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Original Article

Mental Health Promotion of the Elderly in Nursing Homes: A Social-Cognitive Intervention

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SUMMARY

Background: In Iranian culture, transferring old parents to a nursing home is considered unacceptable and a sign of cruelty and heartless of children. This study was conducted to investigate the effect of the educational intervention based on Social Cognitive Theory (SCT) on mental health of the elderly in nursing homes.

Methods: This quasi-experimental study was implemented to determine the effect of the educational intervention using social-cognitive theory. The mental health promotion educational program was designed in 8 sessions of 45 min. Data were collected by demographic information questionnaire, mental health questionnaire based on SCT and general health questionnaire (GHQ-28). Data were analyzed by SPSS19, descriptive statistics, chi-square tests, t-test, Mann-Whitney, duplicate data variance, Friedman and general linear model.

Results: The result showed that educational intervention in the experiment group led to lower GHQ scores and therefore enhanced mental health ($p < 0001$). The variance analysis of duplicate data showed a significant difference between mean scores of mental health during the study ($p < 0.03$) and the effect of educational groups was also significant ($p < 0001$).

Conclusion: As a general conclusion, designing and implementing educational interventions by employing SCT based on individual, environmental and behavioral factors can significantly improve mental health of the elderly.

1. Introduction

In almost all countries, due to the increased life expectancy and declining birth rates, the age group of people over 60 have the fastest growth rate compared to any other age group.[1] In Iran, the proportion of the elderly population has risen from 7.22% in 2006 to 8.20% in 2011 and is projected to reach 10.5% in 2025 and 21.7% in 2050.[2]

The quality of life of the elderly is negatively influenced by cognitive disabilities, depression and other mental disorders.[3] Mental disorders are prevalent among the elderly, especially those in nursing homes.[4]

Mental health disorders in the elderly may reduce their social and physical activities, generate unsociability and self-grief and decrease their quality of life.[5] Interestingly mental health problems in the elderly are the result of a complex interaction of social, psychological, and biological factors. So the place where the elderly live is an important part of their quality of life and mental health.[6]

In Iranian culture, transferring old parents to a nursing home is considered unacceptable and a sign of cruelty and heartless of children. Further, the elderly does not hold a positive view of the nursing homes and often attempt to avoid it, as they regard it as an environment characterized by compulsion and coercion. This mindset wreaks havoc on the psychological health of this people.[7] So, the elderly population is of social concern in Iran, and their mental health and related factors are worthy of further studies.

However, with elderly support programs, the space can be designed in accordance with the needs of the elderly. In this context, health education (HE) can be an effective non-pharmacological intervention for older adults as it provides a better understanding of the human needs. Health education is a technology-based education strategy that results in individual development.[8] In this field, health education as the science of behavior modification can be helpful to modify or moderate behaviors that affects the mental health of the elderly.[9] The effectiveness of health education largely depends on the adopted models and theories.[10] Among various theories, Social-Cognitive Theory (SCT) treated social variables of health as essentially individual variables and emphasized the interaction of three variables: individual, environmental and behavioral factors.[11]

SCT assumes that the individual will act in ways that he or she believes will lead to positive outcomes and avoid behaviors that he or she believes will result in negative outcomes.[12]

The constructs of the SCT include knowledge, task self-efficacy, self-efficacy in overcoming obstacles, self-regulation, outcome expectations, outcomes value, observational learning (modeling),

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emotional adjustment and situational and environmental perception (Figure 1).[13]

Using SCT in practical situations yields the most effective results as it provides access to factors affecting health behaviors as well as investigation of individual outcomes in environmental and social situations.[14] Various studies have shown that there is a significant relationship between the age and their level of mental health, and as the age increases, the level of the mental health of self-care behaviors drops. Studies on the elderly residing in nursing homes also indicate the leading role of personal and environmental factors in the mental health.[15,16] For example, study by Dragst et al. show that lack of communication, loss of home, spouse, relatives and friends can affect the mental health of elderly of the nursing home.[17] Therefore, in addition to individual factors, consideration of environmental factors is important for the mental health of the elderly. Thus, this theory can be used for mental health interventions.

