

## ORIGINAL ARTICLE

# The Effect of Orientation Program based on Activities of Daily Living on Depression, Anxiety, and Stress in the Elderly

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### ABSTRACT

**Background:** This study aimed to analyze the effect of the Orientation Program based on Activities of Daily Living on depression, anxiety, and stress in the elderly.

**Methods:** This is an experimental study on 65 elderly individuals living in 5 nursing homes in Tehran in 2017 for 6 months (May to October). Samples were selected using non-random available sampling methods and randomly assigned to intervention and control groups. Demographic information questionnaire and 21-item version of the Depression Anxiety Stress Scale (DASS- 21) were used. The elderly in the intervention group were subjected to the Orientation Program based on Activities of Daily Living for 6 one-hour sessions for 1 month. DASS- 21 was measured before the intervention, one month and two months after the intervention. Data were analyzed using SPSS V. 24 and Independent T-test, Mann-Whitney, Chi-Square and repeated measure ANOVA tests with a significance level of  $P < 0.05$ .

**Results:** The results showed differences between the two groups regarding depression, anxiety, and stress one month after the intervention ( $P=0.003$ ,  $P=0.005$  and  $P<0.001$ , respectively). One month after the intervention, the mean scores of depression, anxiety, and stress in the intervention group decreased to  $8 \pm 4.54$ ,  $4.5 \pm 3.09$  and  $7.53 \pm 5.42$ , respectively, and two months after the intervention, they decreased to  $8.25 \pm 4.44$ ,  $4.71 \pm 3.05$  and  $8.21 \pm 5.71$ , respectively.

**Conclusion:** According to the results, the Orientation Program based on Activities of Daily Living is effective on depression, anxiety, and stress in the elderly. Considering the instability of the intervention on the depression variable, further studies and long-term interventions are recommended.

**Trial Registration Number:** IRCT20180504039528N1

**KEYWORDS:** Activities of daily living, Anxiety, Depression, Elderly, Stress

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## INTRODUCTION

Today, due to the medical and technological developments, improved health conditions, and increased life expectancy, the world population as well as the elderly has increased.<sup>1</sup> According to the World Health Organization, it is estimated that the number of people over 60 years old will increase from 900 million in 2015 to approximately 2 billion in 2050.<sup>2</sup> This increase in population can have a noticeable impact on planning and providing health care. This growth is quite evident in Iran as well.<sup>3</sup> The aging population index has risen from 3.1 in 1986 to 6.1 in 2016 in Iran.<sup>4</sup> Oldness is the last stage in human life that results in various physical, mental, economic and social changes associated with the reduced function of the body systems.<sup>5</sup> Elderly people are naturally influenced by diminished physical, psychological and social abilities.<sup>6</sup> Among many psychological problems in the elderly, stress, anxiety and depression can be mentioned. These feelings can cause many problems in human life, adversely affecting their health.<sup>7</sup> In Iranian culture, the nursing home is not the option chosen by the elderly, so this can intensify anxiety and stress among them.<sup>8</sup> Depression<sup>9</sup> and anxiety<sup>10</sup> are very common among the elderly. The elderly living in the nursing homes experience more depression and death anxiety than those living among the community.<sup>11</sup>

Failure to perform Activities of Daily Living (ADL) and the consequent dependencies can also increase the incidence of depression in the elderly.<sup>12</sup> Usually, in the elderly, falling may occur while doing everyday activities such as walking, climbing up and down the stairs, moving in/out of the chair or bed, and using the bathroom.<sup>13</sup> Stress experiences lead to an increase in the incidence of depression in elderly people with a disease or physical constraint.<sup>14</sup> Mostly the mobility and daily activity of people after retirement is reduced.<sup>15</sup> Many people aged 60 years old and over need others' assistance to do at least one of their ADL (such as bathing, dressing, going to the toilet, transferring, eating, shopping,

preparing food, housekeeping, etc). This dependency can increase the likelihood of the elderly to be transferred to care centers.<sup>16</sup> Since being engaged in everyday activities positively affects the mental health of the elderly and every interruption in this engagement can cause depression, stress and, anxiety, the elderly need to maintain their daily activities. Mobility and activity during old age are essential to maintain physical and mental health and to reduce dependence on caregivers and mobility devices.<sup>17</sup> With proper planning and education, and improving the quality of care, it is possible to reduce dependency in doing daily activities among the elderly living in the nursing home.<sup>18</sup>

Training and increasing the knowledge of the elderly is possible through a dedicated and targeted communication between the nurse and the elderly. Taylor names the orientation program as the helper relationship.<sup>19</sup> This study aimed to investigate the effect of the orientation program based on the ADL on depression, anxiety, and stress in the elderly.

