

Self-medication and its Effective Modifiable Factors among Elderly Referred Health Care Centers in Shahr-e-Kord in 2015Zahra Sadeghian Motavali¹, Heidarali Abedi², Elham Davaridolatabadi³

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Type of article: Original**Abstract**

Introduction: Drug overuse is a serious problem for health care, and one of the biggest problems for the socio-economic well-being of different communities. The elderly tend to use more drugs due to changes in their cognitive and physiological factors. One of the best ways to evaluate the health level of elderly people is to evaluate their self-medication. This study was conducted to investigate self-medication among the elderly in Shahr-e-Kord.

Methods: This cross-sectional study was conducted on 350 people older than 65 in Shahr-e-Kord in 2015. Sampling was done in two stages. In the first stage, the city of Shahr-e-Kord was divided into four areas using geographical maps. Eighty-eight people were selected from each area. The research instrument was a questionnaire called the Health Belief Model (HBM). The data were analyzed using SPSS version 20, the chi-squared test, the independent-samples t-test, and the Pearson correlation coefficient.

Results: No significant relationship was observed between the prevalence of self-medication with demographic variables and level of awareness. But there was a significant difference between sensitivity, perceived severity, and perceived barriers and educational level. There also was a significant difference between the perceived benefits and their income level. There also was a significant difference between the level of awareness, sensitivity, severity, benefits, and barriers of people with and without a history of self-medication ($p < 0.05$).

Conclusion: Due to the adverse effects of self-medication and the high prevalence of this activity among the elderly, it is recommended that a training program be developed and implemented to change the knowledge and beliefs of the elderly about self-medication.

Keywords: Elderly, Self-medication, HBM, Iran

1. Introduction

The goal of medical science is to promote, restore, and maintain the health level of the population. The major approach to achieving this goal involves a series of factors, including the preparation, distribution, and proper use of drugs (1). In fact, the use of drugs is an important element of treatment, because 75% of patients' treatments involve the use of drugs. However, the uninformed use of drugs and the resulting lack of results can cause long-term side effects that ultimately complicate addressing the underlying disease (2, 3). Unfortunately, the social view of drugs is only their healing aspects, while the medical literature indicated that drug use is a double-edged knife, with one edge being pathogens and the other adversely affecting people's lives because they lack the knowledge required to determine the appropriate consumption (1, 4). People who do not feel well or have a disease sometimes seek to solve

