Original Article

The Relationship Between Self-efficacy for Appropriate Medication Use and General Health of the Retired Elderly Referred to Retirement Centers in Guilan Province, Iran in 2021

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Abstract

Background: General health and medication adherence is important to improve quality of life. This study aimed to determine the relationship between self-efficacy for appropriate medication use and general health of the retired elderly. **Materials and Methods:** This was a cross-sectional descriptive and analytic study conducted on 112 elderly referred to retirement centers in east of Guilan in North of Iran by random sampling method. Data were collected using a self-efficacy for appropriate medication use scale in the elderly, a general health questionnaire, and a personal information form. Data were analyzed by nonparametric tests and Spearman coefficient using SPSS software version 16 (SPSS software version 16, IBM company, Chicago, USA). **Results:** The results showed that most of the elderly had good general health levels (64%) and high self-efficacy for appropriate medication use (83%). Self-efficacy for appropriate medication use was associated with general health ($p < 0.05$) and with increasing self-efficacy score for appropriate medication use by one unit, the odds of being healthy increased by 23%. **Conclusions:** Based on results the higher the self-efficacy score, the lower the general health score.

Keywords: *Elderly, general health, medication adherence, pharmaceutical self-efficacy, self-efficacy*

Introduction

In the current century, due to the increase in life expectancy, aging is becoming a major event around the world. The World Health Organization has identified the elderly as people over 60 years of age.[1] Aging is a significant socioeconomic issue in Iran that has been increasing over the past thirty years. The proportion of Iran's elderly population increased from 5.4% in 1986 to 8.6% in 2016, indicating an increase of 4.3 million elderly people over the 30 years. Population changes are expected to continue; and by 2040. This trend will have far-reaching consequences, especially in the number of chronic diseases among the elderly.[2]At least, more than 80% of the elderly are suffering from chronic disease, and almost half of them aged 75 and over have at least three chronic illnesses at the same time.[3,4] The number of people with chronic diseases increases with age.[5] Multi-morbidity can complicate treatment planning and affect health outcomes, leading to an increase in medication prescription in this population, and increasing the risk of medication interactions and side effects. Therefore, taking effective strategies are needed to manage these conditions.[3,6]

Population aging, socially and healthily, poses a significant public health challenge.[7] One of the phenomena that provide a healthy and positive life for the elderly and social environment is general health. This expression is defined as a state of empowerment giving the ability to cope with the stresses of life to the people and protects the elderly against life events. Overall, it helps the elderly to function better.[8] Several factors such as psychological, socioeconomic, environmental, lifestyle, and healthcare services affect general health.[9] The elderly are the most consumed medication users.[10] Adherence to a long-term medication regimen in chronic diseases is a challenging effort to care for the elderly.[11] This expression is defined as medication use by patients according to instructions, this process consists of the

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main components of starting medication use, implementing the medication program, and discontinuing it at the right time,[12] that is necessary to improve health, especially in chronic diseases.[13]

One of the determinants of medication adherence in patients with chronic disease is self-efficiency. Self-efficacy is known as a person's self-confidence in using his/her ability to achieve a specific goal that can determine a person's choices, sustainability, and effort to perform the task.[14] Self-efficacy in medications adherence refers to the patient's ability to follow a given medical regimen in difficult situations.[15] Adherence to the use of medicines is necessary to improve the health status, especially in chronic diseases.[13] In fact, the management of many chronic diseases largely depends on the assumption that medications prescribed by a doctor are taken by the person being treated.[16] Adherence to medication in the elderly is very important for the correct treatment or management of chronic diseases and to reduce the complications of diseases and improve their quality of life.[11]And medication non-adherence is a worrisome problem in the US healthcare system, costing more than $170 billion annually.[17] Considering that the American National Association of Nurses has accepted poor adherence to the medication regimen as a nursing diagnosis.[18] Also, since there has not been a study in our country on the relationship between self-efficacy for appropriate medication use and general health of the elderly, the purpose of this study was to determine the relationship between self-efficacy for appropriate medication use and general health of the retired elderly and identify whether there is a positive and significant relationship between strengthening the self-efficacy of the elderly regarding the appropriate medication use. So that, by increasing the self-efficacy of the elderly, we can help improve the general health of this important sector of society.

