



The Relationship between Depression and Fear of Falling in Older Adults Referred to Rasht Comprehensive Health Centers

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Abstract

Background: Increased life expectancy has increased the likelihood of chronic diseases. Depression, as the most common mental disorder for older adults, and fear of falling, which may lead to lower self-esteem and self-efficacy, can be barriers to proper physical activity.

Objectives: The current study aimed to determine the relationship between depression and fear of falling in older adults.

Methods: This descriptive-correlational study was conducted in 2018 on 90 randomly selected older adults aged 60 years and older referred to comprehensive health centers in the city of Rasht. Data were collected using a questionnaire on demographic information, a 15-item Geriatric Depression scale, and Falls Efficacy Scale-International Form. Data were analyzed through SPSS version 21 using descriptive and inferential tests (the Spearman and the Mann-Whitney U correlation coefficient). A P value of < 0.005 was considered as statistically significant.

Results: Most of the participants (60%) were female. The mean age was 68.44 ± 7.60 years, the mean depression score was 7.40 ± 2.03 , and the mean fear of falling was 36.97 ± 12.73 . There was a significant positive correlation between depression and fear of falling ($r = 0.420, P = 0.0001$).

Conclusions: These findings clarify the importance of proper planning by health authorities to prevent and treat mental disorders in older adults.

Keywords: Aged, Accidental Falls, Depression, Fear of Falling, Chronic Disease

1. Background

Similar to other countries, the geriatric population is also increasing in Iran (1, 2). The phenomenon of “aging” or “graying” can be considered as “changing in the distribution of a country’s population towards older ages” (3, 4). According to the World Health Organization (WHO) definition and national calendar classification, aging is aged 60 years or above. From 2000 to 2050, the proportion of those aged 60 or above will increase from about 11% to 22% or, in absolute number, an estimated increase from 605 million to 2 billion. In Iran, in the next 25 years, the elderly population will double. Hence, due to the rapid growth of this age group, diagnosis, treatment, and prevention of their problems will be of crucial importance (5). Depression is considered as a major psychological problem and a serious and dangerous consequence of chronic diseases among older adults, and studies have shown that the prevalence of depression among older adults is 12% to 45%

(6, 7). Depression is not a natural part of aging but is more than a transient mood (8). Moreover, falling is the second leading cause of death due to unintentional injuries in the world and can cause a variety of fractures and head injuries, prolonged pain, functional impairment and disability, increased dependence, admission to nursing homes, depression, and fear of falling. The psychological effects of falling can lead to motor deficits and reduced quality of life (QoL) in older adults (9). Fear of falling makes the older adults stay at home, while proper physical activity is the key to successful aging (10). Older adults who report fear of falling have the highest level of depression (11). Depression and falling also have a mutual relationship, so that excessive fear of falling that is intermittently associated with depression increases the risk of falling (12). Community-dwelling older adults who avoid doing their activities due to fear of falling show increased related depression and anxiety. Alternately, avoiding performing activities due to anxiety or functional limitations may lead to inactivity, so-

cial isolation, and depression in older adults (13). In the study conducted by Dias et al. (14), the fear-induced limited activity in older adults was associated with higher levels of depression. Painter et al. (11) concluded that depression was a predictor of fear-induced limited activity. Given what mentioned before, it seems that depression in older adults may have important effects on QoL, clinical outcome, functional status, use of medical services, and mortality (15). Also, fear of falling decreases physical activity, self-efficacy, depression, and self-esteem in older adults (10, 11, 16). Besides, it can be a barrier to healthy and active aging in this age group. Given the importance of this issue and since, according to the best knowledge of the authors, no study in Iran has investigated the relationship between fear of falling and physical and motor limitations and a limited number of studies have examined the psychological aspects of fear of falling, the current study was conducted to fill the gap. Hopefully, by using the results of this study, we would be able to improve the QoL of the Iranian geriatric population, and the goal of active aging will be achieved.

2. Objectives

The current study aimed to investigate the relationship between depression and fear of falling in older adults referred to comprehensive health centers in the city of Rasht in 2018.