2. Methods

2.1. Design

This study was carried out in two stages from November 2016 to May 2017. In the first stage, a descriptive study was conducted on a sample of 203 elderly who living in nursing homes of Iran, who were selected using census method. The descriptive study was conducted to determine constructs of the SCT that possessed greater power in predicting the mental health of participants. In the second stage, a quasi-experimental study was implemented on a sample of 90 elderly to determine the effect of the educational intervention using social-cognitive theory. In the second stage, the intervention was carried out on the basis of an influential structure identified from the first stage (Figure 2). The study protocol follows the Consolidated Standard of Reporting Trials (CONSORT) statement.[18]

2.2. Sample

For the first stage, the researchers had repeated visits to nursing homes and conducted interviews with the sample population (n = 203). Then, questionnaires were completed and collected based on participants' responses. After analyzing data and identifying determining and predictive constructs in social-cognitive theory. These predictive structures were the basis of intervention in the second phase.

In the second stage, a study was implemented to determine the effect of the educational intervention by using predictive constructs of social-cognitive theory. For sampling, three nursing homes were selected as intervention centers then 45 elders were randomly selected from these three centers. For the control group three other nursing homes that had social and geographical conditions identical to that of nursing homes in the experimental group were selected and 45 elders were randomly selected from these three centers.

In determining the sample size in the second step (interventional study), to achieve the average effect size of 0.6 for each group,[19] at least 45 subjects with α 0.5 and β = 0.2 (power = 80%) were allocated to each group.

The inclusion criteria were consent to participate in the study, age of over 60 years, a minimum of the three-month stay in nursing homes and lack of cognitive and perception disorders and mortality led to the exclusion from the study.

2.3. Intervention

After the descriptive study and determining those constructs of the SCT that had the higher predictive capability concerning to the mental health (self-efficacy in overcoming obstacles, self-efficacy and outcome value). The mental health promotion educational program was designed in 8 sessions of 45 min and presented to the experimental group. The syllabus was selected based on the predictive constructs of SCT in the elderly living in nursing homes and consistent with educational objectives. Materials were presented to the elderly in the form of lectures, Q&A sessions, group discussion, and brainstorming for the elderly along with an educational pamphlet for families.

The content of educational programs includes basic information and awareness general beliefs and values of mental health (outcome value). For self-efficacy in overcoming obstacles, techniques of coping with psychological stress, including positive thinking and refrainment from negative thoughts, exercise and breathing, music, spirituality and relationship with God, mental visualization and anger management, among other things, were trained. The goal was to ensure that all participants were able to use trained coping strategies to maintain and promote their mental health (self-efficacy in overcoming obstacles). For promote self-efficacy through a variety of techniques such as lectures, Q&A, brainstorming and group discussion about issues related to senility and its associated physiological changes, the significance of the elderly and old age in religion and Iranian culture and society, ways to enhance the sense of usefulness, fostering the interest and willingness of people to help others (as much as possible) and seeking help from others were presented to the elderly.

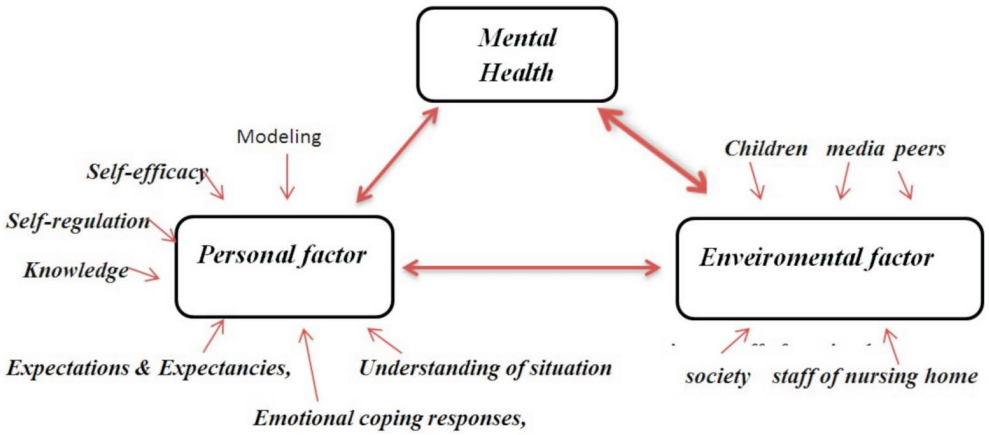

Figure 1. Social cognitive theory structures in mental health.

