Outpatient health service utilization and associated factors: A cross-sectional population-based study in Tehran in 2019

Neda SoleimanvandiAzar[1,2], Seyed Hossein Mohaqeqi Kamal[3], Homeira Sajjadi[3], Hossein Malekafzali Ardakani[4], Ameneh Setareh Forouzan[3], Salah Eddin Karimi[5], Gholamreza Ghaedamini Harouni*[3] (ID)

Abstract
 Background: Health service utilization (HSU) is a significant health and political issue. Awareness of factors that affect HSU and the status of health service utilization can help health professionals improve their services. The aim of this study was to investigate the status of HSU and identify the factors affecting health service utilization among households residing in Tehran.

 Methods: The present cross-sectional study included 1200 residing households from different regions of Tehran, the capital of Iran. They were selected by a multi-stage cluster sampling method in accordance with the zoning of Tehran concerning socio-economic development. Interviews were conducted by trained individuals using a health service utilization questionnaire introduced by the World Health Organization, Zimet's social support questionnaire, and demographic checklist during winter 2018 and spring 2019. Simple and multiple logistic regression models were applied to analyze the data. In order to include the factors related to the status of outpatient health service utilization, a set of bivariate analyses was conducted, and then the factors with a p-value of ≤0.20 were included in the multiple models. Data were analyzed using Stata 12 software.

 Results: The results of the study indicated that the rate of outpatient HSU among households residing in Tehran was 63.61% (CI:60, 66.80). In addition, regarding the results of the study, asset index of family (OR=0.51, 95% CI: 0.28, 0.91), the level of awareness and knowledge of family members regarding health issues (OR=0.55, 95% CI: 0.34, 0.88) as well as the mother knowledge on health issues (OR=0.64 , 95% CI: 0.45, 0.93), the level of social support (OR = 0.50, 95% CI: 0.37,0.68), family health expenditure (OR=1.20, 95% CI: 1.18, 4.06), having a member with a sort of disability in family (OR=1.66, 95% CI: 1.01, 2.77), and having an alcoholic member in family (OR=2.44, 95% CI: 1.27, 4.68) were factors associated with outpatient HSU among households. Considering the adjusted values of odds ratios, the prevalence of the HSU varied according to the area of residence. It should be noted that the variables included in the model explained 15% of the changes in the prevalence of HSU.

 Conclusion: According to the results of the study and in order to increase HSU in different classes, the level of social support, especially among women in the family due to their role in the general health of family members, should be enhanced. Also, policies should be adopted to increase the awareness, knowledge, and information of family members about health issues, lifestyle changes, nutrition, and health behaviors through social media.

 Keywords: Outpatient, Health service utilization, Household, Tehran

Introduction
Health is an important factor for the development of so-cieties, and investment in this section can have an indis-

Corresponding author: Dr Gholamreza Ghaedamini Harouni, Ghaedamini @uswr.ac.ir

1. Department of Social Welfare Management, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2. Preventive Medicine and Public Health Research Center, Psychosocial Health Research Institute, Iran University of Medical Sciences, Tehran, Iran
3. Social Welfare Management Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
4. Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
5. Social Determinants of Health Research Center, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran

↑What is "already known" in this topic:
In previous studies, not receiving health services after a referral was only recognized as non-utilization. They have used secondary data using urban HEART data or the National Survey of Health Service Utilization and addressed only a few factors at the individual level.

→What this article adds:
In the present study, health service utilization was measured by a new definition. This study also considered non-referral for service as non-utilization, and the unit of analysis was on the household level. We used both measuring rates of utilization and related factors based on the Anderson's model.

putable effect on the welfare of the people and the economic growth of the country (1, 2). One of the indispensable indicators in evaluating the efficacy of the health care system, especially in low- and middle-income countries, is the prevalence of health service utilization (HSU) (3, 4). As a human right, HSU is one of the most important mechanisms of the health system and a significant determinant of health (5). However, the level of HSU in many countries is not satisfactory (1), and even in countries with a National Health Service system, which provide public coverage, there are differences in the provision of health services for different groups of society (3, 4). HSU is defined as the consequence of the interaction between health professionals and people in need (6). In other words, HSU is the point in health systems where individuals' needs are met by health professionals (7). Equitable utilization of health services can decrease the occurrence, progression, and exacerbation of the disease among individuals and can also prevent socio-economic deterioration of individuals. It can also contribute to the well-being, quality of life, welfare, growth, and development of society (2). Lack and inequality in HSU may lead to unconventional patterns of service use and increase mortality, disease risk, and burden of disease (8), and have an irreversible effect on health among individuals especially among the vulnerable and disadvantaged people (3, 4, 9, 10). Therefore, studies on HSU and identification of the related factors are really significant in the health system. A better understanding of what factors lead to HSU is also very important for a systematic evaluation of the policies concerning HSU in the health system (11). The reasons behind why HSU patterns vary among people have been the subject of several studies for decades. Different theoretical models of HSU have been proposed to identify and understand variables, factors affecting HSU and their impact on it (11). To explain this process, most studies apply Anderson's behavioral model of health service utilization (BM) (11-19), as this BM model provides a convenient theoretical framework for identifying HSU-related factors and explaining why people use health services (11, 20). This model divides HSU explanatory factors into three categories: predisposing factors (demographic characteristics providing conditions or readiness to increase the likelihood of using health services), enabling factors (factors impeding or facilitating HSU), and need factors (need for health services, as an understanding of changes in a person's health status that include two subcategories of perceived, needs to receive health services (mentally assessed health status by individual himself/herself, that is, how people view and experience their general health, functional status, symptoms of illness) and evaluated needs assessed by a health care providers (i.e., specialized and professional assessments, and tangible measurements of health status)) (1,7, 9-15, 21-25). The relative impact and significance of each of these factors on HSU are influenced by the cultural background, health policies, and health system in each society (5).