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the problems by using inappropriate behaviors in seeking treatment. This treatment includes lack of attention to the disease and a proper treatment plan by avoiding legitimate providers of medical services and using self-medication (5). Self-curing, which is different from the concept of self-care, is a behavior in which someone tries to treat her or his health problems or diseases without the assistance of professionals. Nafsi et al. defined self-curing as using substances that have not been prescribed by a specialist to treat the disease, to treat symptoms, to prevent disease, or to promote health (6). With the remarkable progress that has been made in various scientific fields, people have more access to various drugs. This easy access is a harmful social phenomenon, and the indiscriminate and undue use of drugs has entangled society. Today, the excessive use of drugs and self-curing, in general, are considered to be among the most significant socio-economic and health problems in various societies, including Iran. The investigations also have shown that the amount of drug prescriptions is not consistent with the country's population and epidemiological situation of disease. This can be caused by self-curing or self-medication in the community (7, 2). Self-curing, as the most common form of self-care (8), can be achieved through the use of industrial medicine or homemade pharmaceuticals, access to drugs without the prescription of a specialist (9), the use of drugs that were prescribed earlier for similar diseases (1,10), sharing the drug that was prescribed for one person with family members and acquaintances, the use of extra drugs remaining at home (9), and avoiding to accept the prescription of a major drug either by using more drug without doctor prescription or without completing the regimen of drug consumption (10). Self-medication has become an acute health problem (1, 11), and at the present time, it is among the major problems in the treatment cycle in Iran and in many other countries. This practice can lead to bacterial resistance, lack of optimal treatment, unwanted intoxication, adverse side effects, disruption of the drug market, loss of costs, and an increasing per capita consumption of medicines in society (7, 12). Thus, self-curing is one of the most important health and social issues because it can create important problems in many cases for individuals and society. During the past decade, the use of drugs as a strategic, subsidized commodity and as a basic need of the people in the country has increased (7, 8). Each year the amount of drugs consumed is greater than the previous year, and this process of annual increases exceeds the anticipated increase associated with natural growth (13). Several studies have emphasized the fact that elderly, medical expenses, drug consumption, and chronic diseases increase, mainly affecting older people, leading to pain and disability, decreasing the quality of life, and increasing the need for and use of drugs (6, 10). In addition, as a person's age increases, the adverse side effects of misused drugs also increase (14). According to various studies, members of the Iranian population use medicine two to four times more than the international standard (15). Statistics about self-curing in different parts of the country are inconsistent. The amounts in Tabriz, Babol, and Qazvin are 63%, 36%, and 83%, respectively (7). Although, in many countries, including developed countries, this therapeutic method exists, and, according to a study conducted by the Ministry of Health and Medical Education of Iran, 50% of Iranian patients do not see a doctor when they need to. Even worse, it is estimated that 83% of Iranians use drugs arbitrarily (4). Statistics indicate that 30% of liver and kidney diseases are caused by drugs (2, 9). A study conducted by the Ministry of Health, Labor, and Welfare in Japan showed that over 86% of the elderly in Japan are referred to hospitals more than once per month for medical attention (6, 7). A study conducted by the England National Institute of Health showed that more than 86% of elderly people have at least one medical prescription, and 36% have more than four (15). To avoid self-medication in the United States, different approaches have been implemented to raise people's awareness of the consequences of self-treatment, and doctors and pharmacists have been trained concerning the proper prescription of drugs, providing counseling to drug users, and providing brochures and catalogs at every opportunity (11, 16). Despite that, it has been estimated that the level of self-medication in the U.S. is still quite high (17). Regarding the above items, emphasis on the complications of self-medication in society is very important. Paying attention to self-curing among the elderly is important because changes in their cognitive and physiological characteristics may make them less aware of the dangers involved or the adverse consequences. However, various studies have shown that most individuals do not have the necessary knowledge of or belief in the field of self-medication effects (18), making the emphasis even more important. The aim of this study was to investigate self-medication and its effective modifiable factors among the elderly who were referred to the health centers in Shahr-e-Kord.

2. Material and Methods

2.1. Research Design and Setting

This study is a cross-sectional study done in 2015 in Shahr-e-Kord on the elderly who had been referred to health centers. The research environment included all of the health centers in Shahr-e-Kord. The study population comprised all elderly people who were referred to health care centers.

2.2. Sampling and Selection Criteria

The required sample size was determined to be 350 people. The sampling was conducted in two stages. In the first stage, geographical maps were used to divide Shahr-e-Kord into four regions. In each region, 88 available elderly people were selected non-randomly. Afterwards, data were collected by referring the questioner to the patients' homes. The definition of self-curing in this study was the use of any kind of medication arbitrarily by the elderly target group without diagnosis or prescription in the past six months. Inclusion criteria were age older than 60, willing to participate in the study, not living in a nursing home, lack of special diseases (including cancer), being a resident of Shahr-e-Kord, lack of physical and/or psychological dependence on others, and the ability to perform daily tasks without depending on others.

2.3. Instrument and Data Collection

Data collection tools included a questionnaire model of HBM. The first part of the questionnaire was demographic information, such as age, gender, marital status, economic status, level of education, and number of children. The second part consisted of 10 questions about awareness of self-medication. The third section consisted of 20 questions in the field of Health Belief Model (perceived benefits and barriers, perceived susceptibility and severity) and two questions about the guide to action. The fourth part contained a checklist measuring the person's performance of self-medication during the last six months by considering some diseases that the person might have attempted to self-medicate (1). Scoring in the knowledge part of this questionnaire involved giving the correct answer one score and the wrong answer a zero score. The final scores were calculated at the end based on the score of 100. On the question of HBM (perceived susceptibility, severity, benefits, and barriers), a Likert scale was used, and levels one to four were given different options to choose in reply to the questions in this section. In this part, the scores were calculated based on the score of 100. Also guide and self-medication questions were calculated based on the frequency, and the information was collected. In order to determine the validity of the questionnaire, it was given to 20 faculty members who were qualified in the elderly area, and their ideas were used to prepare the modified version. In order to determine the reliability of the questionnaire, it was completed by the 20 elders who met the inclusion criteria for the study. Then, Cronbach's alpha values were calculated, and the values were 0.89 in the domain of knowledge, 0.84 in HBM, and 0.91 in self-medication. In order to sampling, first health centers were randomly selected, then we examined the health records of all patients who had been referred to health services. After choosing the elderly who had the inclusion criteria of this study. Three hundred and fifty elderly people were entered in this study after we had explained the study to them, including how the information would be collected, and obtained their oral consent. The interviews were done to complete the questionnaire by three colleagues (who had been informed about the objectives of the study by the researcher). It should be noted that sampling was performed over a six-month period.