## MATERIALS AND METHODS

This research is an experimental study which was performed in 2017 for 6 months (May to October). The study was approved by the Ethics Committee of Tarbiat Modares University (ethical No is: IR.TMU.REC.1395.458). The study population constituted all elderly people living in 5 nursing homes in Tehran: Tohid, Mehrgol, Negar, Mehrpooya, and Omid. The inclusion criteria included the age of 60 to 90 years, interest in participation in the study, membership in the mentioned nursing homes, ability of perception and communication, lack of any movement limitation including paralysis or complete bed rest and lack of any cognitive disorder. The exclusion criteria included affliction with cognitive disorder or paralysis disease, discharge from the mentioned nursing homes, the death of the elderly and refusal to continue participation in the study.

The sample size was set to 28 in each group. It was calculated based on the

following formula and data in a similar study by Poorhosein Alamdari et al. (2015):<sup>20</sup>

$$n = \frac{\left( Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 (S_1^2 + S_2^2)}{(\mu_1 - \mu_2)^2}$$

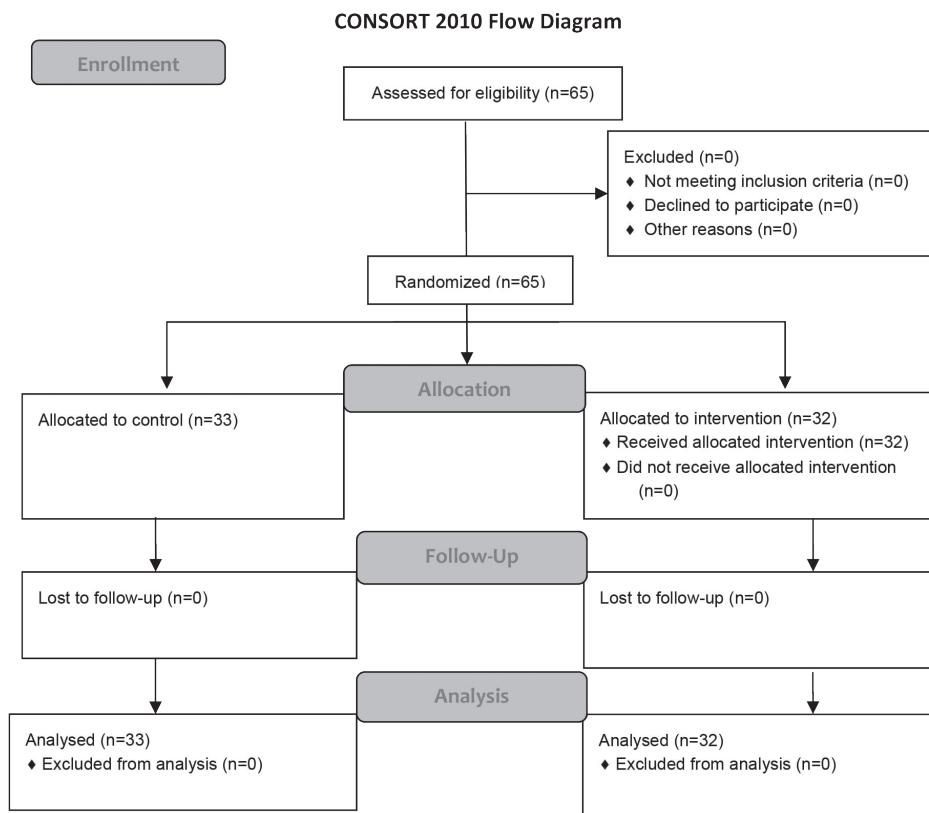
Where  $\alpha=0.05$ ,  $Z_{1-\beta}=0.84$ ,  $\beta=0.20$ ,  $Z_{1-\alpha/2}=1.96$ ,  $S_1=4.12$ ,  $S_2=3.40$ ,  $\mu_1=6.02$ ,  $\mu_2=6.85$ . Due to the probability of falling samples (15%), 4 people were added to the sample size in each group. According to inclusion criteria of the study, 65 elderly people were selected from these centers using available sampling method (Figure 1).