3. Methods

This is an analytical and cross-sectional type of correlational study conducted from October to December 2018. The study population was all older adults aged 60 and more referred to comprehensive health centers in the city of Rasht. Based on the proportional-stratified sampling method, the city was divided into 5 districts (i.e., central, northern, southern, eastern, and western districts). After calculating the number of samples in each district, a number of comprehensive health centers were randomly selected, and the researcher referred to them for selecting participants among older adults who were referring to the centers to receive their periodic care. Participants were selected using the convenient sampling method. If they agreed to participate, a questionnaire was given to them. The inclusion criteria included being aged 60 or above, living in Rasht city during the past year, the ability to communicate verbally, and not having cognitive and mental disorders. The exclusion criterion included not being able to give proper information during the interview. The sample size was estimated based on the study conducted by Painter et al. (11). Accordingly, the correlation coefficient

between depression and fear of falling in older adults was considered as 0.210. Considering this value, a 95% confidence level, and 90% test power (9) and using the sample size formula, the research sample size was determined at 90 subjects.

$$C_n = \frac{1}{2}Ln \frac{1+r}{1-r} \quad (1)$$

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{c} + 3 = 90 \quad (2)$$

If having inclusion criteria, a questionnaire was given to them. Questionnaires were filled through interviews with participants, mainly because some older adults might have a misunderstanding of the questionnaires' questions due to different levels of literacy and perceptions related to their age that might affect their answer and the potential biases that may have occurred.

The study protocol was also approved by the Ethics Committee of Guilan University of Medical Sciences (code: IR.GUMS.REC.1396.301). Before interviews, all participants were ensured about the confidentiality of information. Written informed consent was obtained from all participants.

Data were collected using a questionnaire on demographic information, a 15-item Geriatric Depression scale, and Falls Efficacy Scale-International Form. The demographic questionnaire included variables such as age, gender, marital status, education level, job, history of falls, amputation, and use of motor aids (cane, walker) and sensory aid (glasses and hearing aids). Symptoms of depression were also assessed using a 15-Item Geriatric Depression scale. This scale was first developed by Yesavage et al. in 1982, and various shortened forms of it are developed in different countries, and its validity and reliability are assessed. The older adults were asked to answer the closed-ended questions as "yes" or "no". The range of each answer was from zero to one, and it was different for each question. Scores ranged from 0 to 4 were considered as normal, 5 to 8 as mild depression, 9 to 11 as moderate depression, and 12 to 15 as depression. Malakooti et al. (17) validated the 15-item form of this scale in Iran in a study entitled "Normalizing the 15-item older adults' depression scale in Iran". They reported a Cronbach's Alpha of 0.9, its split-half was obtained at 0.89, and its test-retest was obtained as 0.58 (17). The Falls' Efficacy Scale-International Form (FES-1) is developed and validated by Yardley et al. (18) in 2005. It's a 16-question scale, in which each item measures the level of concern or fear of falling when performing each activity on a 4-point scale. The domains of each item are, respectively, "not at all concerned", "Somewhat concerned", "Fairly concerned", and "very concerned". Each item has a score of 1 to 4.

The total score ranges from 16 to 64, so that a total score of 16 to 19 considers as the lowest worry, 20 to 27 as moderate worry, and 28 to 64 as the highest worry (18). The validity of this tool had already been assessed. The validity and reliability of its Persian version are evaluated by Khajavi (19) on 223 older adults (aged over 60 years) in the city of Arak. Pearson's correlation coefficient (0.70) showed an acceptable test-retest reliability and the results of Cronbach's Alpha in their study (0.96) showed a very good internal reliability. Data were analyzed using SPSS version 21. The Shapiro-Wilk test was used to assess the distribution of data, and Spearman's correlation coefficient and the Mann-Whitney test were also used. A P value of < 0.005 was considered as statistically significant.

4. Results

In total 90 older adults participated in the present study. The mean age was $68.44 \pm 7/60$ years, with a median of 66 and a range of 60 to 86 years. 60% of the subjects were female. Other demographic characteristics are presented in Table 1.

According to the results, 60% of older adults had mild depression ($n = 54$), 31.1% had moderate depression ($n = 28$), and 1.1% had severe depression ($n = 1$). The results also showed that 11.1% ($n = 10$) had low fear of falling, 16.7% ($n = 15$) had moderate fear of falling, and 72.2% ($n=65$ people) had high fear of falling. The mean fear of falling and depression is shown in Table 2.

