



Original Article

Self-Medication and Related Factors in the Older People: Their Practice in Covid-19 Pandemic

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ABSTRACT

Background/Purpose: Self-medication (SM) has many risks especially in the older people, due to the high probability of polypharmacy. In this study, we aimed to assess the prevalence of self-medication and to investigate associated factors in older people, who requested home vaccination in İstanbul. SM during SARS-CoV-2 (COVID-19) pandemic was also evaluated in the study.

Methods: This descriptive study was carried out on elderly adults who requested to receive COVID-19 vaccination service at home in a medium-sized district of İstanbul, Turkey between February 22 and March 19. Study data were collected by a questionnaire through face-to-face interviews in the mandatory waiting period after vaccination.

Results: We observed that 48.7% of the older people used SM. The use of auxiliary equipment, especially use of canes/crutches significantly increased the prevalence of SM. SM was significantly higher in the older people who forget drug use, confuse medication time, recommend drugs for others and keep unused/unfinished drugs at home. The most effective factor in choosing SM was that they had used it before. The most common reason for preferring SM was thought of the disease is mild. A 20% of the participants used SM to prevent COVID-19 pandemic. Vitamins (16.4%) were mostly used for SM during COVID-19 pandemic.

Conclusion: This study shows that the older people had a high rate of self-medication during COVID-19 pandemic. We think that targeted health education and preventive initiatives may be beneficial.

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1. INTRODUCTION

Recently, unnecessary and over-the-counter drug use has increased and emerges as a serious public health problem. Extensive drug use and high potentially inappropriate medications increases the risk for drug-related problems in older people.¹

Self-medication (SM) use includes the use of drugs without consultation to the physician or any medical supervision on own initiative of the patient or on the recommendation of others.² SM is often used for easily self-diagnosed or for recurrent conditions that have been previously diagnosed by a physician. Patients must have the necessary information to

make the right decisions about their own health. Often misuse of medications is due to patients' lack of information.³ SM can lead incorrect self-diagnosis, masking a serious illness and delay in diagnosis / treatment, addiction or abuse risk, polypharmacy, adverse drug reactions, contraindications and potential drug-drug and drug-food interactions, incorrect dosage and administration route.^{2,3}

Pharmaceutical expenditures constitute a significant part of health expenditures in Turkey. Per capita drug consumption in Turkey known to be above the average of Organisation for Economic Cooperation and Development (OECD). In Turkey about 95% of drugs are covered for reimbursement. Rational Drug Use (RDU) issue in Turkey recently is on the agenda and serious reforms are being carried out in this regard. In Turkey, over the counter (OTC) drug regulations are not enough and for this reason OTC regulations should be put into practice. Many application rules for non-prescription drugs such as which items will be covered, reimbursement and where they will be sold are not fully established yet in Turkey,

Older people may be at increased risk from SM more often due to concomitant medication and medical conditions.⁴ The number of medications taken by older people tends to be more since a larger number of co-morbid conditions are seen in this age group. Additionally, reduced renal elimination, decreased hepatic function, reduced body water content and increase of body fat content increases drug interaction rate in older people.⁵

The aim of this study is to determine the socio-demographic and health-related predictors of SM in the Turkish older people adult population. SM during SARS-CoV-2 (COVID-19) pandemic was also evaluated in the study.

2. METHODS

This descriptive study was carried out in older people adults who requested to receive COVID-19 vaccination service at home in Üsküdar, a medium-sized district of Istanbul, Turkey between February 22 and March 19.

Approval was obtained from the Ethics Committee of Zeynep Kamil Gynecology and Obstetrics Hospital and also from the Ministry of Health for this study (46/17.02.2021). The questionnaires were applied in accordance with the Helsinki Declaration and informed consent was obtained from all the participants.

A total of 720 people requested home vaccination from the district health directorate on dates the study was conducted.

The inclusion criteria were determined as being older than 65 years and not having any condition that prevents communication. Those with diseases such as Alzheimer's, dementia and being hearing impaired are determined as exclusion criteria.

Study data were collected by a questionnaire which was created after a literature search. Questionnaires were applied to 475 people who excepted to participate and met the inclusion criteria through face-to-face interviews in the mandatory waiting period after vaccination. Survey questionnaires with incomplete information were excluded and a total of 390 questionnaires (82.1 %) were included in the analysis.

The questionnaire consisted of three parts. In the first part, socio-demographic data, in the second part, individual health assessment and in the third part, drug use habits and attitudes are questioned. Herbal supplements and herbal teas were excluded for non-prescription drug use.

