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Original Article

An investigation of self-medication and its correlates among community dwelling elderly population by applying health belief model

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ABSTRACT

Background & Aim: Self- medication is defined as consuming nonprescription medicines to treat self-diagnosed disorders or symptoms. This study was carried out to examine prevalence of self-medication during three months ago and its correlates among the elderly population in Karaj-Iran by using the HBM model.

Materials & Methods: This cross sectional study was conducted on 189 elderlies who were covered by health care centers. The inclusion criteria were absent of cognitive disorders and being over the age of 60. The multistage sampling was used in this study. The data collection tools included: demographic characteristics and a questionnaire based on the HBM model, including knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers.
Statistical analysis of the data was performed using chi-square tests, Student t-tests, ANOVAs and multiple logistic regressions. Analyses were done by SPSS 19.0.

Results: The prevalence of self-medication was 26.5%. The most common medicine used for self-medication was Supplements (87.30%), cold drugs (40.2%), and pain killers (39.6). There was significant correlation between self-medication and health insurance coverage (P=0.01) and chronic diseases (P=0.001).There were two predictors of self -medication behavior in our study, which were having chronic disease and perceived susceptibility with OR were 1.46(95% CI: 0.71-2.40) and 0.93(95%CI: 0.76-1.13), respectively.

Conclusion: Due to the study results, it is suggested that an interventional program should be considered the promoting of the perceived susceptibility of the elderly population regarding self-medication and policy makers should be noted to elderly health insurance coverage.

Introduction

In Iran, as in many other parts of the world, demographic transition and its key features such as reduced mortality, fertility decline and increasingly elderly population are creating challenges for health system (1).

It is expected that the elderly population of Iran will compromise of over 10.5% of population in 2025 and 21.7% in 2050 (2). World population aging as well as changes in the epidemiological profile of diseases are contributing to increase in both the consumption of medicines and health expenses. Owing to the fact that self-medication can be considered as a quick treatment which can bypass bureaucracy, and also as a way to delay in obtaining medical assistance (3).

Self-medication is defined as "the act of consuming medicine to treat self-diagnosed disorders or symptoms without consulting a healthcare professional, resubmitting old prescriptions for chronic or recurrent disease, sharing medicines with relations or members of one's social circle or using leftover medicines stored at home" (4).

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It is evident that self-medication is a widely employed practice which affects individuals' behavior regarding their health (5) The more prevalence sources of self - medication are relatives, friends, neighbors, the pharmacist, old prescribed, newspapers or magazines (6).

The significant topics associated with self‑medication include wastage of resources, pathogens resistance and causes serious health risks like inappropriate reaction (6). Incorrect self-diagnosis, delay in treating medical symptoms when needed, hazardous medicine interactions, incorrect means of administration, incorrect dosage, improper choice of therapy, masking of symptoms of a severe condition and risk of dependence and abuse (7).

More than 53.8% of investigations in this area indicate that regardless of sample type the prevalence of self-medication is over 50% (8).

Due to this review of literatures significantly greater prevalence of self-medication among elderly population have indicated (8). A study from Iran suggested that practice of self -medication among elderly population is higher than all other age groups because the elderly population more suffering from various chronic diseases (9).

Another systematic review conducted by Roig et al (2014), the worldwide prevalence of self-medication varied from 4 to 87% and the most prevalence from studies point views was from 20% to 60% (3). In Iran based on Sharifirad study (10) findings, 77% of elderly population in Iran practice self-medication. Moreover, a recent cross sectional study which was carried out on elderly population in Iran reported that about 72% of Iranian senior population keep reserve medication at home as a precautionary measures and, 58% of participants reported self-medication use in variety of conditions during the three month' s period (11).

The leading causes of self-medication among participants were continuous use of a prescribed drug for recurrent illnesses and the growing perception that there was no need to seek advice from a professional doctor for minor ailments (12).