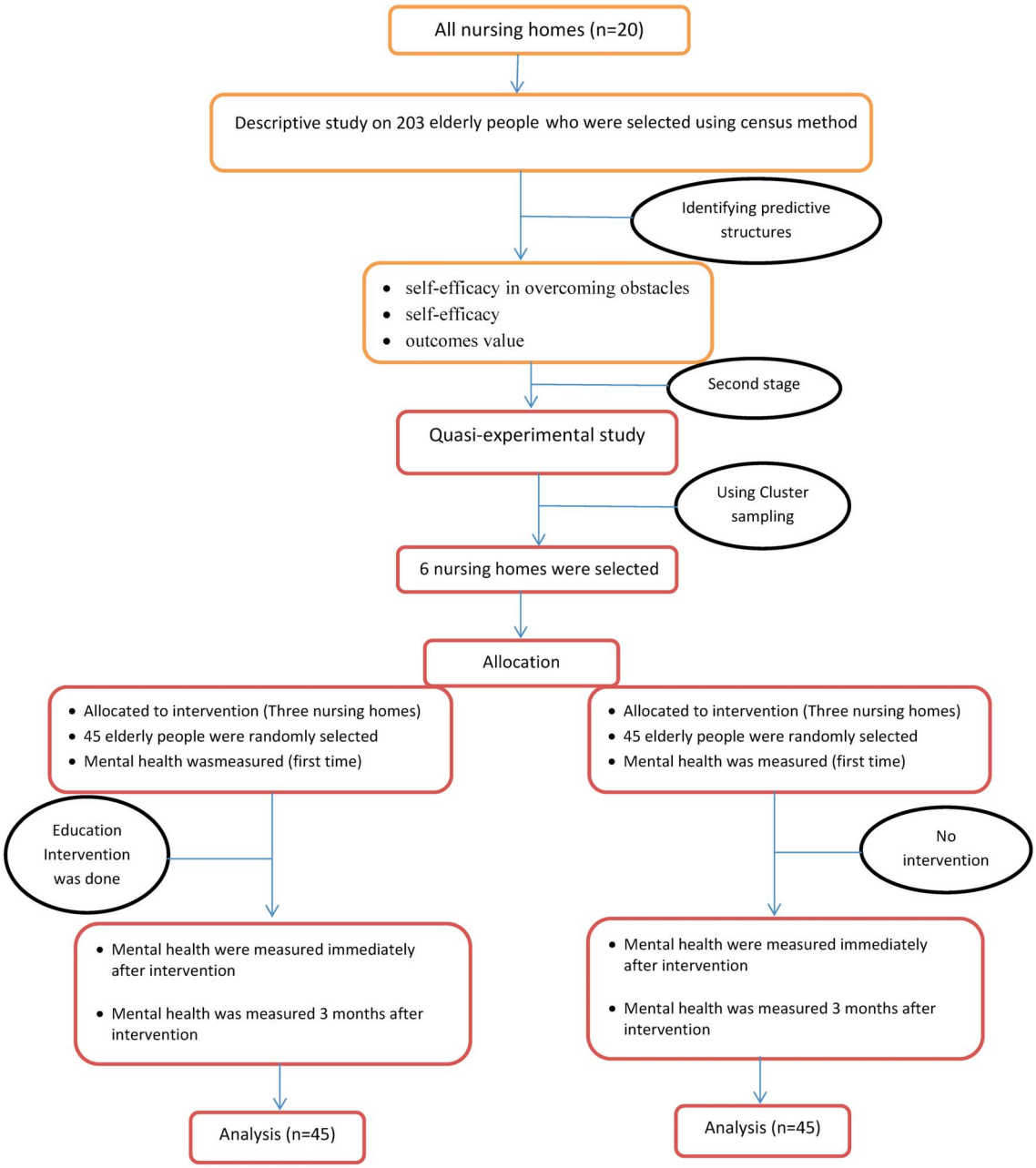

Figure 2. Flowchart of the study.