2.1. Statistical Analysis

Descriptive statistics were used to analyze the characteristics of the study sample. A univariate analysis (Chi square) was used to analyze the relationships between self-medication and sociodemographic characteristics, drug use behaviors. A multivariate logistic regression model was applied to reveal significantly and independently related factors with self-medication. The effect of the variables on self-medication was estimated as an adjusted odds ratio (OR) with 95% CI. Statistical significance was accepted as $p < 0.05$. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) software (SPSS 22.0 for Windows).

3. RESULTS

A total of 282 (72.3%) of 390 older people adults participating in the study were women. The mean age and standard deviation of the participants was 84.88 ± 6.98 . 52.1% (203) of them were graduated from primary school and 51.3% (200) were single. 86.4% (337) of the older adults reported their economic status as medium according to their individual evaluations. In addition, 31.8% (124) of them were using home health services and 94.9% (370) had social security. 44% (174) of the participants reported using 5 or more drugs. Those with any disability were 19% (74), auxiliary equipment use was 73.3% (286). (Table 1).

Most of the participants (98%; $n=360$) had one or more chronic disease and 92.8% ($n=362$) were using drug every day.

The single older people were significantly more tend to perform SM compared to married. Additionally SM was significantly higher in participants those use 5 or

Table 1. Distribution of sociodemographic characteristics and health status-related factors with self medication of the elderly

	Self medication						p
	Yes		No		Total		
	N	%	n	%	n	%*	
Gender							
Female	144	51.1	138	48.9	282	72.3	P=0.134
Male	46	42.6	62	57.4	108	27.7	χ ² =2.243
Age group							
65-74	17	47.2	19	52.8	36	9.2	
75-84	49	47.1	55	52.9	104	26.7	P=0.897
85 and ↑	124	49.6	126	50.4	250	64.1	χ ² =0.217
Marital status							
Married	104	54.7	86	45.3	190	48.7	P=0.02
Single	86	43.0	114	57.0	200	51.3	χ ² =5.372
Education Status							
Illiterate	57	50.9	55	49.1	112	28.7	
Primary school	100	49.3	103	50.7	203	52.1	P=0.824
High school	21	43.8	27	56.2	48	12.3	χ ² =0.908
University	12	44.4	15	55.6	27	6.9	
Social security							
Yes	182	49.2	188	50.8	370	94.9	P=0.423
No	8	40.0	12	60.0	20	5.1	χ ² =0.641
Economical situation							
Poor	7	77.8	2	22.2	9	2.3	P=0.127
Middle	165	49.0	172	51.0	337	86.4	χ ² =4.124
Good	18	40.9	26	59.1	44	11.3	
Disability							
Yes	36	48.6	38	51.4	74	19.0	P=0.989
No	154	48.7	162	51.3	316	81.0	χ ² =0.000
Use of home healthcare services							
Yes	69	55.6	55	44.4	124	31.8	P=0.06
No	121	45.5	145	54.5	266	68.2	χ ² =3.492
Number of medications used every day							
1-4	118	54.6	98	45.4	216	58.9	P=0.009
5 and↑ (polypharmacy)	72	41.4	102	58.6	174	44.6	χ ² =6.772
Use of auxiliary equipment							
Yes	150	52.4	136	47.6	286	73.3	P=0.01
No	40	38.5	64	61.5	104	26.7	χ ² =5.971
Use of wheelchair							
Yes	18	51.4	17	48.6	35	9.0	P=0.737
No	172	48.5	183	51.5	355	91.0	χ ² =0.113
Use of canes/crutches							
Yes	96	55.2	78	44.8	174	44.6	P=0.02
No	94	43.5	122	56.5	216	55.4	χ ² =5.289
Use of glasses							
Yes	63	53.8	54	46.2	117	30.0	P=0.187
No	127	46.5	146	53.5	273	70.0	χ ² =1.759
TOTAL**	190	48.7	200	51.3	390	100	
*Column %, **Line % P <0.05 was considered statistically significant.							

*Column %, **Line %
 $P < 0.05$ was considered statistically significant.

more drugs daily, use auxiliary equipment, especially canes/crutches ($p > 0.05$). (Table 1).

The attitudes of the participants regarding irrational drug use were also evaluated. Seventeen point nine percent of the respondents stated that they were forgetting drug use, 8.5% of them were not using correctly, 19% of them were confusing medication time, 24.9 of them were not checking drug instruction, 22.3% were not checking the expiration date, 8.5% were recommending drugs for others and 44.1% were keeping unused or unfinished drugs at home for later use (Table 2). Of the 172 participants who kept drugs at home for later use, 55.2% ($n=91$) kept one, 24.7% ($n=40$) two, 9.9% ($n=16$) three and 3.1% ($n=5$) four or more drugs. SM was significantly higher in the older people who forget drug use, confuse medication time, recommend drugs for others and keep unused/unfinished drugs at home ($p < 0.05$) (Table 2).

