ACHSM Asia-Pacific Journal of Health Management

RESEARCH ARTICLE

# ASSOCIATION BETWEEN HEALTH-SEEKING BEHAVIOR AND HEALTH SERVICE UTILIZATION AMONG SLUM RESIDENTS: A CROSS-SECTIONAL STUDY FROM A DEVELOPING COUNTRY

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## ABSTRACT

**BACKGROUND:**

Health-seeking behavior (HSB) refers to how individuals respond to health issues and significantly influences health service utilization (HSU). This study examines the association between HSB and HSU among marginalized populations in Iran.

**METHODS:**

This cross-sectional study was conducted in 2020 and targeted adults (aged ≥18 years) residing in the slum areas of Kerman city, southeastern Iran. A cluster sampling method was employed based on population census data provided by the district health center, identifying 233 clusters. The final sample included 840 households. Data were collected through face-to-face interviews using two standardized and validated questionnaires assessing HSB and HSU. Three trained research teams conducted the interviews. Descriptive statistics and logistic regression analyses were performed using STATA 14 software.

**RESULTS:**

Multivariate analysis revealed that marital status, household size, treatment duration, current illness experience, disease acceptance, and stress were positively associated with inpatient service utilization ($p<0.01$). In contrast, higher education levels and greater disease-related knowledge were inversely associated with inpatient service use ($p<0.01$). Regarding outpatient services, factors such as insurance status, initial consultation for illness, perception of received healthcare quality, illness concealment, and situational factors were linked to lower outpatient service utilization ($p<0.01$). Conversely, timely healthcare access and the influence of advertising and health information accessibility were associated with increased outpatient service use ($p<0.01$).

**CONCLUSION:**

This study highlights the significant role of demographic factors and HSB in shaping inpatient and outpatient service utilization. Given the adverse effects of marginalization on healthcare access, policymakers should prioritize improving economic and cultural conditions and implementing targeted educational initiatives, including media campaigns.

Addressing financial barriers and introducing tailored interventions can reduce disparities and empower marginalized communities to access timely and appropriate healthcare services.

**KEYWORDS**
Health-seeking behavior, marginalization, slum, health service utilization, Iran

## BACKGROUND

The global urban population has grown remarkably in recent decades, with over 50% of people residing in urban areas by 2010 [1]. This figure is projected to reach 66% by 2050, adding approximately 2.5 billion urban residents, 90% of whom will be in Asia and Africa [2]. This rapid urbanization has led to the proliferation of informal settlements, commonly known as slums [1].

Among the many social and economic challenges faced by slum residents, inadequate health conditions are particularly concerning. Slum populations generally exhibit poorer health outcomes than other urban populations due to environmental and individual factors, as well as increased health risks, disease complications, and higher mortality rates [3]. Roberts et al. further emphasize that individuals living in marginalized areas experience isolation, discrimination, and inadequate service availability compared to those in other urban settings [4].

A critical factor in this context is the limited accessibility of healthcare services for slum residents [5, 6]. Research indicates that insufficient healthcare availability in marginalized areas alters health-seeking behavior (HSB) patterns among their residents [7]. HSB refers to the actions individuals take when recognizing discomfort, experiencing symptoms (even without feeling unwell), or perceiving potential health risks and subsequently seeking medical assistance [8].

HSB is shaped by complex interactions between social, economic, and physical environments, as well as individual characteristics [9]. It has long been recognized as a crucial mechanism for enhancing patient knowledge, promoting healthier lifestyles, and improving health outcomes. Evidence suggests that active participation in disease management, self-reporting, and individual knowledge significantly contribute to better health outcomes [10]. This is particularly relevant in developing countries, where HSB directly affects healthcare utilization and individual health outcomes. In these regions, many deaths from preventable and treatable diseases result from delayed or lack of access to healthcare. Understanding and improving HSB can thus significantly reduce disease burdens and mortality. HBS plays a crucial role in shaping healthcare utilization and health outcomes, particularly in developing countries where access to healthcare is often limited [11, 12]. A significant proportion of deaths in these regions result from preventable and treatable diseases due to either inadequate or delayed healthcare access. Enhancing our understanding of HSB can therefore help mitigate disease burden and reduce mortality rates [13]. Various cultural, economic, and educational factors significantly influence HSB, making it essential to consider these dynamics when designing effective health interventions [12, 14]. Addressing HSB is a critical step toward achieving health equity, especially in settings where disparities in healthcare access are pronounced [15]. Consequently, healthcare policymaking should be informed by comprehensive data on health service utilization( HSU) patterns to ensure more effective resource allocation and intervention strategies [16].

As a developing country, Iran faces persistent challenges in ensuring equitable healthcare utilization among marginalized populations [17]. Despite efforts to improve healthcare access, there remains a limited understanding of specific HSB patterns and their impact on healthcare utilization within these communities. This knowledge gap hinders the efficient allocation of resources and the implementation of targeted interventions. By addressing this gap, the findings of this study can provide valuable insights for policymakers and healthcare providers, enabling the development of targeted strategies that improve healthcare access and equity. Recognizing the importance of understanding HSB and optimizing healthcare resource allocation [18], this study aims to examine the association between HSB and HSU among marginalized populations in Kerman.