Materials and Methods

This research was conducted in 2021. This study was a cross-sectional, descriptive, and analytical study that was conducted on the retired elderly referred to retirement centers in eastern Guilan province in North of Iran (2021) who had the following criteria, 60 years old or older, having literacy to answer the questions in the questionnaire, having at least one chronic disease for a period of at least one year, taking more than three drugs at the same time, getting a score of five cognitive status in the clock drawing and willingness to participate in the research (obtaining written consent). Also, during the study, we tried to attract their participation by providing complete explanations of the research process, and there was no sample attrition. Firstly, the number of retirement centers in east of Guilan in North of Iran was identified; then, according to the cooperation of the centers, the total number of elderly in each center and the direction of the total sample size, proportional to the population size, in which the total number of elderly centers east of Guilan in North of Iran was considered as the total volume of the society. Next, the number of the elderly that had to be sampled from each center was proportional to the population. The correlation method was used in calculating of sample size. The elderly referred to retirement centers, next, were selected by random sampling method. After primary sampling by 26 elderly people, correlation between self-efficacy and general health was obtained at 0.35. So, sample size was calculated 100 people, considering the power = 0.9, the significant level = 0.05, and the effect size = 0.37. Finally, considering the probability of loss, the final sample size was calculated at 112 people.

Due to the epidemic of the Covid-19 virus, in compliance with health protocols and social distancing, questionnaires were provided to them to fill in, and in this regard, the questions and doubts of the elderly regarding the questions of the questionnaire were answered. In some cases, due to poor eyesight and not having glasses with them, at their request, questions were asked and their answers were recorded.

Data collection tools in this study included Clock Drawing Test that was performed in this way: the participant was given a page with an old clock shape and he/she was asked to assume it was a clock "Please write down the hour numbers." After this step, he/she was asked to "draw the clock in a way that represents 11:10." Then, according to the modified Schulman score, he/she was given a score in the range of 0 to 5 [Figure 1]. If fully drawn, it would score 5 points. Its validity and reliability were carried out by Roodsari *et al*. in Iran. The intensive care unit value was 0.964, and Kappa coefficient was 0.554.[19,20] Another tool was the Self-Efficacy for Appropriate Medication use Scale (SEAMS) in the elderly with 13 items, and each item is scored as a Likert with three options of uncertainty (score 1), somewhat confident (score 2), and complete confidence (score 3). The range of scores varies from 13 to 39, and higher scores indicate higher levels of self-efficacy for medication adherence. Its reliability and reliability were carried out by Sanchooli *et al.* in Iran, and the internal reliability of the tool in terms of internal consistency was obtained using Cronbach's alpha was 0.81, and using the bisection method was 0.77, and the external reliability of the tool was evaluated using a retest, and the resulting Spearman correlation coefficient was 0.97.[21,22] General health questionnaire of the elderly with 28 questions was evaluated by Likert scale as never (0), little (1), high (2), and very high (3). As a result, the individual score was varying from 0 to 84. The cut-off point of the questionnaire was reported to be 19.20. The elderly who scored 19 and below are considered healthy people, while those who scored 20 and above were suspected of impaired general health. Its validity and reliability were conducted by Malekooti *et al*. in Iran and Cronbach's alpha (94%), classification (86%), and retest (60%).[23,24]

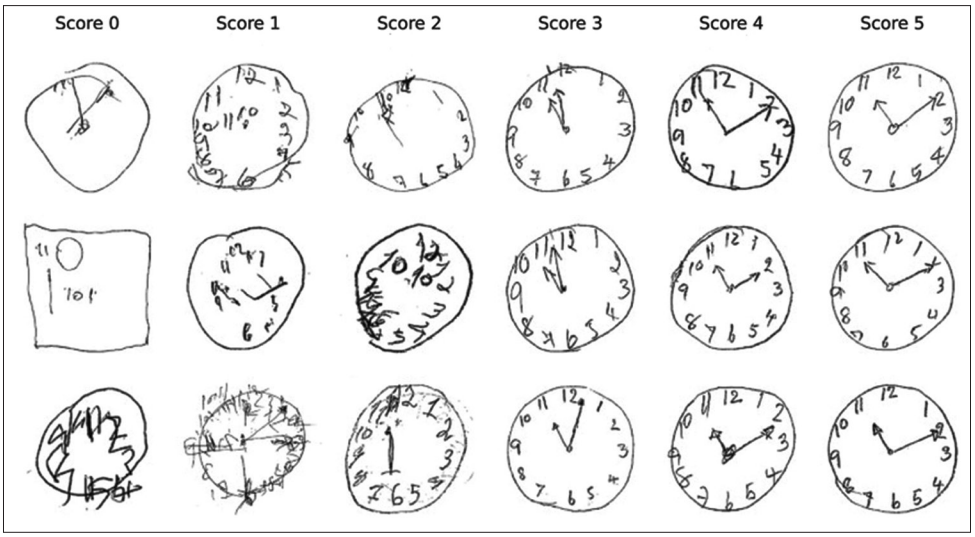

Figure 1: Pictorial summary of modified Shulman scoring method

The last tool was the personal information form including age, gender, education level, income, marital status, place of residence, number of medications used, and number of chronic diseases that were completed by the self-reported method.