The practice of the participants on SM is presented on the Table 3. A total of 190 (48.7%) stated that they use drugs for SM without prescription. Sixty point eight percent of them stated that they did not visit a doctor during pandemic and 20% of them used SM to prevent COVID-19 pandemic. Vitamins (16.4%) were mostly used as SM during COVID-19 pandemic.

Table 2. Distribution of irrational drug use habits with self medication of the elderly

	Self-medication preference						p
	Yes		No		Total		
	n	%*	n	%*	n	%*	
Forgetting drug use							
Yes	52	74.3	18	25.7	70	17.9	P <0.001
No	138	43.1	182	56.9	320	82.1	χ ² =22.323
Not using medications correctly (using by chewing. breaking etc.)							
Yes	20	60.6	13	39.4	33	8.5	P=0.153
No	170	47.6	187	52.4	357	91.5	χ ² =2.039
Confusing medication time							
Yes	53	71.6	21	28.4	74	19.0	P <0.001
No	137	43.4	179	56.6	316	81.0	χ ² =19.176
Not understanding/or checking the drug instruction							
Yes	54	55.7	43	44.3	97	24.9	P=0.114
No	136	46.4	157	53.6	293	75.1	χ ² =2.498
Not checking the expiration date (n=206)							
Yes	33	71.7	13	28.3	46	22.3	P=0.484
No	106	66.2	54	33.8	160	77.7	χ ² =0.491
Recommending drugs for others							
Yes	31	93.9	2	6.1	33	8.5	P <0.001
No	159	44.5	198	55.5	357	91.5	χ ² =25.508
Keeping unused/unfinished drugs at home for later use							
Yes	102	59.3	70	40.7	172	44.1	P <0.001
No	88	40.4	130	59.6	218	55.9	χ ² =13.798
*Column %, **Line % P <0.05 was considered statistically significant.							

*Column %, **Line %
 $P < 0.05$ was considered statistically significant.

Table 3. Practices and attitudes of the study population on self-medication and effects of the COVID- 19 pandemic

	n	%
Do you use drugs for self-medication without prescription?		
Yes	190	48.7
No	200	51.3
Which drugs do you use generally for self medication?		
Analgesics	143	75
Antigribal	26	14
Antibiotics	11	5.7
Vitamin	10	5.2
What is the effective factor in choosing the drug you use in self medication?		
Used with a doctors' prescription in the past	120	63.2
Own experience	26	13.7
Pharmacists' advice	23	12.1
Recommendation of a relative	19	10.0
Other	2	1.0
Did you use drugs without prescription to prevent COVID-19?		
Yes	78	20.0
No	312	80.0
Which drugs did you use to prevent COVID-19 without prescription? (n=78/390)		
Vitamin	69	18.2
Aspirin	9	2.3
Do you think drugs used for self-medication may have side effects		
Yes	303	77.7
No	87	22.3
Have you faced any side effects due to self-medication?		
Yes	9	4.7
No	181	95.3

Table 4. The reasons for preferring self medication

Reasons	n	%
Thought of the disease is mild	139	73.2
Anxiety about COVID-19 disease	23	12.1
Difficulties in reaching the doctor	13	6.8
Avoidance of long waiting at clinics (time saving)	8	4.2
Due to the workload	4	2.1
Less cost	3	1.6

Additionally, 22.3% of them think that drugs used for self-medication may not have side effects and only 2.3 % faced any side effects.

The most effective factor in drug selection for SM was previous use. They had a high tendency to re-use the drugs they had previously taken with prescription (63.15 %) (Table 3). The reasons for preferring SM are presented on Table 4. The most common reason for preferring SM was thought of the disease is mild.

3.1. Multivariate Analysis of Factors Associated with Self-Medication

The univariate analyzes showed that marital status, the presence of chronic disease, the use of auxiliary equipment, the use of canes, frequency of drug use, forgetting to use drugs, confusing the medication time, having medication for later use at home and recommending drugs to someone else were significantly associated with SM.