The elderly of each center were randomly assigned into intervention and control groups. A random number was assigned to each participant and then after sorting them based on the random numbers, the first 32 participants were assigned to the intervention group and the remaining to the control group. Since the elderly in the two groups were in contact with each other, firstly, the elderly in the control group completed DASS-21 in two stages with an interval of one month between

the two stages (questions were read one by one by the researcher and responded by the participant).

At first, the participants completed the written consent form. The research instruments, for data collection, included demographic information questionnaire and 21-item version of Depression, Anxiety, and Stress Scale (DASS-21). Demographic information questionnaire for elderly people included questions about age, sex, marital status, level of education, history of the disease, type of used medications, and so on. Its content was validated by several professors of Tarbiat Modares University and Shahid Beheshti Medical Sciences.

**DASS-21:** This scale has been designed in two versions of 42 and 21 questions. Version 21 is a shortened form in which 7 questions have been used to measure any of the symptoms of anxiety, stress, and depression. This questionnaire was firstly introduced by Lovibond and Lovibond in 1995.<sup>21</sup> It is a Likert-type scale with 4 options: at all, low, medium and high. For each question,



**Figure 1:** CONSORT flow diagram of the participants

the lowest score is 0 and the highest score is 3. The range of scores in each dimension is from 0 to 21, and higher scores represent greater depression, anxiety, and stress. In the original version, the internal consistency for a normative sample of 717 individuals was: depression subscale of  $\alpha=0.81$ , anxiety subscale of  $\alpha=0.73$ , and stress subscale of  $\alpha=0.81$ . The analysis of the basic components was performed, showing that the first three factors explain a high degree of variance.<sup>21</sup> Validity and reliability of the Persian version of this scale were measured by Sahebi et al. (2005)<sup>22</sup> and Moradipناه (2005)<sup>23</sup> in Iran. In the study of Sahebi et al., the construct validity of DASS was measured using factor analysis and criterion validity (concurrent method). The first, second and third factors (stress, depression, and anxiety) were determined 17.25%, 15.09% and 14.32% of the variance, respectively (totally 46.66%). Kaiser-Meyer-Olkin (KMO) test was performed for factor analysis with a coefficient of 0.865 (at a significant level of  $P<0.001$ ). The correlation between the Depression subscale and the Beck Depression Inventory scale was +0.70; it was +0.67 between the Anxiety subscale and Zung Anxiety Inventory, and +0.49 between the Stress subscale and Perceived Stress Inventory. All correlations were significant. The reliability of this scale was also examined through internal consistency, with Cronbach's alpha which was for the depression subscale

$\alpha=0.77$ , anxiety subscale  $\alpha=0.79$ , and stress subscale  $\alpha=0.78$ .<sup>22</sup> In Moradipناه's study, Cronbach's alpha was reported ( $\alpha=0.94$ ) for depression, ( $\alpha=0.92$ ) for anxiety, and ( $\alpha=0.89$ ) for stress.<sup>23</sup>

In addition, Wood et al. (2010) concluded that this scale was valid in the elderly (over 60 years old) with chronic pain.<sup>24</sup> In the present study, the reliability of the questionnaire was measured using Cronbach's alpha method and the results showed  $\alpha=0.90$  for depression,  $\alpha=0.72$  for anxiety,  $\alpha=0.82$  for stress, and  $\alpha=0.92$  for the total questionnaire.

A weekly checklist was designed to receive the participants' reports on compliance with the educational program and their performance in the daily activities of living, including those that the elderly should do alone, such as walking, climbing up and down stairs, combing hairs, bathing, dressing, and so on.