On the other hand, knowledge of HSU factors and determinants helps stakeholders and policymakers have a comprehensive picture of the several variables affecting HSU. Identifying these factors can predict HSU, surmise the future demand for health services in different populations (2, 26), assess HSU inequalities in different groups of people, especially vulnerable groups, and evaluate health resources and macroeconomic policies in this regard accurately (9, 10, 27, 28). In addition, health policymakers can ascertain potential problems and relevant solutions and also identify priorities to preserve and enhance health in the population through the results of such studies (9, 10, 29).

To the best of our knowledge, the studies in the field of HSU in Iran and Tehran have been relatively few. In a way, each study has addressed only a number of related factors. In this regard, the latest studies on HSU in Tehran conducted in 2012 by Rezapour et al. (30) and in 2011 by Nooraiee Motlagh et al. (9) in the form of secondary analysis using urban HEART data, in which the prevalence of HSU in this study was reported to be 40.70% (9, 29). Most of the previous studies in Iran have applied second-hand data from the National Survey of Health Service Utilization as a secondary analysis. Also, the unit of analysis of these studies was individual. Moreover, these studies have focused on one or more specific related factors. Therefore, in the present study, along with obviating these shortcomings, it is attempted to provide a new definition of utilization and to design and carry out a cross-sectional study accordingly. This study also considered non-referral for service as non-utilization, while, in previous studies, not receiving service after the referral was only recognized as non-utilization. According to the above cases, the present study was performed to analyze the prevalence of outpatient health service utilization and associated factors in households residing in Tehran during the month before the interview.

Methods
Study Design
This is a cross-sectional study in which the statistical population included all households living in 22 municipal districts (368 neighborhoods) of Tehran during the period of winter 2018 to spring 2019.

Sampling
According to the information obtained from the study of Nooraiee Motlagh et al. (9) in Tehran (2011) who reported a health service utilization of 40%, as well as 95% confidence level ($\alpha=0.05$) and margin of error ($d=0.03$), the sample size was estimated to be 1024 households based on the following formula. To ensure that the number of samples, the final sample size was considered to be 1200 households.

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} P(1-P)}{d^2}$$

The samples were selected using a multi-stage cluster sampling method. For this purpose, first, the city of Tehran was divided into five zones regarding its socio-economic development situation, which were obtained in the study of Mohaqeqi Kamal et al. (31) in Tehran 2019.

Table 1. Sampled regions in each zone

Zone	Selected Regions	Sample Size
Very High level	3,5,6	360
High level	22	180
Middle level	13	132
Low level	10,20	228
Very low level	16,18,19	300

After that, at least one to a maximum of three regions (a total of 10 regions, including regions 3, 6, 5, 22, 13, 10, 20, 16, 18 and 19) were randomly selected from each zone (cluster sampling). The sample size assigned to each zone was determined based on the population share in the included regions (Table 1). From each of the 10 selected regions, two neighborhoods were randomly selected (cluster sampling). The samples were then randomly selected from each neighborhood, and the data were collected.

Data management

The inclusion criteria for study participants were at least one year of residence in Tehran at the time of data collection and the consent to participate in the study. Institutionalized households (such as those living in barracks and boarding houses, nursing homes) and non-Iranian households were excluded from this survey. Due to the role of women in the family and their greater and more knowledge and awareness of the health status of family members, health costs, and health service utilization by family members (24), the woman of the family was selected as an informed and responsible person in this study. Data were collected using a questionnaire of health service utilization and a checklist containing demographic, socioeconomic, and health behavior variables as well as standard social support assessment tools.

Outcome Variable as Health Service Utilization

Outpatient health service utilization in this study means referring to health care centers and receiving outpatient health services provided by medical doctors or other service providers in health centers such as medical doctors' offices, polyclinics, outpatient units of hospitals, health clinics in industrial factories, schools, etc. To measure the status of utilization, the World Health Organization's health service utilization tools (32, 33) were applied, which had previously been used in national studies on health service utilization in Iran (4, 26, 34) and the world (23).

Health service utilization tools measure outpatient health service utilization over the past month through three questions and yes-no answers. The first question concerns the need for health services, the second question investigates the referral status, and the third question inquires the status of receiving the service.

In this study, the status of health service utilization of the household was determined by aggregating the last three needs of the family during the past month. In case a family member has not referred to or referred for at least one health need during the past month but yet has not received a service (i.e., at least one need is not met), it was considered as a health service un-utilization.

