Original Article

The Effects of a Care Plan Based on the Roy Adaptation Model on Depression among Nursing Home Residents

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ABSTRACT

Background: Depression is one of the most common mental disorders among nursing home residents. Nursing models are among the therapies with potential effects on depression. **Objectives:** This study aimed to determine the effects of a care plan based on the Roy's Adaptation Model (RAM) on depression among nursing home residents. **Methods:** This quasi-experimental study was conducted on sixty older adults selected from four nursing homes in Urmia, Iran. Participants were randomly allocated to a control and an intervention group. A care plan based on the RAM was designed and implemented for participants in the intervention group. The plan included individualized and group educations based on participants' maladaptive behaviors in the four modes of the RAM. During the intervention, participants' maladaptive behaviors and their stimuli were determined and measures were taken for their management. The intervention lasted for 1.5 months, followed by a 1-month supervision. Before and after the intervention, depression was assessed using the Geriatric Depression Scale. Data were analyzed through the independent- and the paired-sample t and the Chi-square tests. **Results:** The pretest and the posttest mean scores of depression were 5.78 ± 3.51 and 6.11 ± 3.64 in the control group and 6.81 ± 3.64 and 2.86 ± 2.50 in the intervention group. The between-group difference respecting the pretest mean scores of depression was not statistically significant ($P = 0.21$), whereas the posttest mean score of depression in the intervention group was significantly less than the control group ($P < 0.001$). Although the mean score of depression in the control group did not significantly change ($P = 0.32$), it significantly decreased in the intervention group ($P < 0.001$). **Conclusion:** The care plan developed in this study based on the RAM is effective in significantly reducing depression among nursing home residents. Therefore, it can be used for depression management in nursing homes.

KEYWORDS: *Care plan, Depression, Elderly, Nursing home, Roy Adaptation Model*

INTRODUCTION

The global population is rapidly aging. Currently, older adults constitute 10% of the global population.[1] The global population growth rate is 1.7%

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per year, whereas the older adults' population growth rate is 2.5%. Estimates show that the population of older adults will doubles from 12% in 2015 to 22% in 2050,[2] which will increase residence in nursing homes.[3,4]

Mental disorders, especially depression and anxiety, are among serious problems associated with aging.[5] Age-related physical and mental problems,[6] impaired self-esteem, reduced mobility, loss of friends and relatives, weakness, reduced physical and financial autonomy,[7] and age-related cognitive impairment are among the risk factors of depression among older adults.[8] Some studies reported that the prevalence of mental disorders, especially depression, among nursing home residents is as high as 80%.[7,9] People with depression may experience problems such as low levels of energy, lack of concentration, changes in appetite and weight, suicidal attempts, feeling of regret, and self-destructive thoughts.[10]

Age-related physical and mental health problems result in the ineffective adaptation as manifested by unhealthy and maladaptive behaviors.[6] Maladaptive behaviors can, in turn, increase the risk of physical and mental health problems among older adults. Therefore, adaptation-promoting strategies may help prevent and manage health-related problems among these individuals.[11] The Roy's Adaptation Model (RAM) is one of these strategies. This model focuses on adaptation promotion and thereby, has positive effects on mental health[12] and depression among older adults.[13,14] In this model, maladaptive behaviors are identified through careful examination,[15] and then, care measures are taken to promote physiological and psychological adaptation[16,17] and manage maladaptive behaviors.[15] RAM is considered as a safe and low-cost noninvasive method for the promotion of physical and psychological adaptation.[18] A number of earlier studies have investigated the effect of implementing RAM-based care plans on adaptation among patients with heart failure[19] and quality of life of patients with cervical cancer,[20] chronic liver disease,[21] and nursing home residents.[6] However, no study is available on the effect of this model on depression among nursing home residents.

Objectives

This study aimed to determine the effects of a care plan based on RAM on depression among nursing home residents. It is hypothesized that there is a significant difference between nursing home residents who receive routine care and their counterparts who receive RAM-based care respecting their depression mean scores.