To design an orientation program based on the ADL of the elderly, the contents and items of the Modified Barthel questionnaire, designed by Shah et al. in 1989<sup>25</sup> were used. The intervention group was then subjected to the orientation program based on the ADL for one month. The orientation program had three phases: inauguration, implementation, and closure (Table 1). The inauguration phase included introducing the researcher and the participants as well as explaining the purpose of the research and the steps of

**Table 1:** Orientation program based on the Activities of Daily Living

Orientation program	Inauguration phase	Introducing the researcher and the participants as well as explaining the purpose of the research and the steps of the intervention
	Implementation phase	Familiarization of participants with aging, specific associated changes, and ADL in the elderly.
		Familiarization with the ways of mobility in the elderly (bed/chair-shifting, using wheelchairs, and climbing up and down stairs), and training how to prevent falls (During two sessions)
		Informed about nutrition and motivation to meet nutritional recommendations for the elderly
Closure phase	Familiarization with personal grooming (dental care, bathing, dressing, and personal hygiene) in the elderly	
	Controlling their excretion and using the flush toilet	
		The degree of the goal fulfillment was evaluated and the results were summarized. In case of failure in the accomplishment of any specific objective, the researcher repeated the relevant theoretical and practical training

the intervention. During the implementation phase, six one-hour sessions of theoretical and practical training were held individually and collectively in each elderly home by the researcher. At the closure phase, the degree of the goal fulfillment was evaluated and the results were summarized. In the case of failure in the accomplishment of any specific objective, the researcher repeated the relevant theoretical and practical training. Sessions were held in each of the nursing homes individually and in groups of two to three. This intervention phase lasted 1 month. Then, for one month, the function of participants in the intervention group was monitored using the weekly checklist. At the end of this one-month period, the participants were asked to complete the DASS-21. One month later, the sustainability of the intervention was measured. Generally, in each group, the questionnaires were completed in three time points, the interval between each time point was one month. After the end of the study, in order to consider the ethical issues, the intervention was performed on the elderly of the control group for 1 month and the educational content was provided to them.

The data were analyzed using SPSS software, version 24. Independent T-test, Mann-Whitney, Chi-Square and repeated measures ANOVA with a significance level of  $P < 0.05$  were used. The mean was compared using the Tukey procedure.<sup>26</sup> Independent t-test and repeated measures ANOVA were used for variables with the normal distribution ( $P > 0.05$ ) and Mann-Whitney test for abnormal distribution variables ( $P < 0.05$ ) (Chi-square test was used to analyze the qualitative variables that were part of the demographic variables).

## RESULTS

Distribution of stress and anxiety variables was normal at each stage. The distribution of the depression variable was abnormal, which was normalized using the square root. Distribution of other variables was abnormal, except age

and weight.

There were 33 participants in the intervention group and 32 participants in the control. The age of the participants ranged from 60 to 90 years and the mean $\pm$ SD of the participant's ages in the control and intervention group was  $75.12 \pm 8.84$  and  $75.56 \pm 8.28$ , respectively. The intervention and control groups were identical in terms of all demographic characteristics (Table 2).

There was no significant difference between the two groups of intervention and control with respect to variables of stress ( $P = 0.28$ ), anxiety ( $P = 0.29$ ) and depression ( $P = 0.77$ ) before the intervention. This finding illustrates the consistency of the two groups regarding the three variables (Table 3).

In the control group, there was no significant difference between the mean of stress, anxiety and depression in the three stages before, one month after, and two months after the intervention ( $P > 0.05$ ), while in the intervention group, there was a significant difference between the mean of these parameters before and one month after the intervention ( $P < 0.05$ ). There was also a significant difference between the mean of the three variables before and two months after the intervention ( $P < 0.05$ ). In the intervention group comparing the mean of two variables of stress and anxiety one month and two months after the intervention showed no significant difference ( $P > 0.05$ ), which showed the stability of the intervention. However, in terms of the depression variable, the mean of depression two months after the intervention was higher than the previous stage (0.16), which was a significant increase ( $P < 0.05$ ). As a result, it can be said that the intervention was not stable regarding the variable of depression (Table 4).