2.4. Measures

The research instrument consisted of Demographic Information Questionnaire, General Health Questionnaire (GHQ-28) and Mental Health Questionnaire based on SCT. General Health Questionnaire was used to assess the mental health of the elderly. The questionnaire contains 28 items and four subscales. Items 1 to 7 measure somatic symptoms; items of 8 to 14 measure anxiety symptoms and sleep disorder; items 15 to 21 measure social function symptoms and eventually items 22 to 28 measure depressive symptoms.[20]

Mental health questionnaire based on SCT consisted of knowledge (4 items), outcome expectations (4 items), outcomes value (4 items), self-efficacy (4 items), self-efficacy in overcoming obstacles (4 items), social support (3 items), observational learning (3 items), situational perception (2 items), self-regulation (5 items) and, emotional adjustment (2 items). To assess the validity of this questionnaire, content validity was used. To do so, questions and issues related to shortcomings of the study instrument were explored based on the views of 11 Health Education and Health Promotion experts and 4 Elderly Science specialists, and finally, their ideas were incorporated in the final questionnaire to make necessary modifications.

To determine the internal reliability, the questionnaire was completed by 30 participants at the beginning of the study, and data analysis was carried out by SPSS 19 and Cronbach's alpha. Also, to evaluate the external reliability of the instrument, 15 subjects were asked to fill out the questionnaire with 10-day time intervals and, the reliability was assessed and approved by the correlation coefficient.

2.5. Analysis

In the next stage, to assess the effect of educational interventions, the questionnaire was immediately filled out after the intervention by participants in the experimental and control groups. Also, to evaluate outcomes, questionnaires were once again completed by

subjects in experimental and control groups after a 3-month interval (in these two cases, similar to the first stage of the study, due to the inability of the elderly, questionnaires were filled out by the researcher based on statements of the elderly). After completing questionnaires, data were analyzed by SPSS19, descriptive statistics, chi-square tests, t-test, Mann-Whitney, duplicate data variance, Friedman and general linear model at a significance level of 0.05.

3. Results

The mean age of subjects was 76.38 ± 9.63, and they were on average staying in nursing homes for a period of 21.17 ± 21.95 months. Most of them were illiterate (64.7%) and widowers (67%), with no source of income or pension (61.1%) and suffered from chronic diseases (63.4%). Also, most people (59.7%) had visitors at least once a week and had never returned home during their stay in the nursing home (69.8%). General characteristics of the study population are shown in Table 1.

Table 2 shows the results of linear regression for constructs of the SCT that affect total score of mental health. Accordingly, self-efficacy in overcoming obstacles with a power of -1.104 had the greatest effect on mental health of the elderly under study so that with one-point increase in self-efficacy of overcoming obstacles score, the total score of mental health dropped by 1.104 points.

Two constructs of self-efficacy and outcomes value with a power of -0.678 and -0.658 were respectively the second and third most important constructs affecting the overall score of mental health services. This model could predict 42.1% of mental health in the elderly.

According to the results presented in Table 3, before the intervention, the two educational groups were not significantly different in terms of age, length of stay, number of children, gender, marital status, education, chronic disease, independent source of income or salary, frequency of visits and number of returns to home ($p > 0.05$). In other words, the two groups were homogenous in demographic variables.

Table 1
Frequency distribution of the subjects in terms of demographic information (n = 203).

Variables	Mental disorder		p-value
	No	Yes	
Age, mean (SD)	75.76 (9.27)	76.73 (9.85)	0.500*
Number of children, mean (SD)	3.01 (3.06)	2.95 (2.45)	0.879*
Education, n (%)			0.970**
Illiterate	46 (35.4)	84 (64.6)	
Primary school	13 (39.4)	20 (60.6)	
Secondary school	4 (44.4)	5 (55.6)	
High school	7 (33.3)	14 (66.7)	
College	3 (37.5)	5 (62.5)	
Marital status, n (%)			0.437**
Single	8 (47.1)	9 (52.9)	
Married	5 (22.7)	17 (77.3)	
Widow	49 (36)	87 (64)	
Separated	11 (39.3)	17 (60.7)	
Having an independent income or salary, n (%)			0.160**
Yes	33 (41.8)	46 (58.2)	
No	40 (32.3)	84 (67.7)	
Chronic disease, n (%)			0.005**
Yes	38 (28.9)	91 (71.1)	
No	36 (48.6)	38 (51.4)	
Meeting number, n (%)			0.039**
Once or more times a week	52 (43.3)	68 (56.7)	
1–3 monthly	11 (26.8)	30 (73.2)	
Less of 1 monthly	5 (31.2)	11 (68.8)	
Never	4 (16.7)	20 (83.3)	
Number of returning to home, n (%)			0.051**
Once or more times a week	9 (64.3)	5 (35.7)	
1–3 monthly	4 (25)	12 (75)	
Less of 1 monthly	14 (45.2)	17 (54.8)	
Never	46 (32.6)	95 (67.4)	

* Independent T test, ** Chi-square.