METHODS

Design and participants

This quasi-experimental study was conducted from December 2018 to June 2019 using a pretest–posttest parallel design. Participants were sixty older adults who were selected from four nursing homes in Urmia, Iran, namely Al-Zahra, Khanaeye Sabz, Ara, and Ferdows. Inclusion criteria were agreement for participation, age over 60, no known hearing or speech problems, orientation to time, place, object, and person, no history of hospitalization in psychiatric hospitals, no history of receiving psychological therapies or suffering any loss during the last 6 months before the study, and no history of known mental, memory, or thinking problems. Exclusion criteria were two or more absences from the intervention sessions and reluctance to stay in the study. Using a random allocation software, participants were randomly assigned to an intervention ($n = 30$) and a control ($n = 30$) group [Figure 1]. Due to the nature of the study the participants were not blind to the intervention.

The sample size was estimated based on the results of a former study.[22] Then, with a type I error of 0.01, a type II error of 0.1, a S_1 of 3.14, a S_2 of 1.84, a μ_1 of 4.17, and a μ_2 of 1.38, the number of participants in each group was estimated at 26. However, considering a possible dropout of 15%, we recruited 30 participants in each group.

Data collection instruments

A demographic questionnaire and the Geriatric Depression Scale were used for data collection through interviewing participants. The Geriatric Depression Scale includes 15 yes/no questions scored 0 or 1. The total score of this scale is 0–15 and is interpreted as follows: scores 0–3: no depression; scores 3.01–10: moderate depression; and scores 10.01–15: severe depression. A study in Iran confirmed the validity and reliability of this scale and reported a Cronbach's alpha of 0.9.[23] The reliability of the scale in the present study was assessed through internal consistency assessment which resulted in a Cronbach's alpha of 0.92. As all participants were aged, we collected all the data trough structured individual interviews. All interviews were conducted by the last researcher and each lasted for about 30 min. The researcher asked the questions and recorded the participants' answers in the questionnaire.

Intervention

To design the study intervention, we initially used RAM-based assessment forms and determined participants' maladaptive behaviors in the physiological, self-concept, role function, and interdependence

modes and their focal, contextual, and residual stimuli. The forms were completed through a face-to-face interview with each participant. Then, an individualized four-session care plan was designed and implemented for each participant based on his/her maladaptive behaviors and their focal, contextual, and residual stimuli. In these individual weekly sessions, we attempted to correct each participant's maladaptive behaviors in the physiological, self-concept, role function, and interdependence modes through manipulating their focal, contextual, and residual stimuli. For instance, a participant with muscular weakness (a physiological problem) caused by limited mobility (the focal stimulus) was encouraged to do physical exercise such as walking. Moreover, a participant with constipation (a physiological problem) caused by limited intake of fluids and high-fiber foods (the focal stimulus) and decreased physical activity (the contextual stimulus) was provided with a high-fiber diet (consisted of fruits and vegetables) and adequate fluids and was asked to perform physical activity. Participants with maladaptive behaviors in the role function and interdependence modes were also provided with counseling services by a psychologist [Table 1].

Besides these individualized four sessions, two educational group sessions were held (at the start of the study) for all participants to address their common maladaptive behaviors. For instance, educations about maladaptive physiological behaviors were about proper nutrition, adequate and balanced physical activity, quality sleep, etc., Regarding maladaptive behaviors in the self-concept mode, educations aimed to make positive changes in participants' self-image and ideal image. In the interdependence mode, educations were mainly about peer relations, group discussions, and religious rituals. Educations in the role function mode were related to assuming some responsibilities in nursing homes, attending birthday or wedding parties, and organizing or joining sports teams.

During the first month after the intervention, we referred to the study setting to supervise participants' engagement in behavior modification activities. Before and after the

study intervention, the Geriatric Depression Scale was completed for all participants. To prevent information leakage from participants in the intervention group to their counterparts in the control group, we asked the authorities of the study setting to settle participants in these groups in separate rooms.

Ethical considerations

This study was approved by the Institutional Review Board and the Ethics Committee of Urmia University of Medical Sciences, Urmia, Iran (codes: 92011331273 and IR.UMSU.REC1393.32, respectively). Informed consent was obtained from all participants, and they were assured about the confidentiality of their personal information. At the end of the study, the study intervention was taught to the staff of the study setting to use it for all older adults in the study setting.