The studies suggest that in addition to education, general public on the proper use of medications, self-medication issues can be remedied by identification of effective factors in behavior variation and then developing proper models accordingly. The Health beliefs model (HBM) has been introduced as one of the most preventive model since the beginning of 1950 (13) This model can be defined as an individual's perception of susceptibility to, and severity of diseases or disorders as well as the perception of an individual about advantages and disadvantages to take action in order to prevent diseases or disorders. The physical, social, cultural and environmental factors could be affect and change aforementioned perceptions. Combination of perceived susceptibility and perceived severity related to improper situation labeled as perceived threat. Perceived benefits of do the healthy action besides perceived threat of unhealthy action can lead to change or involve in healthy behavior. If perceived barriers to do specific action higher than positive results from changing or involving the behavior, it is unlikely to engage the action (14). The aim of this study is to analyze the prevalence of self-medication during three months ago and its correlates among the elderly population in Shiraz-Iran by means of HBM Model.

Methods:

This study was conducted by cross-sectional design. The subjects of study were 189 elderly (≥60-year-old) who were covered by health care centers in Shiraz, southwest of Iran. The sample size was calculated based on following formula.

$$n = \frac{\left(Z_{1-\alpha/2}\right)^2 \times p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.58 \times 0.42}{(0.07)^2} = 189$$

The prevalence of self-medication was considered 58% based on previous study (12). The inclusion criteria for the selection of participants were absence of cognition disorders and being over the age of 60. The persons who could not speak or write in

Persian were excluding from the study. The sample strategy proposed in current study includes two stages, at first stage random clustered sampling performed with 24 health centers (2 health center were chosen in this stage) and in second stage, convenience sampling was applied to select the eligible elderly individuals (94 one and 95 from the another). The data was gathered by using three questionnaires at the first one included demographic characteristics (age, sex, income, marital status, employment status, income level, education, chronic disease, living arrangement, and having insurance and self-mediation status). The second one was to assess participant knowledge regarding self-medication (10 questions) using true and false option (one point for correct response and zero point for false response and I don't know).

The third one is developed based on HBM constructs by reviewing of literatures in the field of self- medication, which includes evaluation of the perceived susceptibility (5 questions) with score range of 5 to 25, evaluation of perceived severity (5 questions) with score range of 5 to 25, evaluation of Perceived benefits (5 questions) with score range of 5 to 25 an evaluation of perceived barriers (5 questions) with score range of 5 to 25. All the questions regarding perception were rated according to Likert scale, ranging from 1 (strongly disagree) to 5 (strongly disagree).

In fourth section, the aim was to assess a person self -medication practice by answering to this question that whether the person had self- medication in the past three months. If the response was yes, the subject was also asked about the type of medicine they used.

The content validity of the questionnaire evaluated by panel experts (5 specialists in health education and epidemiology) and internal consistency was assessed by alpha Cronbach coefficient.it was 0.86, 0.89, 0.76, 0.91 for the perceived susceptibility, perceived severity, perceived benefits and perceived barriers, respectively. The questionnaires were completed by the face to face interview. The trained interviewer with high school diploma were conducted the interview. Each interview duration was proximately 30 minutes. Moreover, the ethical approval for the study was obtained from the Alborz University of Medical Sciences (Code 2458756) and the consent form was obtained from the participants in the study. Data was analyzed by using, Chi-square, Fisher's exact test, t-test and ANOVAs multiple logistic regression analysis was applied to estimate the strength of the association between the exposure and a binary outcome. The probability level of 0.05 was considered statistically significant. For statistical analysis the SPSS 19 was used.

Results

The mean of age of elderly participants in this study was 70.3±8.59; 79% were male, 5.3% were not having spouse. Also, and 60.8% of participants were have a low income job. Moreover, 12.2% of the individuals participated in this study reported no insurance coverage. About 26.5% of participants in this study reported self -medication practice in the past three months (Table 1). There is not any relationship between age, gender, economic status, education, occupation, health insurance and marital status with self -medication (Table1). The most important medicine for self-medication were supplements (87.30%), cold table (40.2%) and analgesics (39.6%) (Table 2). There are statistically significant differences between self -medicated and no self -medicated regarding perceived susceptibility (Table 3). There were two predictors of self -medication behavior in our study, which were chronic disease, perceived susceptibility with the OR were; 1.46 (95% CI: 0.71-2.40), and 0.93 (95% CI: 0.76-1.13), respectively. Due to our result by increasing a point in perceived susceptibility, the self-medication will decrease by 7 percent. As well as having chronic disease, will increase the chance of self-medication by %46 (Table 4).

