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# Utilization of elderly health promotion services during COVID 19 in Iran: A cross-sectional study

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## Abstract:

**BACKGROUND:** The outbreak of COVID-19 pandemic has made it difficult for older adults to utilize ordinary elder services. This cross-sectional study investigated the status of feeling the need, seek, and utilization of health promotion services among older adults in Ardabil, Iran, covered by the country's comprehensive health system during the pandemic.

**MATERIALS AND METHODS:** This descriptive-analytical and cross-sectional study was conducted on 739 elderly people in Ardabil province. Cluster random sampling method was used for sampling. Data were gathered by referring trained individuals to the place of residence of the selected older adults. Questionnaires consisted of three parts: demographic information, household's economic status, and feeling the need, seek, and utilization from health promotion services. Multivariate logistic regression was used to separately model the need, seeking for, and utilization of health promotion services in STATA ver. 14.

**RESULTS:** The mean age of the older adults in this study was  $68.88 \pm 4.72$  years. The results indicate that men showed significantly greater need, seek for, and utilization of health promotion services during COVID-19 than women. According to the results, people over the age of 80 had 4.08 times (95% confidence interval [CI]: 1.99–12.60) more need and utilization of health services than the older adults under 65 years. The results also indicate that use of health promotion services was significantly associated with being married (3.74, 95% CI: 1.22–2.62), having primary insurance and supplementary insurance (1.92, 95% CI: 1.21–3.12), and obesity (2.05, 95% CI: 1.13–3.76) in  $P < 0.05$  level. Based on the results, people with chronic disease and obesity were more likely to utilize health promotion services.

**CONCLUSION:** Findings suggest that the access and utilization of inpatient and outpatient health services by the elderly in the COVID-19 pandemic has somewhat decreased, which could be due to the fear of the disease being referred to health centers by the elderly. Hence, enabling conditions such as parental health care were major factors affecting health-seeking habits among the Iranian elder population.

## Keywords:

COVID-19 (severe acute respiratory syndrome-coronavirus-2), health services, older adults, utilization evaluation

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## Introduction

Iran, as the rest of the world, is facing an outbreak of the new coronavirus disease, COVID-19, wherein the World Health Organization has declared this outbreak as a global health emergency.<sup>[1]</sup> In Iran, out of 1.48

million individuals infected by COVID-19, 76.6% were in the age group over 60 years, which is defined as older adults. As of today, about 58 thousand people lost their lives in Iran due to COVID-19, out of which 93.3% were older adults.<sup>[2,3]</sup>

The world's older people are growing, where in 2015, about 900 million of the

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world's population (about 12%) were 60 and above years old, and this number is expected to reach above two billion people (about 22%) by 2050.<sup>[4]</sup> In Iran, according to the census of the Statistics Center in 2016, about 7.4 million people (about 9.3%) were older adults, and it is predicted that this percentage will exceed 10% by 2050.<sup>[5,6]</sup> The increased older people is one of the most important economic, social, and health challenges, especially for health-care providers.<sup>[7]</sup>

Aging is linked to multiple chronic conditions.<sup>[8]</sup> Growing age is an independent risk factor for cardiovascular disease (CVD), respiratory disease, diabetes, hypertension, and so forth.<sup>[9]</sup> As a study in Iran, the health problems in older adults such as musculoskeletal and CVDs have increased the demand for health services in this group.<sup>[10]</sup> Hence, health-care providers and policymakers have a responsibility to take national action and direct more resources to support the aging population.<sup>[11]</sup>