Data analysis

According to a study by Mohaqeqi Kamal et al. in 2019 (31), Tehran was divided into 5 zones. Zone 5 had the highest level of socio-economic development and zone 1 had the lowest level of socio-economic development. The household asset index was evaluated through the principal components analysis (PCA) technique and according to household assets such as possessing dishwasher, laptop or tablet, side-by-side refrigerator-freezer, personal car, land, garden, and villa. The z-scores of this index were saved and categorized based on ranging points into three levels of low, medium, and high. Family income: this variable was measured by a question with 5 categories of responses and finally included in the regression model with two levels including; lower than three million and above three million Tomans per month. The percentage of expenditures apportioned from total household expenditures to health services as well as the percentage of out-of-pocket expenditures for health services in the form of two ranked variables with 4 types (0 to 10%, 11 to 20%, 21 to 50% and above 50%) included in the regression model. In addition to these variables, dealing with catastrophic health expenditures, having a person with a chronic disease, a person with a disability, and an alcoholic and smoking member in the family were included in the model with yes and no responses. The awareness of family members as well as the awareness of the mother in the family, regarding health issues in the form of two ranking variables, were determined with answers of very low with code 1 to very high with code 5, and each was examined with a single question and finally were included as two variables in the model with the low, moderate, and high categories. Access to health information via radio-television and internet was included in the model as two variables with yes and no codes. Having basic and supplementary insurance also was included in the model in two variables with yes and no answers. General family health status was evaluated with a single question and ranked with a range of "very bad" responses with code 1 to "very good" with code 6. Finally, each person's response was divided into three categories, with codes 1 to 3 for low, code 4 for moderate health, and codes 5 and 6 for high general health. The level of mother's education as a two-category variable (College education and non-college education) and the age of the mother also were included in the model as a qualitative variable. Also, the status of the respondent's social support (mother of the family) was assessed by using a questionnaire with 12 social support questions introduced by Zimet et al. (35). The questionnaire measures three dimensions of support for the family, friends, and others with a range of responses from 1 (completely disagree) to 7 (completely agree). The higher the respondent's score, the higher the level of social support (36). The validity and reliability of this questionnaire have been confirmed in previous studies (37, 38). Cronbach's alpha coefficient of this questionnaire, in the study by Zimet et al. was reported 0.88 and the correlation coefficient was 0.85 in the re-test (35).

Simple and multiple logistic regression models were

applied to analyze data. In order to include the factors associated with HSU, first, a set of bivariate analyzes were carried out and then the factors with a p-value ≤0.2 were included in the multiple models. Data were analyzed using STATA software version 12.

Results

The demographic characteristics of the study sample, such as duration of residence, family size, age, occupation, and education of the mother of family, family socioeconomic status, and HSU status of the family, are presented in Table 2. Also, in terms of household asset index, it was found that about 21% were in the lower class, 56.50% in the middle class, and 33% in the upper class. In terms of HSU status, 63.61% were utilized, and 36.39% non-utilized.

To analyze the effect of each factor related to the status of utilization, first, a set of bivariate analyses were conducted using simple logistic regression. Finally, all variables with a p-value of ≤ 0.2 were selected as multiple model inputs (Table 3). According to the crude values of the odds ratio, the prevalence of HSU in each of the first (lowest), the second and third development zones of the city of Tehran were 1.90, 4.30, and 2.90 times that of the highest, respectively. There was a relationship between the family asset index and HSU, so that the lower the household asset level, the lower the family HSU (OR=0.51, 95% CI: 0.28, 0.91). There was also a relationship between the level of awareness and knowledge of family members and mother of the family about health issues with HSU, as the lower the level of awareness and knowledge of family members (OR=0.55, 95% CI: 0.34, 0.88) and mother of the family (OR=0.64, 95 % CI: 0.45, 0.93), the lower the household HSU. There was a significant relationship between the level of social support of a mother of the family and HSU, so that the lower the level of social support (OR = 0.50, 95% CI: 0.37,0.68), the household HSU was also lower. Moreover, It was found that the higher the portion of health expenditures on household's total expenditures (OR=1.2, 95% CI: 1.18, 4.06) health service utilization increases. Having a person with a disability (OR=1.66, 95% CI: 1.01, 2.77) and the consumer of alcohol in the family (OR=2.44, 95% CI: 1.27, 4.68) increases HSU levels (Table 3).

According to the results of multiple logistics regression analysis, development zone, family asset index, portion of health expenditures on household's total expenditures, presence of alcohol consumption in the family, and the level of social support of mother of the family are among the factors that simultaneously affect HSU variability (Table 4). According to the adjusted values of odds ratios, health service utilization in each of the first (the lowest), the second (low) and the third (middle) development zones in Tehran are 2.40, 8.30, and 2.50 times that of the highest zone respectively. There was a positive and significant relationship between apportioning more costs to health and HSU so that with the increase of this portion, the prevalence of utilization also increased. The presence of alcohol consumers in the family also increased the outpatient HSU of these families by about 4 times compared to the opposite group. Low household asset index and low level of social support were also factors associated with a decrease in outpatient HSU. In general, the variables included in the full model explained 15% of the HSU prevalence changes. These findings were established by controlling two variables of general health status in the family as well as the length of stay in residence.

Discussion

In this study, we aimed to investigate both the status of HSU in households residing in Tehran and its related factors. The results of the present study showed that the prevalence of outpatient HSU among study participants was 63.61% (CI: 60, 66.80). In addition, based on the results of the study, the family asset index, the portion of health expenditures in total family expenditures, alcohol consumption by a family member, the mother's perceived social support in the family, the level of awareness and knowledge of family members and the mother in the family about health issues, and the presence of a person with a disability in the family affected outpatient HSU.