After collecting the data, the data were analyzed using descriptive and inferential statistics using nonparametric tests (Mann–Whitney test and Kruskal–Wallis test), Spearman coefficient tests, and SPSS software version 16, IBM company. In all the mentioned tests, the significance level was 0.05 ($p < 0.05$).

Ethical considerations

This article was part of the master's thesis on geriatric nursing. It was licensed by Guilan University of Medical Sciences in North of Iran with a code of ethics of IR.GUMS.REC.1399.487. All participants were explained the objectives of the study, and informed consent was obtained.

Results

A total of 112 elderly people referred to retirement centers east of Guilan Province in North of Iran were included in the study. The mean (standard deviation) age of participants was 67 (5.418) years (the minimum and maximum were 60 and 82 years old, respectively). The results in Table 1 illustrated that most of the elderly referred to retirement centers were male (79%), married (98%), with a university certification (52%), had a chronic disease (61%), resident in the city (87%), taken 3 or 4 simultaneous medications (67%) and with average income (89%).

Investigating the normality of variables was conducted by Kolmogorov–Simonov test. The variables under investigation were not distributed normally. Difference of the general health in 2 and 3 or more group was conducted by the Mann–Whitney U and the Kruskal–Wallis test, respectively.

The median and Interquartile range scores of self-efficacy for appropriate medication use in retired elderly were 33 (6.05) and 32.00 (28.00–39.00). There was a significant weak relation between income and self-efficacy for appropriate medication use (r Spearman = 0.23; $p = 0.014$). The higher level of self-efficacy is for appropriate medication use level [Table 1].

The majority of retired elderly referred to the mentioned centers (71 people, 64%) were in a healthy state in terms of general health, and the median and Interquartile range scores of general health in retired elderly were 17 (11.00–22.75) (the lowest and highest scores were 2 and 42, respectively). The mean rank of general health scores was significantly different between males and females (Mann–Whitney U = 732.00; $p = 0.021$) [Table 2].

There was a statistically significant relationship between the mean rank of self-efficacy for appropriate medication use scores at two levels of general health (Mann–Whitney U = 551.00; $p < 0.001$). Healthy people showed higher mean rank (70, 35), mean scores (35 [5.61], 29 [4.55]), and median (38.00 [32.00–39.00], 28.00 [25.50–31.00]) than other people, respectively. After the initial examination of the relationship between self-efficacy and public health and other variables in study, logistic regression was fitted.

The result of logistic regression showed that with increasing self-efficacy score for appropriate medication use by one unit, the odds of being healthy increased by 23% [Table 3].

Discussion

This study aimed to determine the relationship between self-efficacy for appropriate medication use and general health of retired elderly referred to retirement centers in east of Guilan Province in North of Iran in 2021.

Table 1: Self-efficacy for appropriate medication use in retired elderly referred to retirement centers east of Guilan Province based on demographic characteristics

Variables	Self-efficacy for appropriate medication use			
	n (%)	Median	Interquartile range	*p*
Gender				
Male	88 (79)	33	28–39	0.171
Female	24 (21)	32	25–39	
Education level				
High school and below	17 (15)	31	27–36	0.241
Diploma	37 (33)	32	26–39	
Bachelor's degree or above	58 (52)	35	29–39	
Number of medications used				
<5	74 (66)	33	28–39	0.516
≥5	38 (34)	32	28–39	
Number of chronic diseases				
1	68 (61)	32	28–39	0.284
2	36 (32)	39	28–39	
3	8 (7)	32	27–39	
Place of residence				
Town	97 (87)	32	27–39	0.598
Village and Suburban	15 (137)	35	30–39	
Variables	***n***		**Correlation coefficient**	***p***
Age	112		−0.07	0.438
Income	112		0.23	0.014

Table 2: General health in retired elderly referred to retirement centers east of Guilan Province based on demographic characteristics