Table 1. The pattern of self-medication in based on demographic characteristics

Demographic Characteristics	Classification	Self-Medication Status				P value
		Yes (n=50)		No (n=139)		
		N	%	N	%	
Age	60-64	11	22	48	34.53	0.51
	65-69	12	24	32	23.02	
	70-74	10	20	26	18.71	
	75-79	4	8	14	10.07	
	80-84	6	12	10	7.91	
	>85	7	14	8	5.76	
Sex	Male	18	36	50	35.97	0.89
	Female	32	64	89	64.03	
Income levels	Low	37	74	114	82.01	0.73
	Intermediate	12	24	22	15.83	
	High	1	2	3	21.58	
education	<12	25	50	50	35.97	0.43
	>12	25	50	89	64.03	
Occupation	Retirement	30	60	85	61.15	0.65
	Non Retirement	20	40	54	38.85	
Health insurance	Yes	40	80	126	100	0. 01
	No	10	20	0	0	
Living arrangement	Alone	4	8	6	4,32	0.29
	With Family	46	92	133	95.68	
Chronic disease history	Yes	42	84	72	51.80	0.001
	No	8	16	67	48.20	
Marital status	Not have Spouse	5	10	5	3.60	0.74
	Have Spouse	45	90	134	96.40	

Table2. Absolute and relative frequency of distribution based on different types of self-medication

Representative	N	%
Supplements	165	87.30
Cold tablets	76	40.2
Analgesics	73	39.6
Antibiotic	37	19.6
Gastro medicine	34	17.98
Antihypertensive medicine	12	6.3
Musculoskeletal medicine	22	11.64

Table3. Mean and SD of knowledge and HBM constructs in self-medicated and non self-medicated

Variable	Total (Mean ±SD)	Min-Max	Self -Medicated (Mean ±SD)	Non Self Medicated (Mean ±SD)	P value
Knowledge	2.43±0.33	1.50-3.20	2.45±0.36	2.43±0.33	0.69
Perceived susceptibility	16.80±4.43	5-25	15.48±4.38	17.28±4.37	0.01
Perceived severity	9.7±3.07	5-20	9.98±2.92	9.61±3.12	0.46
Perceived benefits	8.83±2.81	5-18	9.32±2.97	8.65±2.75	0.15
Perceived barriers	17.83±4.31	6-25	17.18±4.30	18.07±4.34	0.21

Table4. Odds ratios and 95% CI obtained from logistic regression analysis for Self-Medication

	OR (95% CI)	P value
Age	0.97(0.92-1.01)	0.97
Sex		
Male	1.0 (ref.)	0.45
Female	1.45(0.54-2.09)	
Marital status		
Divorce/Widow/Unmarried	1.0(ref.)	0.34
Married	3.23(0.28-36.13)	
Employment status		
Non retired	1.0(ref.)	0.40
Retired	0.65(0.24-1.76)	
Income level		
Low	1.0(ref.)	
Intermediate/High	0.65(0.25-1.68)	0.38
Education		
<12	1.0(ref.)	0.69
>12	1.193(0.48-2.92)	
Chronic disease		
No	1.0(ref.)	<0.001
Yes	1.46(0.71-2.40)	
Insurance		
No	1.0(ref.)	0.061
Yes	0.33(0.1-1.05)	
Living arrangement		
Alone	1.0(ref.)	
With family	1.08(0.09-12.20)	0.94
Knowledge		
Perceived susceptibility	0.93 (0. 76-1.1 3)	0.005
Perceived severity	0.86(0.62-1.19)	0.90
Perceived benefits	1.38(0.096-1.96)	0.42
Perceived barriers	0.99(0.88-1.11)	0.87

Discussion:

The findings of the present study suggest that the prevalence of self-medication in the elderly population of the target group was 26.46 %. Whereas, other studies indicated a greater rate of prevalence. In the study which was conducted by Sharifirad et al. in Gonabad where the prevalence of self-medication among the elderly was reported 77.6%, and the study by Jafari where more than two third of the participants had a history of self-medication (10, 11). It seems having health Insurance was an important issue in this regard. In our study, most of the subjects had health insurance (80%); however, in Sharifirad and Jafari, it was 53% and 37% respectively. It is obvious that there is a significant correlation between having health insurance and health service accessibility. With regards to current study results, there was significant difference in perseverance rate of self- medication practice between those who had health insurance in comparison to those elderly who had no health insurance coverage Moreover, earlier report from Iran indicated that the elderly population with no medical insurance had significantly higher levels of self-medication in comparison with those with medical insurance coverage (11).