Table 2. Demographic characteristics and status of outpatient health service utilization in the sample

Variable / category		Mean (SD)
Duration of residence (in years)		17.45 (14.5)
Family Size (persons)		3.18 (1.20)
Mother's age (in years)		49 (13.95)
Mother's job		Percentage (95% CI)
		(N=803)
	Housewife	74.30
	Others	25.70
Mother's educational level:		
	Under diploma	55.41
	Over diploma	44.59
Family Socioeconomic Status:		
	Low	20.73
	Middle	56.41
	High	22.86
Health Service Utilization Status:		
	Utilized	63.61 (60, 66.80)
	Non-utilized	36.39 (33, 39.70)

Table 3. Simple binary logistic regression model results for determining the effect of factors for out-patient health service utilization

Variable (Reference group)	COR[1]	COR (95 % CI)		p
		LB	UB	
Tehran Development Zones (ref: the highest)				
The lowest	1.90	1.28	2.81	0.001
Low	4.38	2.67	7.16	0.001
Middle	2.95	1.72	5.06	0.001
High	0.99	0.63	1.56	0.981
Family Asset Status (ref: High)				
Low	0.51	0.28	0.91	0.024
Middle	0.78	0.47	1.27	0.322
Household Income level (Lower than 3 millions)	1.24	0.91	1.68	0.160
Health Costs (ref: >40%)				
0-10%	1.31	0.92	1.85	0.125
10-20%	1.26	0.85	1.87	0.244
20-40%	1.20	1.18	4.06	0.012
Out of pocket payments (ref: >40%)				
0-10%	1.06	0.69	1.62	0.770
10-20%	1.54	0.95	2.48	0.071
20-40%	1.44	0.99	2.09	0.056
Catastrophic health costs (ref: NO)	0.86	0.64	1.16	0.331
Having a person with a chronic illness in the family (ref: NO)	1.66	0.56	1.02	0.072
Having a person with a disability in the family (ref: NO)	1.66	1.01	2.77	0.049
Smoking by a family member (ref: NO)	1.12	.82	1.52	0.461
Family knowledge about health issues (ref: High)				
Low	0.55	0.34	0.89	0.014
Moderate	1.20	.88	1.64	0.252
Alcohol consumption by a family member (ref: NO)	2.45	1.28	4.68	0.007
Access to health information by radio & TV (ref: NO)	0.74	0.53	1.03	0.077
Access to health information by cyber space (ref: NO)	1.23	0.92	1.65	0.152
Mother's awareness about family's health issues (ref: High)				
Low	0.64	0.45	0.93	0.019
Moderate	1.10	0.77	1.56	0.570
Family Health Status (ref: High)				
Good	1.96	0.96	0.99	0.060
Moderate	1.92	0.93	3.95	0.076
Low Social Support (ref:High)	0.50	0.37	0.68	0.000
Insurance (ref: NO)	1.53	0.88	2.67	0.131
Supplementary insurance (ref:NO)	1.12	0.78	1.63	0.530
Mother's education (ref: High degree)	0.76	0.53	1.09	0.142
Mother's age (yrs.)	0.98	0.97	1.00	0.084

1. Crude Odds Ratio

Table 4. Multiple logistic regression results to analyze the simultaneous effect of determinants affecting HSU in Tehran, Iran

variable	AOR[1]	Se	Z	p	95% CI for AOR	
					LB	UB
Tehran Development Zones (ref: the highest)						
The lowest	2.46	0.88	2.52	0.012	1.22	4.97
Low	8.36	3.75	4.74	0.000	3.47	20.12
Middle	2.55	1.09	2.19	0.028	1.10	5.91
High	1.03	0.37	0.09	0.931	0.51	2.08
Family Asset Status (ref: High)						
Low	0.40	0.16	-2.26	0.024	0.18	0.89
Middle	0.65	0.21	-1.33	0.183	0.35	1.22
Health Costs (ref: >40%)						
0-10%	0.21	0.12	-2.80	0.005	0.07	0.63
10-20%	0.32	0.18	-2.05	0.041	0.10	0.95
20-40%	0.32	0.18	-1.99	0.046	0.11	0.98
Alcohol consumption by a family member (ref: No)	3.89	2.59	2.04	0.041	1.06	14.31
Family Health Status (ref: Bad)						
Good	2.99	1.85	1.77	0.077	0.89	10.03
Moderate	2.71	1.68	1.60	0.109	0.80	9.14
Low Social Support (ref: High)	0.48	0.12	-2.95	0.003	0.29	0.78
High Residential Stability (ref: Lower than 17.44 yrs)	1.30	0.31	1.12	0.262	0.82	2.07

