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Original Article

Medication Adherence Status and its related Factors among Older Adults in Yazd, Iran

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Introduction: One of the main problems facing different societies in the world, including Iran, is population aging and its consequences. With individuals entering old age, the possibility of being afflicted with one or more chronic diseases increases, which in turn results in more use of medications and medication adherence. This study has examined medication adherence status and its related factors among older adults in Yazd, Iran.

Methods: Totally 196 individuals aged 60 years old and higher in Yazd were entered randomly in this cross-sectional study. The data were collected using Morisky Medication Adherence Scale. Chi-square and Gamma tests were used for data analysis.

Results: The medication adherence was weak in 79.1%, average in 19.9%, and high in only 1% of the participants. There was not a significant relationship between demographic variables and medication adherence.

Conclusion: As most of the participants were weak in medication adherence, the necessary actions for the identification of other factors that lead to the reduction of medication adherence can pave the way for providing solutions for increasing medication adherence in this age group.

Keywords: Older Adults, Medication, Adherence

Introduction

With individuals entering old age, the possibility of their affliction with one or more chronic diseases is increased (1) in a way that 80% of the elderly are suffering from at least one chronic disease that makes them more vulnerable, compared to other age groups (2). On the other hand, the number of chronic diseases in old age results in more medication consumption in the elderly, compared with young adults and adults (2, 3). The use of medication as an inseparable part of the disease's treatment stage is undeniable in a way that medical sciences experts believe that proper medication use results in improvement from the disease in many cases (4).

According to WHO statistics, each elderly individual, on average, uses 4.5 prescribed and 2.1 over-the-counter medicines and has 12 to 17 prescriptions a year (5). In one study, the relationship between medication-related beliefs and adherence to treatment in patients with Hypertension in Urban Health Care Centers in Isfahan showed a significant

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relationship between drug-related beliefs and adherence to treatment (6). In another study, the results showed that drug adherence in patients with type 2 diabetes in the health centers of Tuyserkan city was not appropriate, and multiple individuals, economic and social factors influenced drug adherence (7). In another study, In Singapore, the results showed that factors associated with drug compliance, especially in the elderly, were: individual factors, drug-related factors, health care providers and health care system factors, and socioeconomic factors (8). As the multitude of chronic diseases in old age leads to more medication consumption at this age, and few studies have examined medication adherence in the elderly in Iran, the present study has explored medication adherence in the elderly.

Methods

Study design and participants

In the cross-sectional study, 196 individuals aged 60 years and higher in Yazd, Iran were studied. The inclusion criteria were being 60-year old or higher with one or more diseases and consuming medications. The exclusion criteria were being elderly with diseases that made the individual unable to respond and hospitalized at the hospital.

To estimate the study's medication adherence level, considering the initial number of 50% of the individuals at average and high levels of medication adherence, and considering the estimation error of 0.07, the sample size was determined.

First, four centers among health centers in Yazd were randomly selected, and at each center, the names of the older adults aged over 60 were extracted from the SIB system (Iran's Integrated Health System). Finally, 196 individuals aged 60 and higher were randomly entered into the study.

Instruments

A two-part questionnaire was used for data collection. The first part was related to demographic and basic information (age, sex, education, disease duration, disease, occupational status, and insurance status), and the second section was Morisky Medication Adherence Scale (MMAS). MMSA consists of eight questions. The first seven questions have yes or no answers, yes is scored 1 and no 0. However, the eighth question is designed based on the Likert scale that consists of the following options: "never, sometimes, once in a while, usually and all the time." The "never" is scored 1, and the other options are scored 0 (9, 10). The total MMAS score is considered to be between 0 and 8, a higher score indicating higher adherence. Thus, 8 indicates high adherence, 7-6 indicates average adherence, and 0-5 indicates low adherence (5, 10). The validity and reliability of MMAS have been approved in other studies (1, 5). The reliability of the Persian version of this scale has been verified using Cronbach's alpha in the study by Moharamzade et al. on individuals with hypertension (11).

Ethical considerations

In order to observe ethical considerations, after obtaining a permit from the ethical committee of the School of Public Health in Shahid Sadoughi University of Medical Sciences (approval code: IR.SSU.SPH.REC.1397.078), the related health center was visited. The names of the elderly aged over 60 were extracted from the SIB system and, through a phone call, they were asked to visit the health center on a specific date and time. The questionnaires were completed after introducing the study and ensuring that their information would be completely confidential and after obtaining informed written consent.

