The Role of Health Locus of Control in Predicting Depression Symptoms in a Sample of Iranian Older Adults with Chronic Diseases

Abdul-Aziz Aflakseir, PhD[1]
Mohammad-Saleh Mohammad-Abadi, MA Student[1]

1. Department of Clinical Psychology, School of Education & Psychology, Shiraz University, Shiraz, Iran.

Corresponding author:
Abdul-Aziz Aflakseir, PhD
Department of Clinical Psychology,
School of Education & Psychology,
University of Shiraz, Eram Campus,
Shiraz, Iran.
Tel: +98 713 6134686
Fax: +98 713 6284641
Email: aaflakseir@shirazu.ac.ir

Objective: The purpose of this study was to examine the prediction of depression on a group of Iranian older adults based on components of health locus of control.
Method: Sixty-six men and 42 women over the age of 55 were recruited from the retirement clubs in Shiraz, using convenience sampling. The participants completed the research questionnaires including the Geriatric Depression Scale (GDS) and the Multidimensional Health Locus of Control Scale (MHLC).
Results: The findings on health locus of control revealed that the highest score was on internal locus of control followed by God, powerful others and chance. The mean score on depression was on a normal range. Multiple regression analysis showed that two independent variables including internal control ($\beta = -.32$, $p < 0.01$) and God control ($\beta = -.20$, $p < 0.03$) significantly predicted depression. The other components of health locus of control such as chance and powerful others as well as age did not predict depression. Findings also revealed that the independents variables explained 26% of the total variance of depression ($R^2 = .26$, $p < 0.001$).
Conclusion: This study provides more support for the application of theory of health locus of control on depression.

Key words: *Depression, Elderly, Health Locus of Control*

The Iranian society is aging rapidly and will be faced by the challenge of caring for the old in the future. It is estimated that 7% of Iranian population are over 60 years and this figure goes up to 10% and 21% in 2025 and 2050, respectively (1). Old age can be a time of losses and major life changes that may result in mental health problems such as depression in the elderly (2, 3). Depressive disorders are the most common psychiatric problems encountered in later life. At least 15-20% of the elderly in the general population may experience depression (4). Depressed individuals perceive less control over events in their lives (5, 6). Depression is a condition closely related to locus of control. A low expectancy for personal control and feeling of powerlessness produce depression (7). The control has a significant application in the fields of stress, coping and adaptation, health and care in acute and chronic illnesses (8).The application of the locus of control construct in relation to health context has become known as health locus of control (HLOC). The HLOC refers to the degree of control an individual believes to have over his/ her health. The HLOC consists of three major dimensions of perceived control over health: Internal, chance, and powerful others. The internal control dimension refers to the degree to which one believes one's health status is influenced by one's own behavior. The powerful others control is considered as the belief that powerful other people (for example, physicians, nurses) control one's health. Lastly, the chance control indicates the belief that fate, luck, or chance determine one's health status (9, 10). There are a number of studies investigating the relationship between perceived control and mental health problems. Research has demonstrated that internal health locus of control is related to better physical and mental health (11); the dimension of chance is associated with poorer physical and mental health (12); and powerful others component is linked to stronger compliance to medical prescriptions(9). There are few studies investigating the association between HLOC and psychological outcomes such as depression in the elderly. Older adults experience multiple losses and perceive less control over their circumstances and this condition may affect their mental health. Therefore, it is important to identify psychological factors such as perceiving control that contribute to health. Furthermore, religious attribution seems to be important in situations involving health particularly in

religious cultures (13). In a religious society like Iran, people may attribute their health problems to God (14). Therefore, it is important to examine the extent to which Iranian older adults believe that God controls their health. Given the significance of sense of control for mental health, this study aimed to study was to examine the role of HLOC (internal, powerful others, chance, God) on predicting depression in a group of Iranian older adults with chronic diseases.