Variables	General health			
	n (%)	Median	Interquartile range	*p*
Gender				
Male	88 (79)	17	11–21	0.021
Female	24 (21)	21	13–28	
Education level				
High school and below	17 (15)	21	12–27	0.256
Diploma	37 (33)	16	11–20	
Bachelor's degree or above	58 (52)	17	11–22	
Number of medications used				
<5	74 (66)	17	11–22	0.55
≥5	38 (34)	17	11–24	
Number of chronic diseases				
1	68 (61)	17	11–22	0.538
2	36 (32)	17	12–24	
3	8 (7)	21	13–27	
Place of residence				
Town	97 (87)	17	11–24	0.192
Village and suburban	15 (13)	12	10–20	
Variables	***n***		**Correlation coefficient**	***p***
Age	112		0.06	0.508
Income	112		−0.16	0.083

The results illustrated that the majority of retired elderly people referred to retirement centers in the east of Guilan Province were in a favorable condition of self-efficacy for appropriate medication use. In accordance with our results, Nikraftar *et al*. their results revealed that the mean self-efficacy score for appropriate medication use was at a good level.[25] In a cross-sectional study conducted by Huang *et al*., the mean score of self-efficacy for appropriate medication use was at a good level.[26] The results of Eshraqi *et al*. (2018) reported the average

Table 3: The relationship between self-efficacy for appropriate medication use and general health of retired elderly referred to retirement centers east of Guilan Province and logistic regression

	Coefficient	SE	*p*	OR	95% CI for OR	
					Lower	Upper
Self-efficacy	0.208	0.046	<0.001	1.232	1.127	1.347
Income*	0.001	0.024	0.967	1.001	0.955	1.049
Gender	1.093	0.57	0.055	2.982	0.976	9.107
Constant	−6.969	1.76	<0.001	0.001	-	-

*Income/1,000,000. SE=Standard error, OR=Odds ratio, CI=Confidence interval

self-efficacy of elderly residents of Tehran's Nursing Home was a low level[27] and was not consistent with the results of the present study. This inconsistency may be explained by differences in different tools and questionnaires used to measure self-efficacy, and differences in sampling environment, residency site, job difference, and income of participants in the study.

The results showed that the majority of retired elderly people were in a healthy state in terms of general health, and general health was significantly different between males and females. Similarly, Zarei *et al*. in their research on the elderly living in Sabzevar showed that most of the elderly have good general health, and there is a significant difference between males and females in the level of general health scores.[28] Also, Raei *et al*. focused on the elderly living in Esfarayen and reported the mean of general health of the elderly was at a good level. They found a significant relationship between the two sexes.[29] Sharma *et al*. in their research in New Delhi found a significant difference between male and female general health scores.[30]

In contrast, Papathanasiou *et al*. obtained the mean general health score of the elderly in the unhealthy level,[31] which is contrary to our study and this could be due to sociocultural differences.

In our research, self-efficacy had a direct relationship with income, which was in line with the research of Aslani *et al*.[32] Also, In the study of Emamgholizadeh Baboli *et al*., the variable of income level was related to self-efficacy.[33] In the study of Azimian *et al*., it was also found that having a favorable economic status of the elderly increased their self-efficacy.[34]

The results showed that there was a significant difference between the mean scores of self-efficacy scores for appropriate medication use at two levels of general health. The healthy people had lower mean rank, mean scores, and median scores. Regarding this finding, no research had been found in the literature review. Although this notable paucity was hard the comparison between our results with other studies to discuss better, and also it was one of the limitations of the research, it can be considered as a strength of this study to provide new information.

One of the limitations of the research was the boredom of the elderly during the research, which was tried to control this limitation as much as possible by stating the exact objectives of the research, changing the interview process or shortening the interview time, and asking other questions from the research sample postponed to another time. Our other limitation in this research was the corona virus epidemic, which limited our access to care centers for the elderly and prevented us from obtaining research permits in nursing homes.

Conclusion

The results showed that most of the elderly had good general health levels and high self-efficacy for appropriate medication use. It was found that there was a significant inverse relationship between self-efficacy for appropriate medication use and general health of the elderly, so that the more self-efficacy increases, the lower the health score.

It is suggested to conduct similar research with other tools with the aim of determining the self-efficacy of proper use of medicine and general health and compare the results with this study and a similar study among nursing home residents be done.

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Conflicts of interest

Nothing to declare.

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