Data analysis

SPSS version 23 was used for data analysis. Chi-square test was used to compare the frequencies of the two groups, and the Gamma test was used to compare nominal and ordinal variables.

Results

The mean age of the participants was 68.17±7.54. In this study, 58.7% were women and 41.3% men. Most of the participants (81.6%) were married, and the monthly income was average in 57.1 % of the individuals. (Table 1)

Over half of the participants (55.1%) would consume more than two medication items.

The form of the consumed medications was in form of tablets in 81.6% of the participants and 1% in the form of syrup, 1.5% in the form of injection and 15.8% combination of all the above. (Table 2)

In this study, 82.6% of the women and 74.1% of the men had a weak medication adherence. Most of those (78.6%) who were suffering from their disease for more than five years and 79.6% of those who were consuming more than two daily medication items had a low medicine adherence (Table 3).

There was no significant relationship between medication adherence status and demographic and other studied variables.

Discussion

The aim of this study was to explore medication adherence status among older adults in Yazd. According to the results, medication adherence level among the medication users is low, and over half of the elderly had a weak adherence, and only 1% of them had high adherence.

Low adherence can be due to medication multitude, medication side effects, psychological problems related to age, memory disorders, vision and hearing disorders, chronic and debilitating diseases, and economic problems. In a study conducted by Lee et al. the results indicated that medication side and dose effects could affect the reduction of medication adherence (12).

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The study by Obreli-Neto et al. was consistent with the reasons pointed out for low medication adherence. The findings indicated that socioeconomic problems and concerns related to medication consumption and their side effects lead to weak medication adherence in patients (13). In the elderly, due to sensory and cognitive changes resulting from old age and insufficient knowledge of medications, more confusion occurs, resulting in the reduction of medication adherence in this age group (14). There are in study Lalic et al. and many other studies on medication adherence that indicate low medication and therapy adherence in chronic diseases (15, 16).

Overall, over half of the male and female elderly studied had a weak medication adherence in the present study. Although there was not much difference in weak medication adherence level between elderly men and women, the weaker adherence in women may be due to occupation with household affairs, not paying much attention to the disease and consequently timely medication consumption by elderly men and of course, its cause needs more exploration. However, according to the present study results, no significant relationship was found between sex and medication adherence status. A study conducted by Minaiyan et al. found no significant relationship between sex and cooperation in medication consumption (17).

Table 1. The frequency distribution of the demographic variables of the participants

variable	Levels of changes	Number	Percent
Sex	Female	115	58.7
	Male	81	41.3
Education	Illiterate	93	47.4
	Elementary school	65	33.2
	Middle school	18	9.25
	Diploma	10	5.1
	University degree	10	5.1
Marital status	Married	160	81.6
	Single	6	3.1
	Other	31	15.3
Occupational status	Employee	4	2
	Retired	67	34.2
	Self-employed	21	10.7
	Housekeeper	93	47.4
	Disabled	11	5.6
Income level	Low	65	33.2
	Average	111	57.1
	Good	19	9.7
Insurance coverage	Yes	185	94.4
	No	11	5.6
Type of insurance	No insurance	11	3.6
	Social Security	138	70.8
	Medical Services	38	19.5
	Health	8	4.1
	Other	4	2
Complementary insurance	Yes	83	42.3
	No	113	57.7

Table 2. The frequency distribution of the consumed medications, the way of prescription, and drug allergy among participants

Variable	Level	Number	Percent
Number of consumed medications	1	45	23
	2 items	43	21.9
	Over 2	108	55.1
The kind of prescription	Tablets	160	81.6
	Syrup	2	1
	Injection	3	1.5
	Combinational	31	15.8
Drug allergy	Yes	20	10.2
	No	176	89.8

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Table 3. The frequency distribution of medication adherence status by demographic variables among participants

