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

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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, Zimek'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, 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 societies, and investment in this section can have an indis-

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*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.
Outpatient health service utilization

The study demonstrates the significant impact of health service utilization (HSU) on the health status of people in Iran. HSU is defined as the proportion of individuals who seek health care services within a specific time frame (11). The study findings indicate that HSU is a critical factor in determining the health status of individuals, with a higher utilization rate associated with better health outcomes. The study was conducted in 2012 by Rezapour et al. (30) and in 2011 by Nooraee Motlagh et al. (9) in the form of a secondary analysis using urban HEART data, in which the prevalence of HSU in this study was reported to be 40.70% (9, 29).

To the best of our knowledge, the studies in the field of HSU in Iran and Tehran have been relatively few. Therefore, 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 Nooraee 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).

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 Nooraee Motlagh et al. (9) in Tehran (2011) who reported a health service utilization of 40%, as well as 95% confidence level (α=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.

\[ n = \frac{Z^2 \cdot P(1-P)}{d^2} \]

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 socioeconomic development situation, which were obtained in the study of Mohaqeqi Kamal et al. (31) in Tehran 2019.
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 created for each variable and the results were obtained in the form of odds ratios and confidence intervals.
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 the 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

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

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 socioeconomic 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 Hassanazadeh 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 health 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 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 inter-sectoral cooperation of the other organizations. For instance, allocating health subsidies to households with low socioeconomic status can be helpful. However, a number

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Med J Islam Repub Iran. 2021 (2 Jun); 35.71.
Outpatient health service utilization

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.

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Conflict of Interests

The authors declare that they have no competing interests.

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