2.4. Ethical Consideration

The Ethics Committee of the Faculty of Nursing and Midwifery, Islamic Azad University of Isfahan (Khorasgan branch) approved this study (reference number: 493058). In order to comply with ethics issues in the research, the researcher introduced himself/herself by a written introduction letter to the officials at the Nursing and Midwifery College requesting permission from the relevant authorities to conduct the research, which was granted. Then, at the location of study, the aim of this study was explained to the participants, and they agreed to participate in the study. In the collection of data, all of the information provided by the participants was kept confidential.

2.5. Statistical Analysis

The data were analyzed using statistical software SPSS 20 and using statistical analysis, including the Pearson correlation coefficient, the independent t-test, the Kruskal-Wallis test, and ANOVA.

3. Results

3.1. Demographic Information

Among the 350 elderly subjects in this study, 185 (52.9 %) were females and 165 (47.1%) were males. The subjects' ages ranged from 65 to 90, and the average age was 71.41 ± 5.54 . The men's ages ranged from 65 to 90, and their average age was 71.22 ± 5.20 . The women's ages ranged from 67 to 90, and their average age was 71.57 ± 5.84 . Among the 350 subjects, 39.5% had an elementary level of education. Among the men and women, 37.6 and 41.1%, respectively, had an elementary education; 10.9 and 12.3%, respectively, were illiterate; and 95.7% were married, and 4.3% were single. Concerning their jobs, 51.1% were housewives, 87.6% were retired, and 61.5% were employed outside the home (Table 1).

Table 1. Frequency of the target group on the basis of gender, marital status, and education

Demographic	Self-curing	n	%	p-value
Man (n = 165)	Yes	106	71.22	0.558
	No	53	29.88	
Women (n =185)	Yes	122	71.56	
	No	61	28.44	
Marital status (n = 89)	Yes	4	71.22	0.001
	No	161	29.88	

3.2. Self-medication

Seventy-eight percent of the subjects kept drugs at home, and the most important drugs for self-medication were herbal medicines (47.17%), analgesics (acetaminophen, acetaminophen codeine, aspirin) (40.29%), antibiotics (29%), cold tablets (10%), iron tablets (5.71%), tranquilizers (4.81%), and vitamins (1.43%). In this study, the most frequently-mentioned reasons for self-medication were previous experience with a given disease, the belief that the drugs had no side effects, the availability of the drugs at home, and good results from previous self-medications (Table 2).

Table 2. Absolute and relative frequency of distribution based on different types of self-medication

Responsiveness	No		Yes	
	n	%	n	%
Multivitamin	345	98.57	5	1.43
folic acid	344	98.29	6	1.71
Iron tablets	330	94.29	20	5.71
Antibiotics	336	96.00	14	4.00
Acetaminophen	209	59.71	141	40.29
Syrups colds	339	96.86	11	3.14
Cold tablets	315	90.00	35	10.00
Tranquilizers	333	95.14	17	4.86
Analgesics	273	78.00	77	22.00
Antihistamines	341	97.43	9	2.57
Hypnotics	339	96.86	11	3.14
Stomach antacids	345	98.57	5	1.43
Antiemetic drugs tested	346	98.86	4	1.14
Anti-hypertensive	349	99.71	1	0.29
Pyretic	348	99.43	2	0.57
Herbal Medicines	185	52.86	165	47.14

3.3. Internal and External Guide

The most important external guideline for elderly people who did not self-medicate were (61.1%), radio and television (32%), family (0.8%), friends and acquaintances (0.6%), and newspapers, magazines, and books (0.3%). The internal guideline for the elderly people who had not self-medicated were nervousness or fear of side effects caused by self-medication (78.3%), a lack of belief in self-medication (17.1%), good general conditions and reliance on personal information (4.6%) (Table 3).