Materials and Method
Participants
Participants consisted of 108 (66 men and 42 women) older adults with one or more chronic diseases including diabetes, coronary heart disease, chronic pain, and hypertension. The sample was recruited from several retirement clubs such as Kholde Barin Club and Tamine Ejtemai Organization in Shiraz-Iran, using convenience sampling. The demographic characteristics are presented in Table 1. Inclusion criteria for participation in this study were as follows: (1) Age of 55 or older; (2) having one or more physical disease confirmed by a physician; and (3) the ability to understand the questionnaire items. The participants gave informed consent to complete the questionnaires.

Measure
The Multidimensional Health Locus of Control Scale (MHLC)
MHLS (9) was used to measure the health locus of control. The MHLC (MHLC-Form C) scale consists of three components including internal, chance and powerful others. Each of the subscales contains six items, measured on a 6 point-Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree).The God Locus of Health Control (GLHC) was added later (6 items) to measure the belief that God is the locus of control of one's health status (15). Internal consistency reliability coefficients of 0.66, 0.67, 0.58 and 0 .91 has been reported for internal MHLOC, powerful others MHLOC, chance MHLOC and God MHLOC, respectively (9, 15). The MHLC has been used in Iran and found to have a good reliability and validity. Research in Iran has reported Cronbach's alpha coefficients of 0.72, 0.70 and 0.81 for internal, chance and powerful others health locus of control (16).

The Geriatric Depression Scale (GDS) – Short Form
The GDS (17) was utilized to assess depression in the sample. The GDS is a 15- item yes-no answer scales. A score of 0 to 4 on this scale is normal, but a score greater than 5 suggests depression. GDS is one of the most widely used scales for screening depression in the old adults and has been used to identify depression in the elderly in Iran. The GDS has been found to have a good reliability and validity for the elderly population (18). In Iran, several studies have reported an acceptable validity and reliability for this scale. A

Cronbach's alpha coefficients of 0.92 have been reported for the GDS (19).

Data Analysis
To analyze the data, descriptive statistics indexes such as mean and standards deviation were used. Furthermore, Spearman's correlation coefficient was performed to evaluate the relationship between the components of health locus of control and depression. To determine the role of the component of health locus of control in the prediction of depression, a simultaneous multiple regression analysis was performed. Research data were analyzed using SPSS version 16.

Results
The mean age of the sample was 62.34 years old, ranging from 55 to 78. The majority of the participants were married (93.5%) and stheir level of education varied from below high school (58%), to high school (31%) and to undergraduate education (11%). The mean scores on the MHLC subscales and depression are presented in Table 2. As displayed in Table 2, the higher score was on internal locus of control (M = 23.15), followed by God (M = 21.21), powerful others (M = 17.62) and chance (M = 15.25). The mean score on depression scale was in the normal range (M = 4.85 SD = .81). According to the results, about 24 participants (22.7%) [15 women (62.5%), 9 men (37.5%)] met the criteria for depression. Pearson's correlation coefficient was performed to examine the relationship between the components of health locus of control and depression in the sample. As demonstrated in Table 3, a significant association was found between the two components of health locus of control including internal ($r = -.30$, $p < .01$) and God ($r = -.24$, $p < .01$) with depression. The results did not show any significant correlation of chance and powerful others control with depression. The results revealed that internal HLOC ($\beta = -.32$, $p < .01$) and God HLOC ($\beta = -.20$, $p < .05$) significantly predicted depression. The two other components of health locus of control such as chance and powerful others did not predict depression. The results are presented in Table 4. Findings showed that independents variables explained 26% of the total variance of the model ($R2 = .26$, $p < .001$).

Discussion
The purpose of this study was to investigate the prediction of depression based on health locus of control among a group of elderly people with chronic diseases. The results indicated that a great proportion of participants experienced the symptoms of depression (22.7%). This finding is consistent with the majority of research conducted on older people suffering from chronic diseases. These studies have found that elderly people with chronic diseases are more likely to experience the symptoms of depression. For example,