However, with the correction of potential confounders by multivariate logistic regression, only marital status ($p=0.02$), using a cane / crutches ($p=0.02$), having drugs for later use at home ($p=0.004$), and recommending drugs to someone else ($p < 0.001$) were variables that were significantly associated with SM. Self-medication was 1.69 times more common in single marital status than married individuals ($OR=1.69$, 95% CI: 1.07–2.67, $p=0.02$). In addition, those who use cane / crutches used SM 1.8 times more ($OR=1.80$, 95% CI: 1.08–2.98, $p=0.02$) compared to those who do not use ($OR=2.00$, 95% CI: 1.25– 3.19, $p=0.004$) and those who recommended drugs to someone else were used SM 14.84 times ($OR=14.84$, 95% CI: 3.32–66.33, $p < 0.001$).

4. DISCUSSION

In this study, we observed that 48.7% of the older people used SM. Similar to our study in a study conducted in older people in Turkey 51.4% of the participants used medication without a doctor's recommendation.⁶ However higher rates was found as 58.9% conducted in individuals between the ages of 18–65⁷ and as 63.4 in students between the ages of 18–26 for SM.⁸ We think that the slightly lower rate of SM in older people may be due to the fact that the older people may prefer less since they already take too many drugs. Supporting our data in a study conducted in Brazil it was reported that higher age was negatively associated to self-medication⁹ and in a study conducted in Saudi Arabia young aged people were more involved in practicing SM.¹⁰ SM rates vary in studies conducted in different countries. For an example, it has been reported as 52.2% in Northwest Ethiopia,¹¹ 69% in Italy¹² whereas 35.4 % in Iran.¹³ In two studies conducted in different regions of India, SM rates were reported as 11.9% in Puducherry¹⁴ and 92.8% in Delhi.¹⁵ In a recent study covering 14 European countries, an average of 26.3% of the older people used self-medication, varying between 7.8% and 49.4% among countries.¹⁶ In a systematic review the prevalence of self-medication ranged from 4% to 87% with an average of 38%.¹⁷

We think that, this variation may be due to the economically, socially cultural and educational differences of the countries and regions. The structure of the health systems of countries can also be effective.

In this study marital status was found to be associated

with SM, similar to the previous studies.^{18,19} SM practice among single participants were 1.69 times higher than the married. We think that unmarried people are more effective in interacting with their environment in order not to feel lonely and this may be effective in applying more to SM.

However, we also found the SM rates to be significantly high, especially in people who use a cane or crutch that may delay referral to the hospital and doctor. Similarly, Dominigues et al reported that people with difficulty to perform daily activities (work, study, housework, family activity or leisure) are more prone to self-medicate.⁹

Home care services are provided in Turkey, but these services are widely maintained, mainly for bedridden patients. It would be beneficial to expand home care services more for the older people who have such difficulties.

Almost all older people individuals included in the study had polypharmacy and chronic disease.

The presence of both chronic disease and polypharmacy will increase the risk of drug interactions and adverse effects that may occur with the SM with the addition of a new drug. Therefore, the older people should be more sensitive to SM.²⁰

We investigated the distribution of irrational drug use habits with SM. The use of medications incorrectly as breaking or chewing was low. Twenty-four point nine percent of the participants were not checking the instruction of the drug that is important for those who apply SM, showing the tendency to access detailed information about the drug they use. We observed that SM was more common in older people individuals who do not have awareness of some rational drug use attitudes. SM was found to be high in individuals forgetting to take medications or not taking them on time. While SM is itself a risk factor in the older people, the fact that these irrational drug use behaviors are significantly higher in these people may further increase the risk.

The present study showed that 44.1% of the older people were keeping drugs at home for later use and those who kept drugs at home were significantly with higher SM as two times more. In a study conducted in Turkey keeping drug at home was as 34.3 % in general population⁷ whereas it was 86% in a study conducted in Iran including older people.¹³ In addition to increasing the self-medication, keeping the drug at home is an important issue to consider, raising concerns such as expiration dates, errors in proper consumption, and availability to others. 66.2% of the responders in this study stated that they do not check the expiration date of the drugs before use showing that the probability of using expired drugs

is very high. Expired drugs may be less effective or harmful due to changes in chemical composition. Some products may degrade after the expiration date and decomposition products may be much more toxic than the active pharmaceutical ingredient. Periodic inspection of home-stored medicines and disposal of expired or apparently damaged products are necessary to prevent poisoning or improper use.^{21,22}

We have found that SM was significantly higher in participants who were recommending drugs to others, a factor that may increase the SM. Recommendation of a relative was 10% among the reasons for SM in this study, but higher in the study of Bekele at as 27.1%.²²

In this study, a low percentage of older people (22.3%) stated that the drugs they use in SM will not have side effects. This result is in accordance with the findings of Oyediran et al²³ and Raj and Sujata²⁴ those reported a high awareness of responders regarding SM.