Table 2
Summary of regression analysis for social-cognitive theory constructs as the predictors of mental health (n = 203).

Variables	B	SE	Beta	t	p-value	Adjusted R square	F	p-value
Knowledge	0.418	0.405	0.062	1.033	0.303			
Outcome expectancies	-0-184	0.309	-0.040	-0.594	0.553			
Outcomes value	-0.546	0.330	-0.108	-1.654	0.100			
Understanding of situation	0.106	0.382	0.016	0.275	0.784			
Observational learning	-0.167	0.290	-0.036	-0.577	0.565	0.40	15.988	< 0.001
Self-regulation	-0.046	0.160	-0.019	-0.289	0.773			
Self-efficacy of overcoming obstacle	-1.075	0.176	-0.411	-6.110	< 0.001			
Self-efficacy	-0.616	0.172	-0.248	-3.573	< 0.001			
Social support	-0.096	0.182	-0.032	-0.530	0.597			

Table 3
Comparison of homogeneity in demographic variables between intervention and control groups before intervention.

Variables	Interventional group (n = 45)	Control group (n = 45)	Total	p-value
Age, mean (SD)	78.95 (9.83)	74.86 (9.47)	76.66 (9.77)	0.079*
Number of children, mean (SD)	2.80 (2.55)	3.16 (2.24)	2.98 (2.39)	0.483*
Length of stay in nursing homes (months), mean (SD)	23.35 (20.27)	23.98 (21.37)	23.76 (20.71)	0.920*
Gender				1**
Male	13 (28.9)	13 (28.9)	26 (28.9)	
Female	32 (71.1)	32 (71.1)	64 (71.1)	
Marital status, n (%)				0.319**
Single	4 (8.9)	2 (4.4)	6 (6.7)	
Married	5 (11.1)	8 (17.8)	13 (14.4)	
Widow	27 (60)	31 (68.9)	58 (64.4)	
Separated	9 (20)	4 (8.9)	13 (14.4)	
Education, n (%)				0.385**
Illiterate	28 (62.2)	32 (71.1)	60 (66.7)	
Primary school	9 (20)	6 (13.3)	15 (16.7)	
Secondary school	1 (2.2)	3 (6.7)	4 (4.4)	
High school	4 (8.9)	2 (4.4)	6 (6.7)	
College	3 (6.7)	2 (4.4)	5 (5.6)	
Chronic disease, n (%)				0.291**
Yes	19 (42.2)	24 (53.3)	43 (47.8)	
No	26 (57.8)	21 (46.7)	47 (52.2)	
Having an independent income or salary, n (%)				0.670**
Yes	18 (40)	20 (44.4)	38 (42.2)	
No	27 (60)	25 (55.6)	52 (57.8)	
Meeting number, n (%)				0.498**
Once or more times a week	25 (55.6)	28 (62.2)	53 (89.9)	
1–3 monthly	9 (20)	7 (15.6)	16 (17.8)	
Less of 1 monthly	5 (11.1)	7 (15.6)	12 (13.3)	
Never	6 (13.3)	3 (6.7)	9 (10)	
Number of returning to home, n (%)				0.148**
Once or more times a week	5 (11.1)	1 (2.2)	66.7 ()	
1–3 monthly	3 (6.7)	1 (2.2)	4 (4.4)	
Less of 1 monthly	5 (11.1)	6 (13.3)	11 (12.2)	
Never	32 (71.1)	37 (82.2)	69 (76.7)	

* Independent T test, ** Chi-square.