By comparing the two groups together, as shown in Table 5, one month after the intervention, a significant difference between the two groups was observed with respect to all the three variables of depression, anxiety, and stress ( $P < 0.05$ ). This table also shows the sustainability of intervention regarding the

**Table 2:** Comparison of demographic characteristics in the intervention and control groups

Variables		Intervention group	Control group	P value
		Mean±SD	Mean±SD	
Age		75.56±8.28	75.12±8.84	0.83*
Weight		68.06±7.47	67.48±7.03	0.74*
Height		163.87±6.67	161.42±6.64	0.19**
Degree of activity		28.43±33.58	26.66±27.68	0.65**
		N (%)	N (%)	
Sex	Men	15 (46.9)	15 (45.5)	0.90***
	Women	17 (53.1)	18 (54.5)	
Marital Status	Single	8 (25)	8 (24.2)	0.99***
	Married	7 (21.9)	7 (21.2)	
	Widow	17 (53.1)	18 (54.5)	
Educational status	Illiterate	6 (18.8)	6 (18.2)	0.74***
	Under the high school diploma	15 (46.9)	12 (36.4)	
	high school diploma	5 (15.6)	6 (18.2)	
	Associate Degree	2 (6.3)	1 (3)	
	Bachelor	2 (6.3)	6 (18.2)	
	Masters degree and higher	2 (6.3)	2 (6.1)	
History of the disease	Cardiovascular	3 (9.4)	2 (6.1)	0.45***
	Digestive	1 (3.1)	1 (3)	
	Skeletal	8 (25)	3 (9.1)	
	Psychiatric	2 (6.3)	2 (6.1)	
	Others	5 (15.6)	4 (12.1)	
	Mix (gastrointestinal, skeletal, psychiatric, and cardiovascular)	11 (34.4)	14 (42.4)	
	None	2 (6.3)	7 (21.2)	
Type of medication	Cardiovascular	3 (9.4)	4 (12.1)	0.57***
	Psychiatric	7 (21.9)	10 (30.3)	
	Palliative	1 (3.1)	2 (6.1)	
	Others	2 (6.3)	2 (6.1)	
	Two categories of medication	12 (37.5)	13 (39.4)	
	Three categories of medications and more	7 (21.9)	2 (6.1)	
Experience of fall	Yes	15 (46.9)	11 (33.3)	0.26***
	No	17 (53.1)	22 (66.7)	

\*Independent *t*-test; \*\*Mann-Whitney; \*\*\*Chi-squared test

**Table 3:** Comparison of the mean±SD of depression, anxiety, and stress in the intervention and control before the intervention

Variable	Intervention group Mean±SD	Control group Mean±SD	P value*
Stress	9.40±4.72	10.72±5.05	0.28
Anxiety	6.28±3.53	7.27±3.95	0.29
Depression	9.34±6.49	9.48±6.10	0.77

\*Independent *t*-test

stress and anxiety variable and the lack of sustainability of the intervention regarding the depression variable.

The changes in stress depression and anxiety in the two groups are presented in Figure 2.

## DISCUSSION

The present study aimed to investigate the effect of Orientation Program based on the ADL on depression, anxiety, and stress in the elderly. According to previous studies, demographic

**Table 4:** Within-group comparison of depression, anxiety, and stress at different times (two by two)

Variable	Time	Intervention			Control		
		Mean±SD		P value*	Mean±SD		P value*
Stress	Before and 1 month after	9.40±4.72	8±4.54	<0.001	10.72±5.05	10.75±5.04	0.99
	Before and 2 months after	9.40±4.72	8.25±4.44	<0.001	10.72±5.05	10.81±5.05	0.94
	1 and 2 months after	8±4.54	8.25±4.44	0.62	10.75±5.04	10.81±5.05	0.97
Anxiety	Before and 1 month after	6.28±3.53	4.5±3.09	<0.001	7.27±3.95	7.15±3.70	0.92
	Before and 2 months after	6.28±3.53	4.71±3.05	<0.001	7.27±3.95	7.18±3.66	0.95
	1 and 2 months after	4.5±3.09	4.71±3.05	0.79	7.15±3.70	7.18±3.66	0.99
Depression	Before and 1 month after	9.34±6.49	7.53±5.42	<0.001	9.48±6.10	9.60±5.98	0.85
	Before and 2 months after	9.34±6.49	8.21±5.71	0.003	9.48±6.10	9.63±6.01	0.75
	1 and 2 months after	7.53±5.42	8.21±5.71	0.01	9.60±5.98	9.63±6.01	0.98