Results showed that depression had a significant and direct relationship with marital status ($P = 0.02$). Fear of falling had a significant relationship with age ($P = 0.001$) and history of falling ($P = 0.003$). Results also indicated that fear of falling was significantly higher in female older adults than males ($P = 0.021$), and its level was higher in illiterate older adults ($P = 0.005$). Data analysis indicated a significant and direct correlation between depression and fear of falling in older adults ($r = 0.420$, $P = 0.0001$), based on the Spearman correlation coefficient.

5. Discussion

The present study aimed to investigate the relationship between depression and fear of falling in older adults referred to the comprehensive health centers in Rasht. Due to the importance of these issues for geriatric, if be underestimated, both the medical system and the elderly will suffer immensely from their consequences. The results showed a significant direct relationship between depression and fear of falling. Increased fear of falling leads to excessive self-care, and it makes older adults inactive, which

Table 1. Demographic Characteristics of the Participants^a

Variable	Values
Age	
60 - 74	70 (77.8)
75 - 89	20 (22.2)
90 and older	-
Gender	
Male	36 (40)
Female	54 (60)
Marital status	
Single	1 (1.1)
Married	65 (72.2)
Widowed	22 (24.4)
Divorced	2 (2.2)
Education level	
Illiterate	49 (54.4)
Middle school	26 (28.9)
Diploma	13 (14.4)
Bachelor	2 (2.2)
Job	
Housewife	45 (50)
Self-Employment	26 (28.9)
Retired	17 (18.9)
Employee	2 (2.2)
Fall history	
Yes	59 (65.6)
No	31 (34.4)
Type of injury	
No injury	32 (35.6)
Bruise	26 (28.9)
Fracture	23 (25.6)
Laceration/contusion	8 (8.9)
Others	1 (1.1)
Mobility aid	
No aid	60 (66.7)
Cane	25 (27.8)
Walker	3 (3.3)
Wheelchair	2 (2.2)
Sensory aid	
No aid	46 (51.1)
Glasses	42 (46.7)
Hearing aid	2 (2.2)

^aValues are expressed as No. (%).

Table 2. Depression and Fear of Falling in the Studied Older Adults^a

Variable	Values	r	P Value
Depression (GDS-15)	7.40 ± 2.3	0.420	0.0001
Fear of falling (FES-I)	36.97 ± 12.73		

^aValues are expressed as mean \pm SD.

in turn increases their depression. The results of this study are in line with the results of similar studies, as they have

reported a relationship between depression and fear of falling (9, 11, 14, 20). Reduced positive outlook causes a chain of events, resulting in an increased focus on the self, an increased need for help, reduced participation in enjoyable activities, and an unpredictable increase in fear of falling.

Also, depression is often associated with fatigue and reduced energy, which can despair people from their physical abilities (reduced self-esteem) and increase their fear of falling. According to the theory of self-efficacy, depression is an emotional state that is the definitive source of self-efficacy, so it may affect the association between self-efficacy and falling (9). The study conducted by Scarlet et al. (21) reported similar results to the present study, as they showed depression could significantly predict fear of falling. Also, in a study conducted by Gagnon et al. (22), the results showed that fear of falling was affected by physical, psychological, and social factors, and depression was one of the most common psychosocial disorders among older adults, which is consistent with the results of the current study. Symptoms of major depression, including psychomotor delay, slow stepping, low energy, and low levels of activity, can cause fear of falling, and it may lead to depressive symptoms (23). A defective cycle is caused by depression and fear of falling in older adults. The results of the study conducted by Liu (24) and Malini et al. (25) are consistent with those of the present study, that is more depressive symptoms are increasingly associated with fear of falling. However, in a study conducted by Iaboni et al. (26) reported no association between depression and fear of falling among older adults, which is not consistent with the results of the present study. A significant and direct relationship was found between marital status and depression, which is consistent with the results of studies conducted by Pandit (27) and Mohammadzadeh et al. (7).