1. Adjusted Odds Ratio

The prevalence of HSU in the present study was different from the two studies which were conducted in Tehran. More specifically, the prevalence of HSU in this study was lower than its prevalence in the study by Pourreza et al. (2008), which focused on the people who were 18 or over 18 and reported that their HSU prevalence was 87.9% (22). However, the HSU prevalence in this study was higher than the HSU prevalence in the households in Tehran (40%), which was reported based on secondary analysis of URBAN HEART data in 2011 (9, 29). We believe that the difference in HSU prevalence may be related to differences in design and time of studies, the defi-

nition of HSU in the studies, and the analysis units of the studies. In the URBAN HEART study, HSU was defined based on a single question about the household's actions to utilize services. In the study by Pourreza et al., HSU was defined as receiving health services in the case of the people who had sought them. Nonetheless, in the present study, according to Anderson's BM model, HSU was defined as the time period since the beginning of the people's feeling of the need to utilize services until the end of their service receiving. Furthermore, in all of the previous studies which were conducted in Tehran, the analysis unit was the individual, but in the present study, the unit of analysis is the household. In addition, our study showed that the status of HSU in this study was slightly better than the HSU status (53.8%) in a study which was conducted in Sanandaj and focused on the women who ranged in age from 18 to 49 (27). This slight difference may be related to the local circumstances and the differences in the demographic characteristics of the studied community. More specifically, Tehran is the capital of the country and is in a better position regarding some health facilities such as: number and distribution of health care centers and physicians. Consequently, access to health care centers is easier in comparison with access to these centers in Sanandaj (39). Moreover, this difference may be related to the cultural differences and the peoples' convictions and beliefs about visiting a doctor based on their feeling of the need to utilize health services. It seems that more studies are needed in this area in order to deal with the issue of equitable distribution of HSU throughout the country.

Based on the Anderson's HSU behavioral model, which was used as a theoretical framework in this study, the factors which were related to HSU were divided into three categories including: predisposing factors, enabling factors, and need factors. One of the predisposing factors in the present study, which was associated with outpatient HSU, was the variable of the awareness and knowledge of family members and the mother of the family about health issues. In this regard, the lower levels of awareness and knowledge of family members and the mother in the family about health issues was associated with lower outpatient HSU prevalence of the household. It seems that the individuals' knowledge and awareness of the health issues had an effect on their: perceived need, recognition of the health care service centers which provided health services, and visits to these centers to utilize the services. In other words, families with low awareness and knowledge about health issues are not able to properly assess their health needs, and may pay less attention to the issue of health and preventive care due to their insufficient knowledge and awareness, moreover, they do not have any information about the appropriate people and places that provide health services, consequently, they are not able to utilize the appropriate services when they need them. Similarly, the findings of a study by Yuan et al. (40), which focused on the people who were 15 years and older, lived in Beijing (China), showed that the individuals' awareness of oral health and hygiene issues was one of the factors which influenced oral HSU.

According to the findings of the present study, the variables of household asset, high portion of health expenditures in total household expenditures, social support, and socioeconomic development of zones as an enabling factors which were associated with outpatient HSU. In this study, the high portion of health expenditures in household expenditures was one of the factors which increased the use of outpatient health services. It seems that the households' out of pockets payments and the portion of health costs in the total family costs increased due to inadequate insurance coverage in regard to health services. The large portion of health expenditures in total household expenditures may stem from a variety of reasons. It may be related to a person's disability or chronic illness, a specific illness in the family, or the cost of dental services or cosmetic services. Moreover, the portion of the treatments cost in the total expenditure of the family may increase due to the low level of family income and their higher needs to receive the treatment.

The findings of the present study showed that the utilization of health services in each of the first (the lowest), the second, and the third socioeconomic development zones in Tehran was 1.90, 4.30 and 2.90 times more than the utilization of these services in the highest socioeconomicaly developed zone, respectively. It means that, the zones, which have not been highly developed, have utilized health care services more than the other zones. This prevalence of HSU does not mean the better health status of this class of people. The high utilization of health care services may stem from the high prevalence of infection and diseases in these areas due to the fact that people are more at risk. Moreover, it may be related to the unhealthy lifestyle of the people who live in the neighborhoods with lower socioeconomic status. In line with the results of our study, Kirby and Kaneda (41) found that living in disadvantaged areas was associated with an increased likelihood of unmet medical needs, even when the individual characteristics were controlled. The asset index of the household was another enabling variable in the present study which was related to HSU. Our study showed that a low family asset index was associated with lower health care utilization. The studies by Limpuangthip et al. (19) and Zhang et al. (42) showed that HSU increased as a result of an increase in the household asset index. Our results are supported by the results of different studies which have reported high outpatient health service utilization in the case of individuals with high socioeconomic status (43-45) or the individuals with a high asset index (34, 46). A study by Hassanzadeh et al. showed that people who were in the first quantile of the household asset index used health services 55% less than the people who belonged to the fifth quantile (34). Moreover, Rezapour et al. showed that the households in the higher quantiles utilized heath care services more than the households of the poorest quantile (quantile one). Furthermore, based on the results of the studies by Homay Rad et al. (47), Fujita et al. (48) and Piovesan (49), the individuals who had higher incomes utilized health services more than the individuals who had lower incomes.

Social support is another enabling factor which is related to HSU. Based on our knowledge, very few studies

have examined the relationship between social support and HSU. In the present study, lower levels of social support led to lower HSU. It seems that the path that extends from the feeling the need to utilize services requires that families have the support of others. The lack of this kind of support, including companionship and emotional or financial support of the people around these individuals makes them less likely to seek to utilize health care services. Moreover, when the level of social support is low, people in the community receive less information on health especially preventive health services through this support network, consequently, they are less likely to visit the health care centers.