One of the dimensions of equity in health is widely related to the utilization or use of health services because fair access of all members of society to health services promotes health status for various activities and creates a right atmosphere for the growth and development of the country.<sup>[12]</sup> The utilization of health services is affected by the feeling of need, seeking care (referring to health service providers to receive services), and access to health services.<sup>[13]</sup> Therefore, the study of the utilization services for different parts of society in general and the older adults in particular is very important due to the growing demand for such services during COVID-19.<sup>[14,15]</sup> Globally, the highest death rate from COVID-19 was reported for older adults and those with an underlying chronic disease.<sup>[16,17]</sup> Older people due to a weak immune system are considered to be more susceptible to this new infectious disease.<sup>[18]</sup> Unfortunately, infectious diseases are serious in older adults and then, the death rate is higher for them, especially for those with at least one underlying chronic disease.<sup>[19]</sup> Hence, by examining the status of the older adults' utilization health services, a clear picture of need, demand, benefits, and obstacles in the path of demand and health service utilization (HSU) for this group of population can be obtained.<sup>[20]</sup> Based on the several studies, COVID-19 pandemic significantly affected patients' care seeking and utilization.<sup>[21]</sup>

In the older adult population, the need to receive health services grows due to the deterioration of health and increasing the likelihood of having several chronic diseases at the same time.<sup>[22]</sup> With the increase of the older adult population in Iran, COVID-19 epidemic could be one of the factors influencing the access of older adults to health services.<sup>[7]</sup> Understanding the state of feeling the

need, seek, and utilization of health services in the older adults during COVID-19 pandemic can provide valuable information to managers and s of the health system. These information can be considered in health system reforms and future planning and as a basis for future decisions and policies.<sup>[23]</sup> On this basis, the present study was designed to examine the state of feeling the need, seek, and utilization of health services during COVID-19 pandemic among Iranian older adult population to determine the factors affecting them during this period.

## Materials and Methods

### Study design and setting

This study was a descriptive-analytical and cross-sectional, which was conducted in 2020. The statistical population of this study consisted of older adults (people over 60 years old) in Ardabil. Ardabil has about 529,374 people, where 49.1% of the population is female, and about 8.02% (about 43 thousand people) are over 60 years old, who known as the older adults.<sup>[24]</sup>

### Study participants and sampling

The sample size was determined using  $P = 50\%$  (HSU),  $d = 0.035$  (accuracy), and  $\alpha = 0.05$  (Type I error). The sample size was about 780, which was reduced to 739 people at the final stage of analysis after the drop out of incomplete questionnaires.

$$n = \frac{z_{1-\alpha/2}^2 p(1-p)}{d^2} = \frac{0.961}{0.00123} \cong 780$$

Multistage sampling method was used to select the sample. Sampling was completed in two stages. First stage: a random selection of clusters in which twenty centers were randomly selected from 48 comprehensive urban health enters of Ardabil City as the distinct geographic areas. The comprehensive urban health center is known as the primary health-care program providers where each center serves basic health services of a population of about 12,500 people.<sup>[25]</sup> Second stage: A random selection of old populations within clusters. In stage two, older adults were randomly selected using their electronic document number covered by each comprehensive urban health center.

### Data collection tools and techniques

Data were gathered by trained individuals, who trained for well communication with old people and filling the questionnaires. They referred to the place of residence of the selected older adults and gathered data directly. Participants were those who showed a willingness to participate in the study and had appropriate mental powers. Before completing the questionnaire, the purpose of researching individuals was explained and

the participants were assured that the questionnaire's information would remain completely confidential. In case of unwillingness or absence of the older adults to respond and participate in the study, another older adult's person was randomly selected from the list of the older adults in the same center, and sampling continued until reaching the specified number.

Feeling of need, seeking for health-care services, and utilization of health services were each considered separately as dependent (and binary) variables in this study in terms of health promotion services. The questionnaire consisted of three parts: demographic information including age (60 to over 80 years), sex (male/female), occupation (retired, employed, and unemployed or housewife), education (illiterate to university education), head of family (yes/no), family size (one to six and above), marital status (single/has a spouse), type of primary insurance (no insurance to aid committee insurance), supplementary insurance status (yes/no), chronic disease (yes/no), and body mass index (underweight to obese). The second part included the household's economic status, and the third part included questions related to feeling the need for outpatient and inpatient services, seeking for outpatient and inpatient services, and utilization from outpatient and inpatient services. The required information on the main variables was extracted through the self-reported HSU Questionnaire, a valid and reliable questionnaire designed by the National Institutes of Health Research.<sup>[26]</sup> It should be noted that the reminder period was considered for outpatient services (yes/no) including referrals to clinics, offices, paraclinical, health centers (last month), and for inpatient services including referrals and hospitalizations (last year).