In a study conducted by Ghaderi et al. (28) to estimate the prevalence of depression and its related individual factors in Kurdish older adults, they classified the marital status into two types of living with spouse and living without a spouse and reported a significant relationship between marital status and depression. The important point in this study was the high prevalence of depression among the married older adults, which was not unexpected due to the higher proportion of participated married older adults. However, it should be noted that being single, especially during the elderly, does not necessarily increase depression. In the present study, no significant relationship was found between depression and age and the level of education, which is consistent with the results of the study conducted by Mohammadzadeh et al. (7). In this study, no significant relationship was found between depression and gender, which is consistent with the results of the study

conducted by Bakhtiyari et al. (8). However, several studies conducted on depression in Iran have reported a statistically significant relationship between gender and depression. The inconsistencies in the results might be due to the sample sizes, the research tools, and the living area and ethnicity of the participants (28, 29).

The mean depression score was 7.40 ± 2.03 . These results are consistent with those of the study conducted by Ilali et al. (9), in which 63.4% of older adults had mild depression, 20.9% had moderate depression, and only 1.6% had severe depression, and the mean depression score was 6.7 ± 2.1 . In the study conducted by Ghadri et al. (28), the mean depression score was similar to that of the present study. In the study conducted by Mirzaei et al. (15), 28.2% of older adults had mild depression, 19.2% had moderate depression, and 16.6% had severe depression (30), which indicates significant differences with the results of the current study. This difference might be due to difference in the research environment, as the present study was conducted on community-dwelling older adults who were often living independently with their families, while in the study conducted by Mirzaei, targeted older adults was those living in nursing homes. The results of the present study showed that fear of falling was significantly correlated with the variables of age, history of falling, gender (it was higher among females compared to males), and level of education (it was higher in illiterate people compared to literate people). Borhaninejad et al. (10), Bastani et al. (16), and Ilali et al. (9) also found similar results. Miller et al. (31) found that fear of falling rises with increasing the age so that older people are at increased risk of falling due to age-related changes, including neuromuscular and cardiac homeostatic mechanisms, physical weakness, immobility, and reduced functional capacity (31).

The present study showed that fear of falling was significantly higher in older adults who had a history of falling, which is consistent with the results of other similar studies, including the studies conducted by Abdiani et al. (32) and Mendes da Costa et al. (33). However, Dias et al. (14) did not find a significant association between falling and fear of falling, which may be because their study population had limited activities or had greater flexibility and have had a lower perception of the dangers of falling. In line with the results of the present study, the study conducted by Najafi Ghezalcheh et al. (5) reported a significant relationship between gender and fear of falling, and females had more fear of falling compared to males. It might be because women are at higher risk of osteoporosis and often have a weaker musculoskeletal system compared to men (34). The results also showed that the level of fear of falling was significantly higher in illiterate older adults. It can be argued that an illiterate person considers all possible

events that would occur as well as complications of these disorders over time. The results of the studies conducted by Hajati (35) and Kim and So (20) are in line with these results. However, the study conducted by Payette et al. (36) did not show any significant relationship between fear of falling and literacy, and it may be because in the current study, more than half of the participants were illiterate, whereas in Payette's study most of them were literate.

5.1. Limitations

Older adults' memory impairments in recalling activities and events probably had affected their responses to the questions about past experiences. By using an assistant (his/her accompany), it was tried to address this limitation.

5.2. Conclusions

The results of the present study revealed a relationship between depression and fear of falling. So, the higher the depression in older adults, the higher the risk of fear of falling. Older adults are valuable assets of human communities, and the importance of paying attention to their mental health is becoming increasingly more evident. In the light of advances and developments made in this regard, it is recommended to increase the awareness of people at lower ages so that individuals do not consider the depression and disorders such as fear of falling at old ages as a normal process of aging and try to have healthy and active aging by preventing such disorders.

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Footnotes

Authors' Contribution: Study concept and design: FM and HE. Analysis and interpretation of data: AB and ME. Drafting of the manuscript: AB, ME, and AE. Critical revision of the manuscript for important intellectual content: ME, AB, and AE. Statistical analysis: ME.

Conflict of Interests: All of the authors confirm that this study or manuscript has not any conflict of interest

Ethical Approval: The study protocol was also approved by the Ethics Committee of Gilan University of Medical Sciences (code: IR.GUMS.REC.1396.301).

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