As noted in Table 4, changes in the median of awareness, outcome expectation, outcome values, situational perception, observational learning and self-regulation were statistically significant in the experimental group during the course of study, which was consistent with the training effect ($p < 0.001$). Furthermore, an inter-group comparison using Mann-Whitney test showed no significant difference in the median of awareness, outcome expectations, outcome value, situational perception, observational learning and self-regulation before the intervention.

Moreover, according to the Table 4, immediately after the intervention ($p < 0.001$) and in the follow-up ($p = 0.008$), a significant difference between mean score of self-efficacy in overcoming obstacles was observed.

Also, Friedman nonparametric test revealed a significant difference in the median of emotional adjustment scores in the experimental group ($p = 0.022$), while no statistically significant difference was found in the median of emotional adjustment scores in the control group ($p = 0.317$). Further, data analysis using the Mann-Whitney test showed a statistically significant difference in the median of emotional adjustment scores in the two groups before the intervention ($p = 0.039$). As a result, the inter-group comparison revealed a significant difference between median score before the intervention, immediately after the intervention and in a three-month follow-up.

According to the results presented in Table 5, the variance analysis of duplicate data showed a significant difference between mean scores of mental health during the study ($p < 0.03$) and the effect of educational groups was also significant ($p < 0001$).

4. Discussion

The purpose of this study was to investigate the effect of educational intervention based on cognitive-social theory on elderly mental health. To achieve this goal initially, a predictive study was conducted to determine the effective structures of social cognitive theory on mental health of the elderly and then in accordance with the results of the predictive study, education intervention was provided to experimental group.

The result of this study showed shows that self-efficacy of overcoming obstacle was most important predictor of mental health. Additionally, the second most important determinant of behavior reported in this study was self-efficacy. In the study of Petosa et al., three constructs self-regulation, task self-efficacy and self-efficacy in overcoming barriers were found to be significant predictors.[21]

The findings of the present study showed a significant increase in the mean score of self-efficacy in the experimental group as a result of the educational intervention. The self-efficacy also decreased in the control group during the study. Consistent with this result, community-based nutritional education using SCT, along with the provision of food basket among low-income Latin people, not only increased fruits and vegetable intake, but also significantly improved knowledge of participants.[22]

The results of the study indicated that educational intervention increased the mean score of outcome expectations in the experimental group. Similar to our study results, in a study conducted for African American young women with overweight and obesity, a

Table 4
Comparing the participants mean or median scores of constructs of social cognitive theory.

Variables	Group	Before intervention	After intervention	Follow up stage (3 months after intervention)	Test (Friedman Test)	
		Median (IR)	Median (IR)	Median (IR)	Chi-square	p-value
Knowledge	Interventional group	3 (3)	4 (0)	4 (2)	40.06	< 0.001
	Control group	3 (3)	3 (2)	3 (2)	3.50	0.174
	p-value*	0.217	< 0.001	0.001		
	z	1.23	5.71	3.23		
Outcome expectancies	Interventional group	17 (2)	20 (2)	19 (2)	32.60	< 0.001
	Control group	18 (3)	18 (4)	18 (4)	0.64	0.724
	p-value*	0.941	< 0.001	0.003		
	z	0.07	4.06	2.99		
Outcomes value	Interventional group	18 (2)	20 (2)	19 (2)	47.15	< 0.001
	Control group	18 (2)	18 (3)	18 (3)	6.58	0.037
	p-value*	0.708	< 0.001	< 0.001		
	z	0.375	4.28	4.27		
Understanding of situation	Interventional group	8 (2)	9 (2)	9 (2)	72.05	< 0.001
	Control group	9 (2)	8 (2)	8 (2)	0.378	0.828
	p-value*	0.119	0.001	0.037		
	z	1.55	3.37	2.08		
Observational learning	Interventional group	13 (3)	15 (1)	15 (1)	48.01	< 0.001
	Control group	13 (3)	13 (3)	13 (3)	1.48	0.477
	p-value*	0.253	< 0.001	< 0.001		
	z	1.14	4.44	4.67		
Self-regulation	Interventional group	22 (6)	25 (3)	23 (5)	49.82	< 0.001
	Control group	20 (6)	21 (4)	21 (4)	0.10	0.951
	p-value*	0.855	< 0.001	0.003		
	z	0.18	4.58	3.01		

IR, interquartile range. * Mann-Whitney Test.

Table 5
Comparing the participants mean scores of mental health.