### Data analysis

Descriptive statistics (frequency and percent) was used to demonstrate the proportion of the variables. Chi-square and Fisher's exact tests were used to compare men and women in terms of utilization of health-care services. The result was dichotomized into not using health-care services and feeling, seeking, and utilization of health-care services separately. Multivariate logistic regression test was used to analyze the data where using health promotion services were defined as dependent variables (as a binary variable) and sociodemographic factors were defined as independent variables in the models. Statistical tests were performed using Stata software, version 14.0.0 (StataCorp, College Station, TX, USA). All graphs were designed by GraphPad Prism 8.

### Ethical consideration

All the experiments' protocol for using human's data was confirmed in accordance to guidelines of national/international/institutional or Declaration of Helsinki

in the manuscript. This study has approved by the ethical committee of Ardabil University of Medical Sciences (ARUMS) with code IR.ARUMS.REC.1398.425. All participants signed informed consent.

## Results

According to Table 1, a total of 739 people entered to the study, out of which 381 (51.5%) were women. The results showed that the mean age of the older adults participating in the present study was  $68.88 \pm 4.72$  years and the highest frequency belonged to the age group of 60–64 years. According to the results, the average age of women was higher than men. Most of the participants (601 persons, 81.39%) had a spouse and 385 (52.12%) of them were often considered older adult retirees with a salary. The highest frequency of participants (244, 33.02%) belonged to the older adults whose family size was 3 people and 214 (28.9%) of the participants was illiterate and more than 53% (396 participants) of the older adults had supplementary insurance and about 40.2% (297 participants) had at least one chronic disease. Furthermore, the prevalence of overweight and obesity as well as chronic disease was higher among women than men.

One of the important results of the present study was the data acquired from the comparison of older adult men and women in terms of feeling the need, seek, and utilization of inpatient and outpatient health-care services and health promotion services during COVID-19 pandemic. The outpatient reminder period was considered 1 month ago and the inpatient reminder period was 1 year ago. As per results, men showed a significantly greater need for outpatient and inpatient services ( $P < 0.001$ ) during COVID-19 pandemic. There was also a significant difference in terms of seeking and utilization of outpatient and inpatient services among older adult men and women ( $P < 0.05$ ). The comparative results obtained for older adult men and women in terms of access to health promotion services are presented in Figure 1.

The results of Table 2 using multivariate logistic regression show the factors affecting the feeling of need, seek, and utilization of inpatient and outpatient health-care and health promotion services during COVID-19 pandemic. According to the results, the feeling of need and also utilization of outpatient and inpatient services was significantly increased with age. People over the age of 80 had 1.98 times (95% CI: 1.22–2.62) more feeling of need and 4.08 times (95% CI: 1.99–12.60) more need and utilization than the older adults under 65. According to the results, men felt the need, seek, and utilization from more health promotion services compared to women ( $P < 0.001$ ) during COVID-19 pandemic. Older adult people who had a spouse compared to single older