3.4. Awareness and Health Belief Model (HBM) Structures and Differences between Men and Women

The level of awareness among the elderly concerning self-medication and its potential harms was moderate (73%), and the results of the independent t-test showed no significant difference between the awareness level of men and women ($p < 0.05$). In the perceived sensitivity part, 70.6% of the elderly were at a good level. The results of the independent t-test showed no significant difference between men and women concerning the perceived level of sensitivity ($p < 0.05$). In the perceived severity part, 77.4% of the elderly were at a good level. The results of the independent t-test showed no significant difference between men and women concerning the perceived level of severity ($p < 0.05$). In the perceived benefits part, 68.9% of the elderly were at a good level. The results of independent t-test showed no significant difference between men and women concerning the perceived level of benefits ($p < 0.05$). And in the perceived barriers part, 79.7% of the elderly were at a weak level. The results of the

independent t-test showed no significant difference between men and women concerning the perceived level of barriers ($p < 0.05$) (Table 4).

Table 3. Distribution of absolute and relative frequency of different types of research on the causes of self-medication

Responsiveness	Yes		No	
	no	%	no	%
Urging people	20	5.71	330	94.29
Lack of access to doctor	8	2.29	342	97.71
Fee inflation	20	5.71	330	94.29
Not important diseases	85	24.29	265	75.71
Good previous result of self-medication	106	30.29	244	69.71
Not having enough time to see a doctor	16	4.57	334	95.43
Previous experience with the disease	25	7.14	325	92.86
The availability of drugs	42	12	308	88
Get drug without prescription	5	1.43	345	98.57
Lack of health insurance	1	0.29	349	99.71
Lack of confidence in the doctor's practice	3	0.86	347	99.14
Failure to correct the effects of drugs	5	1.43	345	98.57
Lack of belief on treatment without prescribing drugs	2	0.57	348	99.43
The belief that the drugs are safe	133	38	217	62

Table 4. Mean scores of self HBM components in the target group

Variables	Self-medication	Average	SD	p-value
Awareness	Yes	31.59	17.12	0.120
	No	43.45	18.14	
Perceived susceptibility	Yes	41.05	12.40	< 0.001
	No	59.37	12.33	
Perceived severity	Yes	44.08	11.84	< 0.001
	No	32.50	11.84	
Perceived benefits	Yes	64.19	11.27	0.120
	No	60.38	11.54	
Perceived barriers	Yes	80.08	9.23	< 0.001
	No	61.42	7.35	
Self-efficacy	Yes	61.41	10.14	< 0.001
	No	77.14	10.84	

4. Discussion

4.1. Demographic Information

Most of the subjects (95.7%) were married, i.e., 97.6% of the men and 94% of the women were married.

4.2. Self-medication

The findings of this study showed that the prevalence of self-medication in the elderly of the target group was 87.6%. The study was conducted by Sharifirad et al. in Gonabad, where the prevalence of self-medication among the elderly was reported as 77.6% (17). This figure is than it was in a similar with other studies (18, 19). Also, differences were observed in the prevalence of self-medication in other studies. The prevalence of self-medication in Khaksar et al. was 83.7% of students in Shiraz (20), and, in Dianati et al.'s study, it was 88% (21). Baghiani Moghadam and Ahrampoush reported it was 83% of students in Yazd (9); Tajik et al. reported it was 54% of pregnant women in Arak (13); Siam reported that it was 61.5% in Rasht (12); Amani et al. reported that it was 41.1% in Tehran (22); Abbasi and Abedzadeh reported 15.9% in Ilam (23); and Delshad Noghabi et al. reported 4.4% in Tehran (24). Of course, this problem can be seen in other regions of the world, e.g., the prevalence of self-medication in Hong Kong was reported to be 94% (25); it was 92% among students in Kuwait 92 % (26); 42% among the employees of the University of California (27); and 70% among employees in Nepal (16). These figures

