothers, this training was even effective on the eating habits of other members of the family (13). Schmidt (14), with the aim of gaining an insight into the perceptions of mothers of diabetic children and factors affecting it, demonstrated the impact of parental involvement on high levels of self-care ability, independence, preciseness, and management of blood sugar levels in children with diabetes (14). In another study, using an educational intervention based on cognitive-social theory on mothers, Mirzaei et al improved children's sun protective behavior (15). The investigation by Morrongiello et al which also explored the effect of film and radio messages on mothers in preventing accidents, showed that video-based interventions increased mothers knowledge concerning the prevention of accidents to children (16). In a qualitative research, Christiansen reported that in addition to significant support for learning, teaching by storytelling can provide a more consistent learning opportunity for the audience as well (17). In their study, Falavigna et al demonstrated that training based on documentary films about accidents happening for children and adolescents increased their knowledge score (18).

As it was shown, although lecturing as a traditional teaching method apparently has a lower level of effectiveness and is unable to enhance the efficacy of mothers, it is clear that this approach is one of the educational methods which plays a fundamental role in the efficiency of the educational system. This is because lecturing is cost-effective and accessible, requires bilateral relation between the instructor and audience and opens up the possibility for question and answer as well as giving feedback. Storytelling is also among the effective ways of changing the knowledge, attitude, and self-efficacy of the mothers because it creates learning opportunities and allows an individual to go beyond his personal experiences and develop innovative solutions to overcome his problems.

**Table 2.** Comparison of Demographic Characteristics in Storytelling and Lecturing Groups

Demographic Characteristics		Lecturing Group		Storytelling Group		P
		Percent	No.	Percent	No.	
Child sex	Female	46.6	14	56.7	17	0.44
	Male	53.3	16	43.3	13	
Birth rank	First child	60	18	50	15	0.3
	After the second child	40	12	50	15	
Mother's education	Elementary and pre-elementary	20	6	13.3	4	0.65
	High school	50	15	46.7	14	
	Academic education	30	9	40	12	
Mother's job	Employed	16.7	5	33.3	10	0.12
	House wife	83.3	25	66.7	20	

**Table 3.** Comparison of Mean Score and Changes of Knowledge, Attitude and Self-Efficacy Scores Before and After the Intervention in the Storytelling and Lecturing Group

Domains	Accidents	Time	Intervention Method				
			Lecturing n= 30, M±SD	P value t test paired	Storytelling n= 30, M±SD	P value t test paired	P value independent t test
Knowledge	Downing	Before intervention	3±0.7	<0.001	2.9±0.8	<0.001	-
		After intervention	4.5±0.6		4.1±0.7		-
		Score change	1.5±0.7		1.2±0.8		-
	Suffocation	Before intervention	3.4±0.9	<0.001	4.2±0.9	<0.001	-
		After intervention	4.7±0.5		4.5±0.5		-
		Score change	1.36±0.6		1.7±1		-
	Burn	Before intervention	5.1±0.6	0.01	2.9±1	<0.001	-
		After intervention	5.5±0.6		5.8±0.4		-
		Score change	0.4±0.8		1.5±0.9		-
	Poisoning	Before intervention	3.6±0.9	<0.001	3.6±0.9	<0.001	-
		After intervention	5.2±0.7		4.9±1		-
		Score change	1.6±1		2±1.3		-
Total score	Before intervention	15±1.6	<0.001	12.8±2.7	<0.001	-	
	After intervention	20±1.5		19.4±1.6		-	
	Score change	4.9±1.6		6.5±2		-	0.002
Attitude	Drowning	Before intervention	21.9±3	0.04	22.1±3.4	0.42	-
		After intervention	23.8±4		22.8±4.3		-
		Score change	2±5		0.7±5		-
	Suffocation	Before intervention	23.5±3.1	0.008	23±7	0.5	-
		After intervention	25.6±2.3		24±3.3		-
		Score change	2±3.9		0.9±7.7		-
	Burn	Before intervention	29±2.7	0.001	28±4.4	0.004	-
		After intervention	31±2.4		30±3		-
		Score change	2±2.9		2.1±3.6		-
	Poisoning	Before intervention	19.4±2.9	0.01	19.2±9.2	0.006	-
		After intervention	20.9±2.5		21±2.2		-
		Score change	1.4±3		1.8±3.4		-
Total score	Before intervention	93.8±9	0.001	92.4±12	0.03	-	
	After intervention	101±7		98±9.3		-	
	Score change	7.5±11		5.7±13.7		-	0.5
Self-efficacy	Total score	Before intervention	59±5.3	0.02	54.4±5.5	0.001	-
		After intervention	61.3±5.4		57.7±6.3		-
		Score change	2±4.8		3.3±4.9		-

A comparison of the two methods of storytelling and lecturing in this study illustrated that intervention by storytelling increased the total knowledge score more than lecturing. This could be due to the higher potential of stories in enhancing the audiences' interest, excitement and motivation and accordingly due to shaping a deeper understanding of the issue being addressed. In the training courses which included presenting the accident scenarios to the mothers, the researchers could themselves deeply feel the higher excitement and motivation of the mothers to follow the themes. Moreover, storytelling as compared to lecturing was associated with extreme audience excitement and thus furthered their participation - which even sometimes resulted in presenting similar experiences by the participants.

Besides knowledge, the mothers attitude was also affected by the educational method in such a way that the total score of their knowledge increased significantly in both storytelling and lecturing. Morrongiello et al showed a significant increase in mothers' attitude and commitment following an educational intervention based on video and audio messages (16). According to Christiansen, training

by storytelling affects the insights, thoughts, and beliefs of the target population (17). Although these studies have revealed the positive effects of educational interventions on the attitude of the target group, a study by Falavigna et al on the effects of documentary films on children and adolescents, showed that interventions do not create a significant change in the attitude of the target group (18). An investigation of the attitude scores in each of the accidents under scrutiny in our research clarified that training based on storytelling, in spite of the increase in the total score of attitude, could not produce a significant change in the mothers' attitude concerning suffocation and drowning. This might have originated from the type of scenarios presented.

Mothers' self-efficacy was among the other areas investigated in the current study. As the research showed, both storytelling and lecturing could increase the mothers' self-efficacy scores. This finding is consistent with the results of the investigation by Azhari et al (19). According to their study, educational intervention increased mothers' self-efficacy in breastfeeding (19). Furthermore, in various studies, educational interventions performed on

different groups could enhance the self-efficacy of the target groups (20-24). In contrast to the positive effects of training on the self-efficacy of the target groups in the above studies, in a study by Sarabi Jamab et al training based on group discussion revealed no significant difference in the mean score of self-efficacy of mothers with autistic children (25).

It is noteworthy that in the process of the study, the researchers of the present study faced with a decreased tendency on the part of the participants to take part in the educational classes which in turn led to sample attrition as well as repeated samplings. Such an unwillingness apparently resulted from the superficial understanding of participants of domestic accidents as incidents that had not been experienced by them at home. It is possible to draw mothers attention to such accidents using attractive and warning posters or developing educational media such as films, instructional booklets which can replace fulltime classes. Full time classes could come after this stage.

### Conclusion

Recounting the stories of past real accidents that have happened for the children in the educational classes which aim at preventing domestic accidents can have a higher impact than lecturing on the knowledge of the mothers. In the meantime, like lecturing, storytelling can also be administered in educational environments using a limited range of facilities.

### Suggestion

As there was no difference between the two methods concerning the change created in attitude and self-efficacy, the future researchers are recommended to conduct a study with a longer duration on these domains and consider the impacts of consistent learning and mothers performance on preventing the accidents as well.

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