**Table 1: Sociodemographic characteristics of study participants (n=739)**

	Men (n=358), n (%)	Women (n=381), n (%)	Total, n (%)
<b>Age categories</b>			
60-64	106 (29.72)	127 (33.25)	233 (31.52)
65-69	81 (22.50)	90 (23.72)	171 (23.13)
70-74	63 (17.53)	65 (17.14)	128 (17.33)
75-79	47 (13.03)	45 (11.77)	92 (12.39)
>80	62 (17.23)	54 (14.12)	116 (15.64)
<b>Marital status</b>			
Single	31 (8.65)	107 (28.08)	138 (18.62)
Has a spouse	327 (91.35)	274 (71.92)	601 (81.39)
<b>Job</b>			
Retired with salary	221 (61.73)	79 (20.73)	385 (52.12)
Employed	73 (20.39)	43 (11.29)	113 (15.29)
Unemployed/housewife	64 (17.88)	259 (67.98)	241 (32.59)
<b>Head of family</b>			
Yes	286 (79.78)	56 (14.72)	342 (46.24)
No	72 (20.22)	325 (85.28)	397 (53.76)
<b>Family number</b>			
One	31 (8.66)	107 (28.08)	138 (18.67)
Two	114 (31.84)	91 (23.88)	205 (27.74)
Three	127 (35.47)	117 (30.71)	244 (33.02)
Four	56 (15.64)	50 (13.12)	106 (14.34)
Five	14 (3.91)	7 (1.84)	21 (2.84)
Six and above	16 (4.47)	9 (2.36)	25 (3.38)
<b>Education</b>			
Illiterate	93 (25.98)	121 (31.65)	214 (28.9)
Primary	42 (11.73)	57 (14.97)	99 (13.4)
Secondary	162 (45.25)	174 (45.79)	336 (45.53)
University	61 (17.04)	29 (7.59)	90 (12.17)
<b>Primary insurance</b>			
Nonrural health services	151 (42.18)	157 (41.09)	308 (41.62)
Social security	103 (28.77)	190 (49.81)	293 (39.62)
Armed forces	77 (21.51)	10 (2.74)	87 (11.83)
Aid committee	15 (4.19)	16 (4.27)	31 (4.23)
Other	12 (3.35)	8 (2.09)	20 (2.7)
<b>Complementary insurance</b>			
Yes	201 (56.15)	195 (51.25)	396 (53.62)
No	157 (43.85)	186 (48.75)	343 (46.38)
<b>Have chronic disease</b>			
Yes	113 (31.56)	184 (48.35)	297 (40.22)
No	245 (68.44)	197 (51.65)	442 (59.78)
<b>BMI</b>			
Underweight	14 (3.91)	1 (0.26)	15 (2.03)
Normal weight	161 (44.97)	34 (8.85)	195 (26.35)
Overweight	137 (38.27)	213 (55.98)	350 (47.4)
Obesity	46 (12.85)	133 (34.90)	179 (24.22)

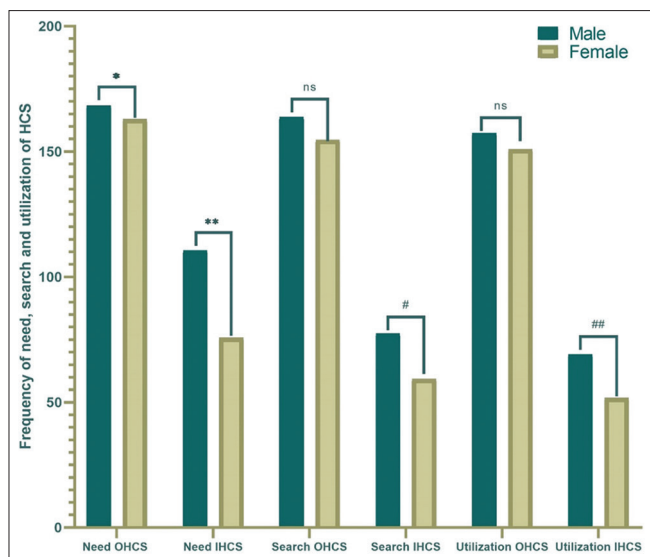
n=Number, NCDs=Noncommunicable diseases, CVDs=Cardiovascular diseases, BMI=Body mass index

adults had feeling the need (2.02, 95% CI: 1.22–2.62), seek (1.21, 95% CI: 1.22–2.62), and utilization of services (3.74, 95% CI: 1.22–2.62) more outpatient and inpatient health care. One of the factors affecting the feeling of need, seek, and utilization of services was supplementary insurance, so that people with supplementary insurance felt 4.11 times (95% CI: 1.42–8.16), 3.22 times (95% CI: 1.61–5.20), and 1.92 times (95% CI: 1.21–3.12) more need, seek, and utilization of health services, respectively, than people

without supplementary insurance. As per results, people with chronic disease and obesity were more likely to seek health-care services and utilization more than people without underlying disease and with normal weight ( $P < 0.05$ ) during COVID-19 pandemic.