Another reason for lower rate of self - medication in our study compared to the other study, can be explained by different participants' characteristic. The study was carried out the Shiraz in Iran. Squeezed juice and herbal tea consumption is more common than other regions in Iran and it was not considered as self-medication from participants' point of view. Parmer et al (2015) revealed a high prevalence rate (88.5%) of self - medication in urban elderly persons (15). In Pulmar et al. study, the recall period was 6 months but in our study it was 3 months (15). Another study among Mexican elderly indicated that more than half of the 245 participant interviewed

older adults reported taking a medicine without prescription during the last 30 days (16). Recall period is another factor that should be taking into account when interpreting findings in self-medication subject (3). Consistent with our results, the previous study results indicated that prevalence rate of self- medication practice among elderly population in Iran were significantly correlated with history of chronic diseases and the perceived susceptibility. Due to Roig systematic review study the self-medication among the elderly compromised different definition and it makes the difficulties in the comparison between the studies (3). The self-medication definition influences by the considered period and interview situation (3). We considered the three months for assessing the prevalence of self-medication in our sample and the filling question was being done in public health center. Other study considered different time period varies between three days (17), 30 days (18), 365 days (19) and so on. It seems should be considered the specific time period for the self-medication study. Similar to this study, Unsal and Demir (19) were used the public health center for the gathering data.

Gazibara et al (2013) also found a correlation between that multiple chronic conditions and multiple self-medication with over-the counter drugs (20).Chronic diseases, in addition to decline quality of life (21) , increase self-medication in them. Concerning present study results, the supplement consumption among participants in self - medicated elderly was 87.30 and higher than other use. The drug other studies have also confirmed the current study results (22, 23). Knof reported in this regards that vitamins, minerals and food supplements are often used without seeking advice from health experts (24). In Pulmar et al (2015), the analgesics were the most consumed drug group with paracetamol being the most commonly used drug for self- medication (15). But in the current study the analgesics was in the third level of consumption. It was found from this study that in the disease distribution of self-medication 40.2% of the drug use was for common cold medication. In another study performed in Tehran (25) common cold was the most frequent disease for self- treatment.

Accordance to Sahebi 2009 and Karimy 2014 reports (26, 27) our finding shows there is not any significant relationship between age and self - medication.

On the other hand, we found those who had higher level of education (12 years and more) are more likely to obtain medication without prescription than the other participants even though the difference between two groups was statistically not significant. This might be due to the fact that participants with higher level education can obtain necessary information regarding their required medication from brochures, books, internet and other source without consulting with health experts (16). Similar to Parmer et al (2015) study results (15), our investigation showed no differences in self-medication relating to gender and income level.

This study shows, despite other studies (27) there is a significant association between self -medication and perceived susceptibility, however, no significant association between self- medication and other HBM construct was found

Perceived susceptibility is one of the most influential factors affecting people tendency to self -medication. The greater the perceived susceptibility to , the more likely health-seeking decisions will be made (28) and higher motivation to adhere protective behavior(29). According to Niksadat study, perceived susceptibility effects prevention of self-medication and this issue should be included in the educational planning for prevention self-medication (13) and using proper audio and video to in creation health program is crucial (30).This study was conducted on elderly patients in a health care center, therefore it has had limitation to

generalize the results to the other elderly, and they may differ from others in terms of socioeconomic status, family and social support, and access to health care.

To conclude, we identified the chronic disease history, health insurance coverage and perceived susceptibility the effective factors in preventive behavior for self- medication.

Therefore, it is recommended that the educational interventions should be designed according to perceived susceptibility in order to promote health interventions and strategies to prevent self-medication. Also it implies that policy makers should provide easy access to health insurance coverage for elderly population.

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