In most of the studies, there was a positive and significant relationship between having insurance as one of the enabling factors and HSU (8, 50-53). However, in the present study, there was not a significant relationship between having basic insurance or supplementary insurance and HSU. The lack of a relationship between having basic insurance and HSU in the present study may stem from the fact that most of the examined households (i.e. 89.30%) were covered by at least one of the basic insurance services including: health care, social security, the armed forces insurance, the Imam Khomeini Relief Foundation, or Iranian Health Insurance. It seems that, there was not a significant relationship between having basic insurance and utilizing health services since there was not any difference between the households in terms of basic insurance coverage.

Moreover, in this study, about 40.40% of the households had supplementary insurance and differed from one another in terms of their supplementary insurance coverage. Nonetheless, there was not a significant relationship between supplementary insurance and HSU in the present study. It seems that supplementary insurance has not been able to have a greater and better effect on HSU, given that a lot of economic resources are spent on supplementary insurance, investing in this area is not very justified, although it seems that there is a need for more complete and in-depth studies on this issue.

In this study, the presence of a person with a disability in the family as a need factors, increased the use of outpatient health service utilization. In line with the results of the present study, the results of various studies, including Fistom Girma et al., (1) Rezapour et al., (54), and Kim and Lee (23), showed that having a disability or a movement restrictions increased the likelihood of HSU (1, 44, 55, 56, 57). This issue may be due to these individuals' need to receive prolonged care and their various health needs. Furthermore, these people's awareness of health services increases in the process of their numerous visits to health care centers and helps them to have a better perception of their needs.

According to the results of the study, alcohol consumption was another variable which was related to the need and impacted HSU. Having a healthy lifestyle and not consuming alcohol make a person physically and mentally healthier, decrease the likelihood of his/her sickness, and reduce his/her HSU. On the other hand, the individuals who use alcohol are more likely to suffer cardiovascular,

respiratory and liver diseases or high blood pressure, as a consequence, they are more likely to visit health centers to utilize health services. The results of a study by Limpuangthip et al. (19), which support the results of the present study, showed that the utilization of dentistry services decreased in the case of the elderly when they abstained from alcohol. This behavior was considered as an instance of healthy behaviors in the aforementioned study.

One of the strengths of this study is the collection of data in the form of surveys at the household level and selected sufficient samples from all of the 22 districts of Tehran using stratified random sampling on the basis of the population concentration in each district and neighborhood and the individuals' different socioeconomic status, which helps to increase the generalizability of the findings. Moreover, in this study, the complete path of HSU i.e. feeling the need to utilize services, visiting health care centers, and receiving health care services was considered. However, this study had several limitations. First, the present study was a cross-sectional study, therefore, it was not possible to determine any cause-effect relationships between HSU and its relevant factors. Second, the study was carried out based on the self-declaration of the mother of the families regarding the perceived needs of the members of the relevant families to utilize health services during the preceding month (one month before the collection of the data), it may have caused a recall bias. Third, due to the large sample size, the design effect in the calculated sample size and sampling weights in data analysis was not considered. Forth, the present study focused on outpatient health service utilization, therefore, it did not examine the differences in the types of outpatient services such as visiting the doctor or providing over-the-counter medications. Finally, it is recommended that future studies examine the distinctions between specific types of health services such as the distinction between primary care and intensive care, and the distinction between public HSU and private health services.

Conclusion

HSU is one of the important determinants of health (5). Moreover, it is an essential index of evaluating of the performance of health care systems, therefore, it seems that identifying the factors which are related to health service utilization and adopting and implementing appropriate policies in order to strengthen its positive and facilitating factors and to reduce its deterrent and negative factors is a fundamental step in improving the health of the society. According to the findings of the study, low socioeconomic status, low level of health awareness, and low level of social support were the important factors associated with health service utilization. Changing some of these factors, such as intervening to improve the socioeconomic status, income and employment status of heads households, is beyond the power and facilities of the health sector. Health is a human right, supporting low-income households in meeting their health needs requires the intersectoral cooperation of the other organizations. For instance, allocating health subsidies to households with low socioeconomic status can be helpful. However, a number

of interventions through a slight investment in the health sector can improve the status of HSU. For instance, providing various types of trainings using public media and cyberspace can increase the women and family members' knowledge and awareness of health issues and health needs. Moreover, it is possible to help families to change their lifestyle by designing interventions in order to inform people about the harmful effects of alcohol and smoking abuse. Furthermore, in order to increase in the perceived social support by strengthening governmental and non-governmental organizations, using the local capacities of the neighborhood houses and cultural centers in the metropolis of Tehran may be a policy to increase social support and might improve health service utilization in the community.