## Discussion

The findings of this study provide important information



**Figure 1:** The comparative results obtained for older adult men and women in terms of access to health promotion services, where there were men significantly had higher \*: Need to outpatient health-care services ( $P = 0.028$ ) and \*\*: Inpatients health-care services ( $P = 0.001$ ) and #: Searched significantly higher than women for IHCS ( $P = 0.041$ ) and ##: Utilized significantly more than women from IHCS ( $P = 0.002$ )

on the utilization of health promotion services among older adult men and women in Ardabil during the COVID-19 pandemic. Men felt significantly more need for outpatient and inpatient services than women. There were also significant differences in terms of seeking and utilization of outpatient and inpatient services among older adult men and women. Specifically, more men than women visited doctors. The incidence rate of COVID-19 was higher among men than women in Ardabil, as in other parts of the world, which could be one of the reasons for the seeking and feeling of more need of men for health services during COVID-19,<sup>[2]</sup> although various studies have shown that older men have received higher levels of health services than women.<sup>[27,28]</sup> In a study conducted by Park on the health status and utilization of health services by the older adults in Korea, the older women generally had worse health conditions and older people with chronic illnesses reported poor health conditions. Likewise, the older adults above 80 years old and those who reported poor health conditions utilized more health services.<sup>[29]</sup> Fear of hospitalization and fear of contamination of medical facilities could be two important factors of not seeking for health services in older adult women in Ardabil compared to men. Due to the pandemic COVID-19, in some cases, older adult women self-medicated themselves.<sup>[30]</sup>

With age, the feeling of need as well as the utilization of outpatient and inpatient services was significantly increased. The results of this study were in line with other researches, which showed that more than half of the older adults utilize health services.<sup>[31,32]</sup> Age is

a significant explanatory variable, which deteriorates health status and increases the feeling of need as well as access to health services.<sup>[33,34]</sup> During the COVID-19 epidemic in Ardabil, it was also shown that the use of health services was increased with age. This might be due to the fact that COVID-19 disease in older adults is more severe due to vulnerability and physical weakness and the need to use more health services. The incidence of COVID-19 was significantly higher among the older adults above 60 years old because this group of the population suffers various underlying diseases, which are risk factors for COVID-19 infection.<sup>[35,36]</sup>

This study showed that being married affects the feeling of need and use of health-care services. Some other studies also showed that married people utilize health services more than single people.<sup>[37,38]</sup> This could be associated with the higher life expectancy of married couples than single people, wherein the older adults with a spouse have a longer life expectancy and a lower disease rate than single adults.<sup>[39]</sup>

Having a chronic disease also affected the feel of need and use of health-care services. The frequency of chronic diseases among the older adults has led to increased use of health services, which is clearly due to the need for more health services of older adults. Zhang *et al.* studied on patients with COVID-19 in China, which showed that older patients (>60 years of age) and those with chronic conditions were vulnerable to a moderate-to-serious state of COVID-19 and death.<sup>[40]</sup> In the study conducted by Kavosi *et al.*, the use of health services by people above 65 years old or people with diseases has been reported more than others, which is consistent with the results of the present study.<sup>[41]</sup> In addition, the studies conducted in Brazil<sup>[42]</sup> and Canada<sup>[43]</sup> showed that the rate of utilization of health services was higher among older people and people with chronic diseases and mobility limitations, which is along with the results of the present study. The severe acute respiratory syndrome coronavirus-2 pandemic has a mile's better mortality fee in older adults, and older adults who have sure comorbidities with chronic diseases.<sup>[44]</sup> Therefore, more use of health services in the elderly during the COVID-19 pandemic can be further attributed to the discussion of the high prevalence of chronic underlying diseases in this age group and their risk due to poor physical immunity. Raveendran and Jayadevan suggested the use of reverse quarantine for the elderly because reverse quarantine is a promising public fitness degree to lessen the morbidity and mortality related to COVID-19 in vulnerable people.<sup>[45]</sup> It should also be noted that this group also had a high rate of health service use before the COVID-19 pandemic.