show the acceptance of self-therapy and self-medication among different communities. In this study, 75.1% of the elderly kept drugs at home, irrespective of maintenance conditions, which is a significant percentage. Davati et al. reported the percentage to be 72% in Tehran (19). In Amoako et al.'s study (28), it was shown that the percentage of the elderly who had drugs at home was high. In Karimi et al.'s study in Arak (1), almost all of the elderly had drugs at home. These findings were consistent with the findings of the study of Asefzadeh (8) in Ghazvin, Sahebi (29) in Tabriz, Nouhi (30) in Esfahan and Yavari (31) in Tehran, Kahrizak. It was found that one of the most important causes of self-medication in this group can be attributed to the high proportion of drug availability. Analytical approach to self-medication causes from older people's attitudes, appears that the availability of drugs as well as factors such as the presence of chronic diseases such as hypertension and many years of experience of diseases and symptoms which causes relative knowledge of these diseases, recovery experience of previous treatments is the most important motivating factor of self-medication. Ease of drug preparation without prescription, easy access to it, and its excessive administration in previous visits by doctors are factors that can be considered as reasons for storing drugs at home. Keeping drugs at home increases the possibility of self-medication and also includes some important issues, such as proper storage of medicines, their expiration dates, the possibility of errors in their use, and easy access by other members of the family. The drugs that are most often kept at home are painkillers, antibiotics, and herbal and gastrointestinal medicines. Herbal drugs and acetaminophen are known to be used extensively by the elderly. So, 47.14% of the elderly have indicated that they use herbal medicines without a doctor's prescription, and 40.29% indicated that they self-medicate with acetaminophen. In Akbari et al.'s study in Shahr-e-Kord (32), 74.4% of the subjects in the study used herbal medicines. This finding was similar to the findings of the study of Bagheri et al. (33) in Esfahan (65.8%). Again, similar to these results were the results of the study of Davati et al. (20) on the elderly in Tehran, Loyola et al. (34) on the elderly in Brazil, Linjakumpu et al. (35) on the elderly in The Philippines, and Riedeman et al. (36) in Germany. The high level of keeping these drugs at home may be related to their specific problems, the more drug prescription by doctors, and also low cost of these drugs compared to other drugs. The test showed that there was no significant difference between men and women concerning self-medication. This result was inconsistent with the studies of Siam and et al. (12) in Rasht, Moghaddamnia (4) in Babol, and Davati et al. (19) in Tehran. The studies of Baghiani Moghadam and Ehrampoush (9) in Yazd and Khaksar and et al. (20) in Jahrom showed that there was a higher prevalence of self-medication by men. In addition, the results showed that a significant majority of examined samples were married, and 94% of those who were married self-medicated. The highest frequencies for men and women were 97.6% and 95.7%, respectively, related to the married, while the figure among single people was 6%. In the study of Sharifi Rad et al. (17), the results showed that significantly singles (those who lived alone, including singles, widows, and divorced) self-medicated more than married people, with 96.6% of the singles self-mediating, while this figure was 71.8% among married people. Davati et al. (19) in Tehran and Antonov and Isaacson in Sweden (37) showed that singles self-medicated more. It seems that the lack of attention to the needs of elderly people causes them, when they are sick, prefer rarely to receive treatment services, and they may self-mediate more. The findings showed that attempting to self-medicate in patients with adequate literacy is higher than people with low literacy, so 36.6% of people who self-medicated had secondary and higher educational levels. This result was similar to the study of Tavakoli (38) in Rasht, Davati et al. (20), Porteous et al. (39) in Scotland, and Tajik et al. (13) in Arak. The higher level of self-medication in educated people may be related to false confidence concerning their medical information. No significant difference between self-curing and other demographic characteristics, such as the number of children, employment status, insurance status, monthly income level, or age, was observed, and the results of other studies in this regard are available (40, 41). One of the main causes of the high level of self-medication in this group can be attributed to the high proportion of drug availability. The analytical approach to self-medication results from elderly people's attitudes, and it seems that the availability of drugs with factors, such as chronic diseases in the elderly, and many years of experience with these diseases and their symptoms cause them to have some knowledge of these diseases. Recovery experience with previous self-curing is the most important motivating factor in this age group. Therefore, it is necessary to consider this issue in educational programs for doctors and pharmacists so they will make a greater effort to train the elderly in the correct use of prescription drugs.