Acknowledgement

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Harouni GG, Sajjadi H, Rafiey H, Mirabzadeh A, Vaez-Mahdavi M, Kamal SH. Current status of health index in Tehran: A multidimensional approach. Med J Islam Repub Iran. 2017;31:29.
2. Ali Akbari Saba R, Safa Kish M, Rezaei Ghahroudy Z, Khabiri R, Eftekhari N, Mirkamali SJ, et al. Health Service Utilizatin in Iran,2016. Iran: National Institute of Health Research of the Islamic Republic of Iran, 2017 March.
3. Girma F, Jira C, Girma B. Health services utilization and associated factors in jimma zone, South west ethiopia. Ethiop J Health Sci. 2011;21.
4. Tran BX, Nguyen LH, Nong VM, Nguyen CT. Health status and health service utilization in remote and mountainous areas in Vietnam. Health Qual Life Outcomes. 2016;14:85.
5. Doroh V, Hatam N, Jafari A, Kafashi S, Kavosi Z. Determinants of Outpatient Services Utilization in Shiraz, 2012. J Commun Med Health Educ. 2013;3:2161-711.1000216.
6. Abera Abaerei A, Ncayiyana J, Levin J. Health-care utilization and associated factors in Gauteng province, South Africa. Glob Health Action. 2017;10:1305765.
7. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in the United States. Milbank Q. 2005;83:Online-only-Online-only.
8. Yang PQ, Hwang SH. Explaining immigrant health service utilization: a theoretical framework. Sage Open. 2016;6:2158244016648137.
9. Nooraiee Motlagh S, Saber Mahani A, Barooni M, Vaez Mahdavi M, Hadian M. Determining factors related to health services utilization: case of Tehran. Razi J Med Sci. 2015;21:127.
10. Lotfi F, Motlagh SN, Mahdavi G, Keshavarz K, Hadian M, Gorji HA. Factors Affecting the Utilization of Outpatient Health Services and Importance of Health Insurance. Shiraz E-Med J. 2017;18.
11. Fernández-Olano C, Hidalgo JLT, Cerdá-Díaz R, Requena-Gallego M, Sánchez-Castaño C, Urbistondo-Cascales L, et al. Factors associated with health care utilization by the elderly in a public health care system. Health Policy. 2006;75:131-9.
12. Andersen R. A behavioral model of families' use of health services. A behavioral model of families' use of health services. J Hum Resour. 1968.
13. Anderson JG. Health services utilization: framework and review. Health Serv Res. 1973;8:184.
14. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? J Health Soc Behav. 1995:1-10.
15. de Boer AG, Wijker W, de Haes HC. Predictors of health care utilization in the chronically ill: a review of the literature. Health Policy. 1997;42:101-15.
16. Phillips KA, Morrison KR, Andersen R, Aday LA. Understanding the context of healthcare utilization: assessing environmental and provider-related variables in the behavioral model of utilization. Health Serv Res. 1998;33:571.
17. Shaikh BT, Hatcher J. Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. J Public Health. 2004;27:49-54.
18. Alavian SM. Determinants of seeking needed outpatient care in Iran: results from a national health services utilization survey. Arch Iran Med. 2007;10:439-45.
19. Limpuangthip N, Purnaveja S, Somkotra T. Predisposing and enabling factors associated with public denture service utilization among older Thai people: a cross-sectional population-based study. BMC Oral Health. 2019;19(1):1-8.
20. Brennan A, Morley D, O'Leary AC, Bergin CJ, Horgan M. Determinants of HIV outpatient service utilization: a systematic review. AIDS Behav. 2015;19:104-19.
21. Gulliford M, Figueroa-Munoz J, Morgan M, Hughes D, Gibson B, Beech R, et al. What does' access to health care'mean? J Health Serv Res Policy. 2002;7:186-8.
22. Pourreza A, Khabiri R, Rahimi Foroushani A, Akbari Sari A, Arab M, Kavosi Z. Health care-seeking behavior in Tehran, Islamic Republic of Iran. World Appl Sci J. 2011;14:1190-97.
23. Kim HK, Lee M. Factors associated with health services utilization between the years 2010 and 2012 in Korea: using Andersen's behavioral model. Osong Public Health Res Perspect. 2016;7:18-25.
24. Şenol V, Çetinkaya F, Balci E. Factors associated with health services utilization by the general population in the Center of Kayseri, Turkey. Turkiye Klinikleri J Med Sci. 2010;30:721-30.
25. Bazie GW, Adimassie MT. Modern health services utilization and associated factors in North East Ethiopia. Plos One. 2017;12.
26. Mohammadbeigi A, Hassanzadeh J, Eshrati B, Rezaianzadeh A. Socioeconomic inequity in health care utilization, Iran. J Epidemiol Glob Health. 2013;3:139-46.
27. Esmailnasab N, Hassanzadeh J, Rezaeian S, Barkhordari M. Use of health care services and associated factors among women. Iran J Public Health. 2014;43:70.
28. Hajek A, Bock JO, König HH. Which factors affect health care use among older Germans? Results of the German ageing survey. BMC Health Serv Res. 2017;17:30.
29. Motlagh SN, Sabermahani A, Hadian M, Lari MA, Mahdavi MRV, Gorji HA. Factors affecting health care utilization in Tehran. Glob J Health Sci. 2015;7:240.
30. Rezapour A, Ebadifard Azar F, Yusef Zadeh N, Hasanpour F, Bagheri Faradonbeh H, Ansari Nosrati S, et al. The socio-economic determinants of health care utilization: A cross-sectional survey in Tehran metropolis. Payavard Salamat. 2015;9:180-91.
31. Kamal SHM, Harouni GG, Basakha M. Spatial pattern of well-being in Tehran: The north-south gap. Med J Islam Repub Iran. 2019;33:112.
32. Kojo Arhinful D. WHO level II household survey,to measure access to and use of medicines in Ghana, 2008. Ministry of Health, Ghana 2011 November.
33. Naffa S, Gammouh S. Report of a survey conducted in October - December 2009. World Health Organization - Jordan 2012.
34. Hassanzadeh J, Mohammadbeigi A, Eshrati B, Rezaianzadeh A, Rajaeefard A. Determinants of inequity in health care services utilization in markazi province of iran. Iran Red Crescent Med J. 2013;15:363.
35. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. J Pers Assess. 1988;52:30-41.
36. Mohaqeqi Kamal SH, Sajadi S, Ghaedamini Harouni G, Basakha M, Noroozi M. Prevalence, risk and protective factors for substance abuse among homeless males living in Tehran. J Subst Use. 2019;24:240-4.
37. Edwards LM. Measuring perceived social support in Mexican American youth: Psychometric properties of the multidimensional scale of perceived social support. Hisp J Behav Sci. 2004;26:187-94.