Having supplemental insurance had a positive effect on the utilization of health services and people with health

**Table 2: Multivariable logistic regression model predicting feeling the need, seek, and utilization of health services (inpatient/outpatient) by the older adults in Ardabil province**

	Feeling the need		Seek for health services		Utilization of health services	
	OR	95% CI	OR	95% CI	OR	95% CI
<b>Age categories</b>						
60-64 (ref.)	-	-	-	-	-	-
65-69	1.11	0.98-1.76	1.06	0.64-1.88	1.25	0.86-2.11
70-74	1.78	0.96-2.11	1.31	0.71-3.15	1.62*	1.02-2.72
75-79	2.01*	1.12-2.41	0.98	0.42-3.22	3.27**	1.62-4.74
>80	1.98*	1.22-2.62	1.14	0.79-2.14	4.08**	1.99-12.6
<b>Sex</b>						
Female (ref.)	-	-	-	-	-	-
Male	3.95**	1.25-6.72	6.21**	2.17-9.62	2.16*	1.45-5.01
<b>Marital status</b>						
Single (ref.)	-	-	-	-	-	-
Has a spouse	2.02*	1.30-4.31	1.21*	0.87-3.03	3.74**	1.16-7.01
<b>Job</b>						
Unemployed/ housewife (ref.)	-	-	-	-	-	-
Retired with salary	2.05*	1.06-2.91	2.55*	1.15-4.02	1.24*	0.86-2.09
Employed	1.05	0.63-1.91	0.97	0.59-2.61	1.53	0.94-2.76
<b>Head of family</b>						
Yes	1.06	0.71-1.68	1.16	0.88-2.14	1.64*	1.04-3.19
No (ref.)	-	-	-	-	-	-
<b>Family number</b>						
One (ref.)	-	-	-	-	-	-
Two	1.78*	1.06-3.17	1.45*	1.01-1.99	1.68*	1.12-3.01
Three	1.15	0.86-2.11	1.62	0.91-2.45	1.41*	1.03-1.89
Four	1.43	0.69-2.91	1.18	0.83-2.16	1.33	0.83-2.61
Five	1.08	0.93-2.15	0.87	0.41-2.74	1.10	0.67-2.03
Six and above	0.96	0.63-1.79	1.08	0.67-4.01	1.08	0.61-4.12
<b>Education</b>						
Illiterate (ref.)	-	-	-	-	-	-
Primary	0.98	0.59-1.66	0.81	0.60-1.63	1.06	0.61-1.75
Secondary	1.31	0.91-2.17	1.16	0.71-2.25	1.44*	1.02-2.90
University	1.80*	1.12-3.03	2.05**	1.17-3.78	2.78**	1.45-4.11
<b>Primary insurance</b>						
No insurance (ref.)	-	-	-	-	-	-
Nonrural health insurance	1.54	0.59-3.16	1.36*	1.02-1.94	1.70*	1.11-3.61
Social security	1.79*	1.12-3.62	1.95*	1.18-3.44	1.66*	1.09-4.20
Armed forces	2.13*	1.24-5.70	2.16**	1.14-4.03	2.15**	1.11-3.67
Aid committee	1.31*	0.90-2.18	1.41	0.88-2.16	1.52*	1.01-2.79
<b>Complementary insurance</b>						
Yes	4.11**	1.42-8.16	3.22**	1.61-5.20	1.92*	1.21-3.12
No (ref.)	-	-	-	-	-	-
<b>Have chronic disease</b>						
Yes	2.72*	1.16-3.65	1.53*	1.05-2.96	3.11**	1.34-6.01
No (ref.)	-	-	-	-	-	-
<b>BMI</b>						
Underweight	0.83	0.48-1.90	1.12	0.67-2.09	1.13	0.74-2.23
Normal weight (ref.)	-	-	-	-	-	-
Overweight	1.42	0.89-2.14	1.25	0.84-2.13	1.36	0.91-2.79
Obesity	3.15**	1.74-6.27	2.82*	1.20-4.18	2.05*	1.13-3.76

\*P<0.05, \*\*P<0.01. OR=Odds ratio, CI=Confidence interval, BMI=Body mass index, Ref.=Reference group

insurance have used the services more. The fact that people covered by supplementary insurance are more likely to use outpatient care is an important finding.