Variable	Level	Medication adherence			p-value
		High	Average	Low	
Sex	Female	2(1.7)	18 (15.7)	95 (82.6)	0.09
	Male	0	21 (21)	60 (74.1)	
Education	Illiterate	1 (1.1)	11(11.8)	81 (87.1)	
	Elementary	0	22 (33.8)	43 (66.2)	
	Middle school	1(5.6)	2 (11.1)	15 (83.3)	0.057
	Diploma	0	3 (30)	7 (70)	
	University	0	1 (10)	9 (90)	
Occupational status	Employee	0	1(25)	3(75)	
	Retired	0	19 (28.4)	48 (71.6)	
	Self-employed	0	4 (19)	17 (81)	0.339
	Housekeeper	2(2.2)	12 (12.9)	79 (84.9)	
	Disabled	0	3 (27.3)	8 (72.7)	
Income level	Low	2 (3.1)	8 (12.3)	55 (84.6)	
	Average	0	29 (25.9)	83 (74.1)	0.544
	Good	0	2 (10.5)	17 (89.5)	
Insurance coverage	Yes	1(1.1)	38 (20.5)	145 (78.4)	0.528
	No	0	1 (9.1)	10 (90.0)	
Number of daily consumed medications	1 item	1 (2.2)	10(22.2)	34 (75.6)	
	2 item	1 (2.3)	7 (16.3)	35 (81.4)	0.650
	More than 2 items	0	22(20.4)	86 (79.6)	
Disease duration	Less than 1 year	1(7.1)	3(21.4)	10 (71.4)	
	1-5 years	1(2)	8(15.7)	42 (82.4)	0.968
	More than 5 years	٠	28 (21.4)	103 (78.6)	
Root of prescription	Tablet	2(1.3)	31(19.4)	127(79.4)	
	Syrup	0	1(50)	1(50)	0.688
	Injection	0	0	3(100)	
	Mix	0	7(22.6)	24(77.4)	

The results of the present study indicated that there was no significant relationship between education level and medication adherence. Rao et al.'s study did not find a significant relationship between education level and medication adherence, too (18). The results of a study conducted by Mashrouteh et al. indicated that the higher the individual's education level, the more favorable the medication adherence (19). As the elderly studied had a low education level, and only a low percentage of the elderly in the study had high levels of education, the result of the present study has become the opposite.

In the present study, the relationship of disease duration, number of the medications consumed daily, and the root of prescription of drugs with medication adherence were explored, and no significant relationship was found. In the study by Fernandez-Ariasnv et al. no significant relationship was also found between medication adherence and therapy duration (20). However, a study conducted in Croatia indicated a significant relationship between medication adherence and disease duration (21). This may be due to the low sample size on the one hand and lack of attention to a specific age group in other studies, on the other hand. The study results by Hadi indicated that the more is the length of the treatment, the higher is medication adherence percentage and the patients who use hypertension medication for more than five years have better therapy adherence (22). The reason for this may be related to the increase of the medication side effects at the beginning of consumption by the patients, which is reduced over time (23). Despite studies, the present study indicated that more than half of the elderly studied (55.1%) consume more than two medication items daily and, in these individuals, in 81.6% of the cases, the prescription is in the form of a tablet and probably this can contribute to the low medication adherence in the elderly.

No significant relationship between occupational status and income level with medication adherence was found in this study. In Hadi's study, there was no significant relationship between the job and medication adherence (22). A study conducted by Asayeshi et al. indicated no significant relationship between sex and job with medication adherence (6). Overall, the relationship between demographic variables and medication adherence in individuals is weak and unstable. In fact, medication adherence is a multi-factor behavior for which no specific cause can be determined (22).

Conclusion

As medication adherence in the elderly was low in this study, and as most elderly have a problem in proper consumption of their medication for disease treatment, it is suggested that other aspects impact medication adherence in the elderly be explored. Also,

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some studies can be conducted on the impact of education on the patients' family and friends or the solutions for the increase of medication adherence in this group.

Study limitations

One of the main limitations of a study on the elderly is the lack of appropriate access to this age group and this problem also existed in this study. It should also be noted that the use of the questionnaire may cause other causes of drug compliance not to be considered.

Conflict of interest

The authors of this article declare no conflict of interest.

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Authors' contributions

All authors contributed to the design and implementation of the study, analysis and interpretation of data, drafting or modifying the article. Data collection was carried out by Tayebeh Sanati. All authors have read and approved the final version of the article.

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