\*Repeated measures ANOVA (Tukey)

**Table 5:** Between-group comparison of mean difference±SD of stress, anxiety and depression variables in both intervention and control groups

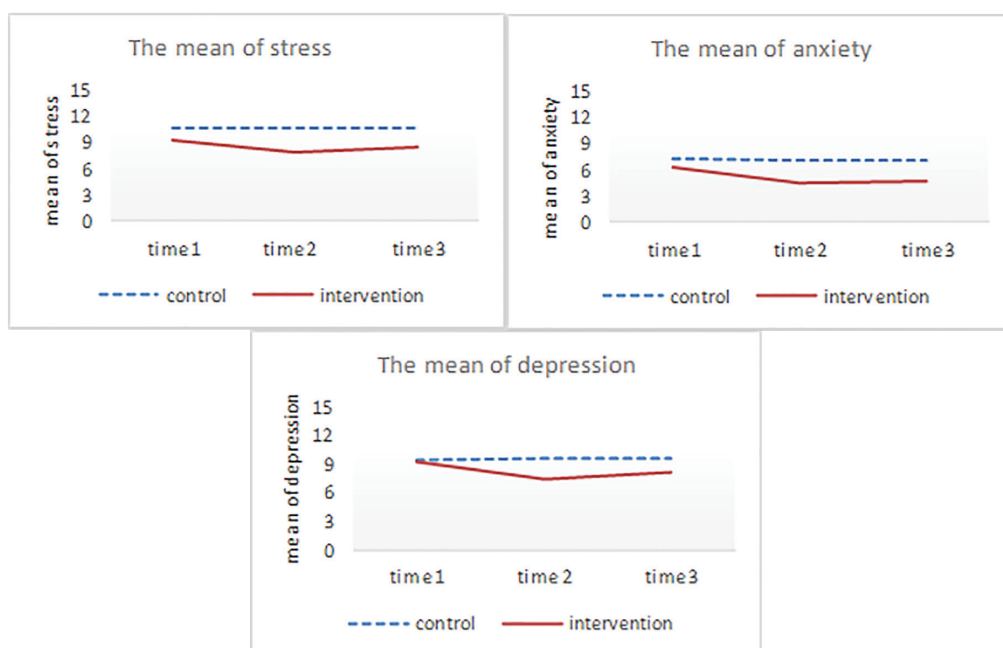
Variable	Group Differences	Mean difference±SD		P value*
		Intervention	Control	
Stress	One month after and before intervention	-1.40±2.58	0.03±0.63	0.003
	Two months and one month after intervention	0.25±0.80	0.06±0.34	0.10
Anxiety	One month after and before intervention	-1.78±3.02	-0.12±0.92	0.005
	Two months and one month after intervention	0.21±0.75	0.03±0.17	0.25
Depression	One month after and before intervention	-1.81±2	0.12±0.81	<0.001
	Two months and one month after intervention	0.68±1.25	0.03±0.30	<0.001

\*Mann-Whitney

information can be influential in depression,<sup>9</sup> anxiety,<sup>27</sup> as well as the daily activities of the elderly.<sup>28, 29</sup> Therefore, this information was checked and matched in both intervention and control groups. The results of this study showed that the orientation program was effective on the stress level of the elderly. The decrease in the mean of stress variable in the intervention group may be due to the fact that the Orientation Program in this study included regular daily activities. Based on a study conducted in Korea, physical activity had a positive effect on stress among the elderly women.<sup>30</sup> Also, sports and physical exercise reduce susceptibility to stress,<sup>31</sup> and older people with physical activity have less stress.<sup>27</sup>