This observation is consistent with other studies.<sup>[46]</sup> The reason is that access to services is increased with health insurance. Household income has also been one of the

most effective variables with a positive effect on the use of hospital and outpatient services. Wagstaff *et al.* showed that the implementation of the health insurance program and treatment in Vietnam has led to an increase in the use of outpatient and inpatient services in people covered by health insurance.<sup>[47]</sup> Arroyave *et al.* also showed that the implementation of a health insurance program could increase the use of health-care services among the poor and uninsured in Colombia.<sup>[48]</sup> Harmon and Nalon also showed that the probability of using and utilizing from inpatient services among the insured individuals was 3% higher than those without insurance coverage.<sup>[49,50]</sup> Health insurance plays a very important role in terms of public health, especially during illness, so the needs of the community for health services are met and the financial budget can be guaranteed. In COVID-19 pandemic, most of the older adults who had supplementary insurance used more private offices and medical centers that were not corona centers.<sup>[51]</sup>

Although population aging is a global phenomenon and is not specific to a particular geographic region or country, the rate of aging and the planning to deal with it vary from region to region. Population aging is one of the most important challenges of the 21<sup>st</sup> century. Aging, if not controlled and planned for, becomes a serious challenge for governments. However, this can be managed by modifying the function of service delivery based on studies of service use and implementation of empowerment programs in older adults. Older adults are at high risk for infectious diseases, especially COVID-19, due to their weak immune systems and are often at the risk for chronic underlying diseases. Therefore, older people are more in need of health services. As a result, the type of referrals and diseases of which the older adults are most often referred is important. Those in charge of health should put this phenomenon on the agenda and provide conditions for better and more use of specialized doctors by the older adults through planning and adopting the necessary policies.

In the current study, such limitations appear to merit attention. First, this is a cross-sectional study in which it is not possible to make causal interpretations. Second, we used a correlational structure, thus restricting our ability to prove causal relationships. Finally, only a small proportion of the variation of the dependent variable – interaction with health-care practitioners – was explained by the variables analyzed in our investigation. In order to better understand the dynamics of interaction with health-care utilization during COVID-19 among older adult population, the need to incorporate additional variables is suggested for future research.

### Limitations and recommendation

The present study had several limitations. The main limitation of the present study was co-occurrence of

study data collection with the COVID-19 epidemic and the possibility of changing the pattern of service demand by the older people. It is suggested that according to the epidemic of COVID-19 and the possibility of continuing this disease for several years, an electronic database for recording information of the elderly during COVID-19 should be designed and implemented in accordance with the needs and structure of the health system of each country. Furthermore, the lack of segregation of inpatient services could be another limitation of the present study, which was largely impossible due to the COVID-19 epidemic. Also, due to the differences in health services provided to the elder population by health systems and the type of insurance in different countries, the results of this study should be generalized with caution.

### Conclusion

The present study showed that the access and utilization of inpatient and outpatient health services by the elderly in the COVID-19 pandemic has somewhat decreased, which could be due to the fear of the disease being referred to health centers by the elderly as well as the allocation of the major part of the health system, in particular hospital clinical wards and primary health centers, to COVID-19. The present study showed that the feeling of need, seek, and utilization of health promotion services in the older adults during COVID-19 was high for various reasons, including the direct relationship between older age, male gender, and having an underlying disease with COVID-19. Moreover, the need for health promotion services was high and financial variables had less effects on the use of these services. Enabling conditions such as parental health care were major factors affecting health-seeking habits.

Considering the heterogeneity of older adults, the results of this study indicated that in countries such as Iran, where the prevalence of COVID-19 is higher, reverse isolation for the elderly could be an effective policy to reduce the incidence and mortality rate among them.

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## Conflicts of interest

There are no conflicts of interest.

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