38. Nasiri F, Abdolmaleki S. Explaining the relationship between perceived social support and quality of life, perceived stress mediator role in female-headed households in Sanandaj. J Appl Sociol. 2017: 99-116

39. Ahmadi S, Saborikhah H, Darvishi H, Jabari H. Spatial Analysis of Prosperity Provinces of Iran in Health Indexes. J Reg Plan. 2014;4:31-44.

40. Yuan C, Zhu L, Li Y, Liu M, Si Y, Zhang F. Oral health services utilization and influencing factors in downtown community residents older than 15 years in Beijing. Zhonghua Kou Qiang Yi Xue Za Zhi. 2011;46:182-5.

41. Kirby JB, Kaneda T. Neighborhood socioeconomic disadvantage and access to health care. J Health Soc Behav. 2005;46:15-31.

42. Zhang X, Wu Q, Shao Y, Fu W, Liu G, Coyte PC. Socioeconomic inequities in health care utilization in China. Asia Pac J Public Health. 2015;27:429-38.

43. Andersen RM. National health surveys and the behavioral model of health services use. Med Care. 2008;46:647-53.

44. Krishnaswamy S, Subramaniam K, Low WY, Aziz JA, Indran T, Ramachandran P, et al. Factors contributing to utilization of health care services in Malaysia: a population-based study. Asia Pac J Public Health. 2009;21:442-50.

45. Roberts T, Esponda GM, Krupchanka D, Shidhaye R, Patel V, Rathod S. Factors associated with health service utilisation for common mental disorders: a systematic review. BMC Psychiatry. 2018;18:262.

46. Hosseinpoor AR, Naghavi M, Alavian SM, Jamshidi H, Vega J, Speybroeck N. Determinants of seeking needed outpatient care in Iran: results from a national health services utilization survey. Arch Iran Med. 2007;10(4):439-45

47. Rad EH, Kavosi Z, Arefnezhad M. Economic inequalities in dental care utilizations in Iran: Evidence from an urban region. Med J Islam Repub Iran. 2016;30:383.

48. Fujita M, Sato Y, Nagashima K, Takahashi S, Hata A. Impact of geographic accessibility on utilization of the annual health check-ups by income level in Japan: a multilevel analysis. PloS One. 2017;12.

49. Piovesan C, Ardenghi TM, Mendes FM, Agostini BA, Michel-Crosato E. Individual and contextual factors influencing dental health care utilization by preschool children: a multilevel analysis. Braz Oral Res. 2017;31.

50. Harmon C, Nolan B. Health insurance and health services utilization in Ireland. Health Econ. 2001;10:135-45.

51. Fields BE, Bell JF, Moyce S, Bigbee JL. The Impact of Insurance Instability on Health Service Utilization: Does Non-metropolitan Residence Make a Difference? J Rural Health. 2015;31:27-34.

52. Guindon GE. The impact of health insurance on health services utilization and health outcomes in Vietnam. Health Econ Policy Law. 2014;9:359-82.

53. O'Connor GE. Investigating the significance of insurance and income on health service utilization across generational cohorts. J Financ Serv Market. 2016;21:19-33.

54. Rezapoor A, Roumiani Y, Azar FEF, Ghazanfari S, Mirzaei S, Asiabar AS, et al. Effective factors on utilization and access to health care: a population-based study in Kerman. J Health Adm. 2015;18.

55. Vikum E, Krokstad S, Westin S. Socioeconomic inequalities in health care utilisation in Norway: The population-based HUNT3 survey. Int J Equity Health. 2012;11.

56. Zhang X, Wu Q, Shao Y, Fu W, Liu G, Coyte PC. Socioeconomic inequities in health care utilization in China. Asia Pac J Public Health. 2015;27:429-38.

57. SoleimanvandiAzar N, Mohaqeqi Kamal SH, Sajjadi H, Ghaedamini Harouni G, Karimi SE, Djalalinia S, Forouzan AS. Determinants of Outpatient Health Service Utilization according to Andersen's Behavioral Model: A Systematic Scoping Review. Iran J Med Sci. 2020 Sep 30.

58. SoleimanvandiAzar N, Mohaqeqi Kamal SH, Sajjadi H, Ghaedamini Harouni G, Karimi SE, Forouzan AS. Barriers and Facilitators of the Outpatient Health Service Use by the Elderly. Iran J Ageing. 2020 Oct 10;15(3):258-77.