However differently from our findings, Selveraj et al¹⁴ and Das et al reported that awareness regarding risks of self-medication was low.¹⁸ Although a few of the participants have wrong information about side effects of drugs used in SM, this misinformation may lead to the use of the drugs at high and inappropriate dosage ranges. Additionally, considering that the drugs will not have side effects can increase the tendency for SM. We think that believing that the drugs used in SM are safe increases the rates of SM. From this point of view, the prevalence of SM is higher (83%) in the study of Jaferi et al.,¹³ which the majority of the older people reported that the drugs used in SM were safe, compared to our (48.7%) study. We also think that increasing awareness about rational drug use may decrease SM behavior. In a study conducted in Ethiopia, it was stated that participants with high level of knowledge about drugs had less self-medication.¹¹

The older people reported that they mostly kept painkillers/analgesic, cold medicines and antibiotics at home for later use. This data shows that they mostly prefer these drugs for SM. Several studies also reported that most frequently consumed drugs by the older people were analgesics, cold medicine, vitamins and digestive drugs.^{17,18}

The most effective factor in choosing drugs for self-medication was prior experience in this study and most of these experiences were related to previously prescribed drugs, although a small portion was related to drugs taken without a prescription. Similar to our study, it has been shown that the patient preferred SM mostly depending on their previous experience in recent studies.^{13,19,25} The major justification towards preferring SM was thinking that it was not a serious illness as in other studies.^{10,25,26}

The older people participated to this study stated that the rate of consulting a doctor during the pandemic process was very low. They used mostly vitamins (16.4%) followed by aspirin (2.3%) and supplements (1.2%) as SM during SARS-CoV-2 (COVID-19) pandemic.

In a study investigating the medication changes among older adults during the COVID-19 pandemic, it was reported that only a small percentage (2.7%) reported any changes to medications during the pandemic unlike the findings in our study. The majority of reported changes involved starting new medications which included mostly use of new vitamins and supplements similar to our results. In a study conducted in Togo, where SM was high, vitamin C was used mostly for SM to prevent COVID-19 similar to our study.²⁶ WHO does not recommend self-medication with any medicines as a form of prevention or management of COVID-19.²⁷ Since vitamins or nutraceuticals have been promoted to prevent or treat disease for decades, increased use of vitamins and supplements is actually an expected finding. Many conventional prescription and over-the-counter medications, dietary supplements, and vitamins have been discussed as preventative or curative options for COVID-19. The effectiveness of vitamin C or D has been reported in the management of COVID-19 in several studies. It was reported that in the high-dose vitamin C group, clinical improvement was better for patients ≤ 60 years old than others but there are insufficient data to recommend either for or against the use of vitamin C for the treatment of COVID-19.²⁸ It has been hypothesized that vitamin D supplementation may reduce the incidence of influenza and COVID-19 and the risk of death. However, it should be investigated in trials to determine appropriate doses, serum 25-hydroxy vitamin D (25-(OH)D) concentrations and the presence of any safety issues.²⁹ However, it is also important to note that high doses of vitamins C may cause side effects, most specifically an increased risk of kidney stones. Heavy doses of vitamin D due to misuse of over the counter supplements to hypercalcemia and imbalance in the regulation of bone metabolism.³⁰

The older people should be informed that SM is an incorrect approach to prevent COVID-19. Increasing the awareness of the older people about rational drug use will enable them to be more careful about SM. Given the high prevalence of SM, it seems necessary to design and implement educational programs to increase the perceived risk of SM.

This study deals with self medication in the older people, which is one of the important public health problems. However, the study had some limitations too. It was conducted in only one province of İstanbul, one of the most important big cities of Turkey. The participants of the study were only among

those who were requesting COVID-19 vaccination and as the working period is in the cold season, the elderly may be hesitant to leave their homes. We only evaluated modern medicines that did not include traditional medicine practices. The data of this study is insufficient to represent the society and causal relationship cannot be established since it is a descriptive study.

CONFLICTS OF INTEREST

None of the authors have any conflict of interest to report.

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AUTHOR CONTRUBITION

Hatice Ikiisik: Conceptualization, Methodology, Software, Writing- Reviewing and Editing, Original draft preparation; Elif Oguz: Conceptualization, Methodology, Writing- Reviewing and Editing, Supervision, Original draft preparation; Mehmet Akif Sezerol: Data curation, Visualization, Investigation; Yusuf Taşçı: Data curation, Visualization, Investigation

AVAILABILITY OF DATA AND MATERIAL

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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