4. 3. Awareness and Dimensions of Health Belief Model (HBM) and Differences between Men and Women

The findings showed that there is a significant relationship between awareness and self-medication. The relationship between knowledge and self-medication was also observed in the studies of Ziayee et al. in Tehran (42), Sahebi et al. in Tabriz (29), and Shamsi in Arak (18). According to the results of the present study and other studies, including the study of Farhadi et al. in Dashti (40), which represents the relationship between awareness and self-medication, the experts believe that most people in society do not know about self-medication. Therefore, designing and implementing programs to enhance people's awareness and knowledge about the effects of self-medication seem

necessary. The analytical approach to the causes of self-medication in this study indicated that perceived barriers, such as fear, belief in having no effects, and the good results of previous self-curing, are the most common causes of self-medication among the elderly, and it is one of the effective factors in self-curing. Among the elderly, 38% have self-medicated because they believed there would be no adverse effects, and 30.29% have done so because they got good results when they did it earlier. However, the studies of Karimi (1) in Arak, Baghiani Moghadam (9) in Yazd, and Heidari (43) in Kerman were not in agreement with the findings of this study, because, in these studies, the lack of time to visit a doctor was the most important barrier to the proper use of drugs. Also, in the studies of Sharifi Rad et al. (17) in Gonabad and Karimi et al. (1) in Arak, the most important causes of self-curing were perceived barriers, such as the high cost of visits to the doctor, inadequate time, and lack of trust in doctors. But the study of Lozano in Mexico (44) indicated that the barriers to the proper use of drugs included belief in traditional medicines and a lack of trust in doctors. It seems that, with the Health Belief Model, we can identify the factors that influence the behavior of self-curing. In other words, by increasing perceived sensitivity and severity amount related to self-medication as well as analysis of the benefits obtained by lack of self-curing and the removal of the existed barriers on the proper use of drugs. The attitudes of elderly about self-medication can be changed and directed their performance toward lack of self-medication and taken effective steps towards healthy behaviors in society.

4. 4. Internal and External Guide

Examining the external guide in elderly people who did not self-mediate showed that they identified radio and television as well as health care workers as the most important sources of information on self-medication or the lack of it. In other words, getting information from these two sources was successful in reaching elderly people. Sharifi Rad et al. (17) in Gonabad also confirmed the benefits of these sources. In addition, concern or fear of developing effects of self-curing was the most important guide to internal performance, which is justifiable according to the perceived sensitivity score. In this study, according to the elderly's statements, some of the main causes of self-medication are the previous use of the drug, improvement of symptoms, and belief in being safe about their disease, which were predictable given the low perceived sensitivity level and the high level of perceived barriers. However, other studies explicitly referred to these cases.

5. Limitations of the Study

The limitations of this study may be the existence of some confounding factors, such as having more elderly people with chronic diseases, their uses of more drugs, and cognitive disorders, which are prevalent in this age group. In addition, the examined subjects may not reflect their true feelings in response to the questions.

6. Conclusions

The findings of this study showed that the prevalence of self-curing (self-medication) among the elderly who were referred to the health centers of Shahr-e-Kord is very high. According to the examined modifiable factors, conditions of the perceived susceptibility, the perceived severity, the perceived benefits, and the perceived barriers were not satisfactory. The functional significance of these findings is that the use of educational programs that are compatible with the characteristics of the elderly, such as peer education programs, adapted training from patterns and health education models, and extensive notification by mass media, especially the local written media, should be emphasized more to promote effective modifiable factors. In addition, to prevent self-curing and self-medication, reducing drug items in prescriptions is recommended. A further quasi-experimental study in designing a program to reduce self-medication on the elderly can be a right direction for future research.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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