Data analysis

Data were analyzed using the SPSS software v. 16.0 (SPSS Inc, Chicago, IL, USA). At first, the Kolmogorov–Smirnov test was used for normality testing. Then, the independent-samples t- and the Chi-square tests were used to compare the groups respecting participants' demographic characteristics. Moreover, the independent- and the paired-sample t-tests were used, respectively, for between- and within-group comparisons in terms of the mean scores of depression. The level of significance was set at <0.05 in all testes.
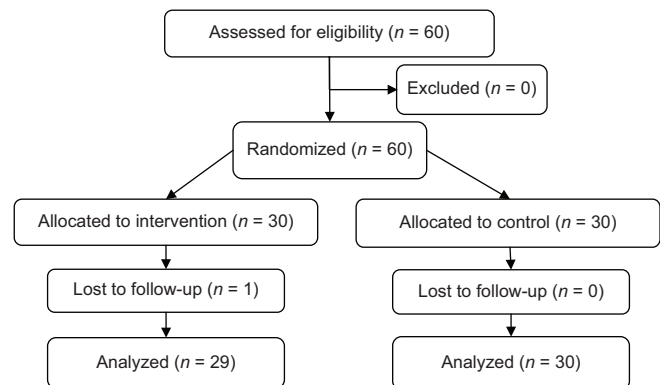

Figure 1: The flow diagram of the study

Table 1: Examples of the components of the study intervention

Adaptation modes of RAM	Examples of maladaptive behaviors	Type of stimuli	Examples of interventions
Physiological	Muscular weakness	Limited mobility (focal stimulus)	Physical exercise
Self-concept	Low self-esteem	Physical weakness (contextual stimulus)	Counseling services by a psychologist
Interdependence	Feeling lonely	Lack of family attention (focal stimulus)	Telephone contact with family members
			Participation in peer groups
Role function	Feeling incompetent	Change in roles (contextual stimulus)	Engagement in some cleaning and shopping activities and role playing in peer groups

RAM: Roy's Adaptation Model

RESULTS

One participant from the intervention group died during the study and the number of participants in this group reduced to 29 [Figure 2].

Most participants in the control (93%) and the intervention (96%) groups were female. Age mean in these groups was 70.10 ± 4.59 and 69.58 ± 7.03 years, respectively. No statistically significant differences were found between the groups respecting participants' age, gender, education level, marital status, income level, insurance, length of stay in nursing home, and number of children [Table 2].

The results of the independent-samples *t*-test showed no statistically significant between-group difference respecting the pretest mean score of depression ($P = 0.21$). However, the posttest mean score of depression in the intervention group was significantly less than the control group [$P < 0.001$; Table 3].

The mean score of depression in the control group changed from 5.78 ± 3.51 at pretest to 6.11 ± 3.64 at posttest. The paired-sample *t*-test showed that this change was not statistically significant ($P = 0.32$). However, the mean score of depression in the intervention group significantly decreased from 6.81 ± 3.64 at pretest to 2.86 ± 2.50 at posttest [$P < 0.001$; Table 3].

DISCUSSION

Before the intervention, there was no statistically significant between-group difference respecting the mean score of depression. Therefore, the significant difference between the groups respecting the posttest mean score of depression is attributable to the effects of the study intervention. In agreement with our findings, previous studies reported the positive effects of RAM-based care plans on adaptation among patients with heart failure[19] and quality of life among patients with cervical cancer,[20] chronic liver disease,[21] and nursing home residents.[6] Similarly, a study found the positive effects of RAM on the control, energy and mobility, and social support aspects of quality of life among patients with type II diabetes mellitus.[24] Another study found the effectiveness of a RAM-based educational program in significantly increasing the number of psychological adaptive behaviors among patients with heart failure.[17] A study showed that nurses can play a significant role in improving psychological adaptation and promoting adaptive behaviors through employing RAM-based educational programs.[25] Mental health components, such as depression, are closely related to the quality of life.[1] Older people living in nursing homes are prone to depression due to staying away from family, physical,

Table 2: Between-group comparisons respecting participants' personal characteristics