According to the results, it can be concluded that the Orientation Program

based on the ADL has a positive effect on the level of anxiety in the elderly, reducing it in the intervention group. The reason for this decrease can be the presence of regular activities in the Orientation Program. This finding is consistent with some other studies.<sup>27, 28, 32, 33</sup> In addition, a review study found that physical activity training and exercise reduced the symptoms of anxiety in patients with chronic illness.<sup>34</sup> On the other hand, the decrease in the level of anxiety may only be related to the state anxiety created during the daily activities of living in the elderly, not to the trait anxiety. Therefore, it can be said that the Orientation Program, through raising the elderly awareness of the benefits of ADL as well as training and accompanying the elderly during the intervention, has reduced



**Figure 2:** The mean of depression, anxiety, and stress in three times before the intervention, one month after and two months after the intervention in the two groups of control and intervention

the stress, fear and state anxiety.

The findings of the present study showed that the Orientation Program on the ADL also resulted in a decrease in the mean of depression in the intervention group. In Consistent with this study, some studies highlighted the positive impact of the activity on depression.<sup>27,32</sup> In this research, the Orientation Program based on the ADL enhanced the mobility of the elderly and made them familiar with the definition, benefits, and the ways of doing daily living activities. Therefore, with increasing mobility and activity of the elderly during the intervention and the one-month follow-up, their psychological problems including depression, anxiety, and stress reduced to some extent.

Given the depression variable, the effect of the intervention was not stable. To some extent, this instability can be attributed to the elderly's residence in the nursing home. The nursing homes in this study had specific discipline regarding various issues such as time of eating, going out, bathing, visiting, and so on. The elderly seems to have less freedom in these places. Lack of leisure activities, feeling of loneliness as well as reduced social support of the family and friends can also be

effective. Different procedures of the nursing homes in this study, long habitation of the participants, the environmental factors and the participants' perceptions of their place of living are among other influential factors in depression. The comments of the participants during the intervention and the follow-up period can confirm this claims. Some of these comments are: "I am not satisfied with this place; that's why I am not happy...", "Why am I here? I am desperate; I want to come back to my house and my previous life; I want to go, to walk in the streets ...". Based on these comments, it can be said that living in the nursing home might be an obstacle to the more positive effect of the intervention and improvement of the participants' depression. In another study on the Iranian elderly, it was also shown that the prevalence of depression in the elderly living in the nursing home was higher than in their counterparts not living in the nursing home.<sup>11</sup>

Furthermore, from the participants' other comments such as "I am getting older, every day a disease is added to my current diseases; nothing works...", "We are getting worse every day; only death can save us...", It can be understood that they are suffering from



chronic diseases and functional limitation, are disappointed in treatment, and hold negative attitudes toward the effectiveness of the educational program. Consequently, the reluctance to exercise educational items within two months after the intervention may be considered as the possible causes of the poor impact of the intervention on depression.

On the other side, it is likely that the continuous practice, support, and engagement with participants during the intervention and the one-month follow-up occurred due to the nature of the intervention and mitigated the feeling of loneliness among the participants, leading to a decrease in the average of dependent variables, while two months after the intervention when this accompanying ended, the level of depression in the elderly increased again. Hence, it can be concluded that the continuous presence of a supportive person is necessary for the elderly.

In addition to the above explanations, due to the chronicity of depression and since it requires a long period of time to be healed, the poor influence of intervention on depression can be also explained by short duration of the intervention and the follow-up period.

A limitation of the study was the small sample size. Therefore, this finding cannot be generalized to a broader community. Moreover, individual and personality differences in the elderly can affect the acceptance of training and the symptoms of depression, stress and anxiety, which could not be controlled by the researchers. Also, the environmental conditions of the nursing homes and the relationship between the staffing of the nursing homes and the elderly can affect the performance and responsiveness of the elderly, which is beyond the scope of the researchers.

## CONCLUSION

According to the findings, the Orientation Program based on the ADL is influential in decreasing the level of depression, anxiety, and stress among the elderly. Therefore, health care

professionals can use this program as an easy and inexpensive way in nursing homes to reduce the symptoms of depression, anxiety, and stress in the elderly. Given the depression variable, due to the instability of the intervention, more studies and longer interventions are recommended. The researchers suggest that further studies with a larger sample size should be carried out on a larger statistical community.

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**Conflict of Interest:** None declared.

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