Variable	Group	Before intervention		After intervention		Follow up stage (3 months after intervention)		Test (Repeated measure ANOVA)		
		Mean	SD	Mean	SD	Mean	SD	Tim/group	Time	Group
Self-efficacy of overcoming obstacle	Interventional group	13.89	3.35	14.80	3.80	14.73	4.01	F = 0.602	F = 0.575,	F = 9.250,
	Control group	12.82	3.86	12.82	3.49	12.80	3.25	p = 0.458	p = 0.469	p = 0.003
	p-value*	0.166		0.012		0.014				
	t	1.398		2.567		2.509				
Self-efficacy	Interventional group	12.24	3.135	15.29	2.54	14.24	2.58	F = 18.958	F = 13.985,	F = 2.591,
	Control group	12.84	4.627	12.64	4.91	12.56	5.03	p < 0.001	p < 0.001	p = 0.111
	p-value*	0.474		0.002		0.049				
	t	-0.720		3.203		2.003				
Social support	Interventional group	8.71	2.74	10.40	2.16	10.67	2.14	F = 11.440	F = 9.245	F = 0.309
	Control group	9.69	3.45	9.64	3.17	9.56	3.06	p < 0.001	p = 0.001	p = 0.580
	p-value*	0.140		0.192		0.050				
	t	-1.488		1.318		1.993				
Mental health	Interventional group	25.48	9.38	23.80	9.49	24.53	8.69	F = 0.55	F = 4.830	F = 19.09
	Control group	28.75	9.33	30.04	10.26	30.17	10.18	p = 0.45	p = 0.03	p < 0.001
	p-value*	0.101		0.003		0.005				
	t	-1.658		-2.995		-2.826				

* Independent samples T-test.

significant increase in outcome expectations was found.[23]

The result of this study did not show any increase in the mean score of social support in the subjects. Nonetheless, in this study attempts were made to reinforce aids offered to the elderly by raising knowledge of their family and improve perceived social support in the elderly by moderating their expectations and seeking assistances of others. The main reason for inadequate social support for the elderly in the study was insufficient training programs for the elderly's families and exclusion of nursing home's staff from support-based intervention programs, while these people play a pivotal role in perceived social support of the elderly. It is worth noting that given the lack of state support and social respect during old age in Iran, especially after the admission of the elderly to nursing homes, it is necessary to offer educational programs to families, society and policy makers. As such, changing the conventional view of the elderly and reducing social support requires more profound and widespread training.

This study indicated a statistically significant difference in situational perception scores in the experimental group. About importance of situational perception, it can be posited that mental health status is directly related to the perception of people from their situation. For example, a study by Rocha et al. in 2012 showed that people who reported more environmental problems had a higher prevalence of common mental disorders. In fact, the increase in the prevalence of common mental disorders was directly associated with an increase in the number of perceived environmental problems.[24]

According to the results of this study, the educational intervention in the experiment group led to lower GHQ scores and therefore enhanced mental health. Similarly, in a study by Mazaheri on determining the effect of educational interventions on public health and depression of contract-based employees in the city of Isfahan, the mean score of GHQ dropped significantly after the intervention. Thus, the cognitive-behavioral intervention is considered as basic training to improve depression coping skills.[25]

The limitations of this research include the inability of research samples to fill in the questionnaire as well the difficulty of understanding the questions refers to some older and less literate elderly. It is suggested that in future studies, researchers measure the quality of health care provided to these elderlies in nursing homes.

5. Conclusion

As a general conclusion designing and implementing educational interventions by employing SCT based on individual, environmental and behavioral factors can significantly help maintain and improve the mental health of the elderly in the nursing homes.

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Conflict of interest

The authors declare that they have no conflict of interest.

Authors' contribution

Design and implementation of the project: Hadi Tehrani. Scientific monitoring of the project: Hadi Tehrani. Analysis of data: Habibullah Esmaily, Alireza Jafari. Involvement in implementation of project: Aida Abusalehi. Participation in writing article: Mohammad Vahedian-Shahroodi.

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Ethical approval

This study was approved by Mashhad University of Medical Sciences Ethics Committee (IR.MUMS.REC.1395.192). Also, the study was registered in Iranian Clinical Trials Center (IRCT2016 101328529N3).

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