Characteristics	Group[a], mean ± SD		P
	Control	Intervention	
Age (years)	70.10 ± 4.95	69.58 ± 7.03	0.778[b]
Length of stay (years)	5.50 ± 2.35	5.79 ± 2.11	0.617[b]
Number of children	3.83 ± 1.53	3.62 ± 1.99	0.647[b]
Gender			
Female	28 (93.34)	28 (96.55)	0.574[c]
Male	2 (6.66)	1 (3.45)	
Marital status			
Married	6 (20)	8 (27.59)	0.414[c]
Single	0	2 (6.90)	
Divorced	1 (3.34)	0	
Widowed	23 (76.66)	19 (65.50)	
Nursing home			
Khaneye Sabz	16 (53.34)	16 (55.16)	0.989[c]
Al-Zahra	7 (23.34)	7 (24.16)	
Ferdows	4 (13.32)	3 (10.34)	
Ara	3 (10)	3 (10.34)	
Education level			
Illiterate	18 (60)	19 (65.50)	0.874[c]
Below diploma	9 (30)	8 (27.60)	
Diploma and higher	3 (10)	2 (6.90)	
Source of income			
National charity	5 (16.60)	6 (20.60)	0.418[c]
Family	8 (26.70)	8 (27.60)	
Personal	17 (56.70)	15 (51.80)	
Insurance			
Yes	26 (86.70)	23 (79.30)	0.451[c]
No	4 (13.30)	6 (20.70)	

[a]Data presented as mean ± SD or *n* (%), [b]*t*-test, [c]Chi-squared test. SD: Standard deviation

Table 3: Within- and between-group comparisons respecting participants' mean score of depression

Time	Group, mean ± SD		P (*t*-test)
	Control	Intervention	
Before	5.78 ± 3.51	6.81 ± 3.64	0.21
After	6.11 ± 3.64	2.86 ± 2.50	<0.001
P (paired *t*-test)	0.32	<0.001	

SD: Standard deviation

and psychological problems.[26] The results of the study showed that the use of the RAM, by manipulating the stimuli of maladaptive behaviors in physiological and psychological modes, can improve self-esteem, self-concept, communication with others, and delegation of roles, and with the improvement of psychological maladaptive behaviors, the rate of depression has also decreased. Examples of adaptive behaviors after manipulating the stimuli of maladaptive behaviors include physical activity such as exercising, participating in peer groups such as reminiscing, arranging more visits with family members, delegating responsibilities

such as shopping or cleaning centers to the participants, and holding ceremonies and celebrations.

RAM considers humans as biopsychosocial beings with four adaptive modes, namely physiological, self-concept, role function, and interdependence. In the present study, we identified maladaptive behaviors and their focal, contextual, and residual stimuli in each mode and then, attempted to manipulate modifiable stimuli in order to promote adaptation and correct maladaptive behaviors. Psychological counseling by a psychologist was also employed in order to correct psychological maladaptive behaviors. Maladaptive behaviors, negative thoughts, and depression negatively affect self-concept and self-esteem. Poor self-concept and self-esteem can, in turn, aggravate maladaptive behaviors and negative thoughts and result in depression, anxiety, and stress. The most important stimuli for psychological maladaptive behaviors among older adults are poor self-esteem, poor spiritual well-being, isolation, role conflict, and negative thoughts. These stimuli can be managed through psychological counseling and education in areas such as spiritual growth, communication with God, love for one's own and others, participation in peer groups, and assuming responsibilities in nursing home. Previous studies reported the positive effects of education on depression, self-efficacy, and mental aspect of quality of life.[27,28]

Contrary to our findings, a study showed that RAM had no significant effects on the mental aspect of quality of life among patients with type II diabetes mellitus.[24] This contradiction may be due to the differences between the studies in terms of intervention duration and participants' characteristics such as their desire to express their concerns.

The limitations of the study were its small sample size, short duration of its intervention, and participants' problems in answering the study questionnaires due to their sociocultural and age-related health conditions. Future studies are recommended to design RAM-based care plans with more educational and counseling sessions and longer follow-up assessment and evaluate their effects on the different aspects of mental health among older adults. Evaluating and comparing the effects of different nursing care models on different aspects of mental health are other areas for further investigation.

CONCLUSION

This study concludes that as a simple and noninvasive nonpharmacological intervention, the RAM-based care plan developed in the present study is effective in significantly reducing depression and managing physical and mental health problems among nursing home residents. The findings of the present study can be used to develop RAM-based interventions for improving health-related outcomes among older adults, particularly nursing home residents.

Conflicts of interest
There is no conflicts of interest.

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