in several studies on older adults, the prevalence of depression symptoms was greater among the elderly with chronic diseases compared to those without chronic illnesses (20). Older adults with chronic health conditions have higher rates of depression than those who are medically well (21). The results of previous studies on the prevalence of depression among older adults are mixed. Some of these studies have reported a higher prevalence and some of them reported lower prevalence of depression compared with the present study (22). The discrepancy between previous research and the results of this study can be due to various demographic characteristics, different types of chronic illnesses and psychosocial factors. The findings also showed that participants obtained higher score on internal control than other dimensions of MHLC. This finding is similar to another research indicating high level of internal control among patients who desired to control their health conditions (23, 24). Patients in this study believed that their health was controlled by internal factors. Furthermore, the findings showed that two dimensions of the health locus of control including internal HLC and God HLC predicted depression in the elderly. The older adults with low internal health locus of control and low perceived God control were more likely to have depressive symptoms than others. The findings on the internal locus of control in predicting depression were consistent with a previous research indicating a negative association between internal control and depression (25, 26). The study supports the theory of locus of control that perceiving internal control is an adaptive strategy in coping with illness outcomes (27). These results provide more support for Beck's cognitive theory on depression, which emphasizes the significance of adaptive beliefs in emotional state (28). The results of this study on predicting depression based on God control is also in agreement with some other researches that found attributing difficulties to God may reduce depression (29). Previous studies have shown that religious beliefs and practices protect the elderly people against depression (2, 30). Religious people may attribute their health problems more to God than to anything else. Indeed, religious teachings emphasize that God controls everything. Therefore, religious beliefs may give individuals a form of indirect control over their lives, reducing the need to depend on chance or powerful others (30). In this study, age was not a determining factor in predicting depression. One previous research on age has had mixed results. A possible explanation for this may be that the research sample was not diverse on age. These findings lend further support to the importance of internal locus of control in promoting older adults' mental health. This study also supports this idea that Muslim older adults perceive their health condition as God's will (31). This research contributes to our understanding of the psychological influences on mental health, particularly among the elderly.

Table1. Demographic Characteristics of Older Adults with Chronic Disease (n = 108)

Variabl	Frequency	Percent
Age (mean)	62.34	
Gender		
Male	66	61.11
Female	42	38.88
Marital status		
Married	101	93.5
Single/ Widow	7	6.5
Education Level		
Below High School	62	58
High School	33	31
University	13	11

Table2. Means and Standard Deviations on the Scales of Health Locus of Control and Geriatric Depression Scale

Variable	Mean	SD
Internal MHLC*	23.15	3.83
Chance MHLC	15.25	4.75
Powerful others MHLC	17.62	4.37
God MHLC	21.21	4.03
Depression	4.04	0.78

*Multidimensional Health Locus of Control

Table3. The Relationship between Subscales of Health Locus of Control and Depression

	1	2	3	4	5
1.Internal	1				
2.Chance	0.05	1			
3.Powerful Others	0.02	0.07	1		
4.God	-0.04	0.10	0.05	1	
5.Depression	-0.30**	0.09	0.08	-.24**	1

**P < .01
*P < .05

Table4. Multiple Regression Analysis for Predicting Depression

Variable	B†	S.E‡.	β§	p-value
Age	0.07	0.04	0.16	0.8
Internal	0.24	0.06	-0.32	0.01
Chance	0.05	0.06	0.08	0.38
Powerful others	0.83	0.05	0.12	0.13
God	-0.12	0.06	-0.20	0.03

†B= Unstandardized coefficient
‡SE= Standard Error
§ß = Beta

Limitations

This study has a number of limitations. A small sample was used in this study, so for future studies, it is recommended to include a larger sample size to reach a more reliable results. Furthermore, this was a cross-sectional study, thus it could not provide any information on the impact of locus of control on individuals' depression over time, so this subject needs to be further investigated in longitudinal studies. Finally, this study only investigated the effects of the components of health locus of control on depression. Future studies need to survey the impact of other important socio-psychological constructs such as self-efficacy and social support on older adults' depression.

Conclusion

This study highlighted the importance of the internal locus of control as a protecting factor against depression in older adults suffering from chronic diseases. Indeed, older adults who perceived more control on their physical condition were less likely to suffer from depression. Moreover, this study suggests that attributing difficult condition such as physical illness to God and destiny helped Iranian older adults to have a better mental health.

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Conflict of interest

Authors declare no conflict of interest related to this work.

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