## METHODS

### STUDY DESIGN AND SETTING

This study employed a survey design, conducted cross-sectionally, with adult participants (18 years and older) residing in the slum areas of Kerman city, an area located in southeastern Iran. Specifically, the study focused on the marginalized slum areas including Shahrak-e-Sanati, Imam Javad, and Chahardah Ma'soum neighborhoods during the year 2020. Kerman, recognized as one of Iran's most densely populated provinces, is home to a significant marginalized population. These marginalized areas primarily consist of informal and sub-standard settlements, characterized by high population density and low socioeconomic status.

### SAMPLING METHODOLOGY AND SAMPLE SIZE

The study utilized cluster sampling method. Using population census data from the district health center, covering the period from January 1, 2020, to December 31, 2020, a total of 233 clusters were identified. From these, 42 clusters were randomly selected, with the number of clusters chosen being proportional to size: 18 clusters from the Shahrak-e-Sanati area, 18 from Imam Javad, and 6 from Chahardah Ma'soum. . Within each selected cluster, eligible individuals were invited to participate. Starting from the first cluster, the required number of households in each cluster were consecutively selected towards the right. The inclusion criteria were individuals over 18 years of age, either the head of the household or those with comprehensive knowledge of household conditions, and a willingness to participate. If household members refused to participate, only their household number and refusal were recorded, and no further data were collected from them. The sample size was determined using the formula

$$n = \left(\frac{z^2pq}{d^2}\right)$$

Where the parameters included a probability of 0.5 (p = 0.5), a confidence level of 95%, and a margin of error of 0.05. The initial sample size was calculated to be 385. However, considering a design effect of 2.2 [19], the final sample size was adjusted to 840.

### STUDY INSTRUMENTS

Two primary instruments were used for data collection, both of which previously employed in Bahrami et al. study [20].
HSB questionnaire

The first instrument was a standardized questionnaire, validated and reliable, focusing on HSB. The first section collected demographic data, including age, gender, marital status, education level, and other relevant variables. The second section assessed various aspects of HSB, including: treatment-seeking behavior (5 questions), experiences with receiving care (5 questions), consumer evaluation of healthcare providers (6 questions), individual factors (6 questions), psychological factors (6 Likert-scale questions), socio-cultural and family factors (3 Likert-scale questions), situational factors (6 questions), and marketing factors (5 questions). The validity and reliability of this instrument was confirmed in Bahrami et al.'s study [20], and for this study, the Cronbach's alpha coefficient as reliability measure was recalculated at 0.71.

### HSU QUESTIONNAIRE

The second instrument focused on HSU, which consisted of two sections: inpatient services utilization (7 questions) and outpatient services utilization (5 questions). Partial information related to the utilization section was included in another study.

### DATA COLLECTION

Data were collected by trained interviewers, who were recruited and trained in a 4-hour workshop. Participants were informed about the study objectives, and written informed consent was obtained from each participant. All questionnaires were completed through face-to-face, structured interviews with the participants. Participants were assured that their information would remain confidential. If information was unavailable during the initial visit, up to three

follow-up meetings were scheduled to gather the necessary data. To ensure data accuracy, a quality assurance form was designed. One member of the research team visited 50 households, representing approximately 5% of the sample, to complete the quality assurance form. The data collected from the questionnaires were then compared with the information on the quality assurance forms to confirm consistency.

### DATA ANALYSIS

Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to describe the dimensions of HSB. To examine the relationship between HSU and factors associated with HSB, logistic regression analysis was employed. Initially, all variables were examined through univariate analysis, and those with significance levels lower than 0.2 were included in the final multivariate analysis. The significant variables identified in the final model were interpreted.

The analysis was performed using Stata version 14 software. To reduce potential errors, similar questions were grouped together in the logistic regression analysis. Likert-scale questions with 5 and 4 response options were transformed into a 3-point scale for consistency.

The goodness of fit for the logistic regression model was assessed using the Hosmer-Lemeshow test. Since the significance level obtained was greater than 0.05, it was concluded that the model adequately fit the data.

## RESULTS

### DEMOGRAPHIC STATUS

Out of the 840 households initially studied, a total of 823 households residing in marginalized areas were included in the final analysis, as 2.1 of households were excluded due to non-response. The average age of the population living in marginalized areas of Kerman was 36.21 ± 10.87 years. On average, there were 1.18 households per residential unit in these areas, with an average population of 3.84 ± 1.19 individuals per household. Among the participants, 67.80% were females and 32.20% were males. Regarding marital status, 89.31% were married, 6.44% were single without any previous marriage, and 4.25% were individuals who had been married before but were currently single due to the death or divorce of their spouse. In terms of education, 9.36% of the participants were illiterate, 76.91% had a high school diploma or lower, and 13.73% had a university education. The study also revealed that 63.67% of the population in the marginalized areas of Kerman were unemployed.

Regarding income, 45.93% of participants had an income ranging from $40 to $80. Among the participants, 68.53% were homeowners, and 51.76% had social security insurance coverage. However, 14.22% of the individuals did not have any insurance coverage. In terms of supplementary insurance, 85.05% did not have any supplementary insurance, and 53.46% had a history of acute illness.

### DESCRIPTIVE FINDINGS

The descriptive statistics on HSB in this study revealed several key findings. Among those who had been ill in the past three months, 90.42% took some action to treat their illness. Additionally, 96.35% of participants had a history of receiving healthcare services, and of this group, 50.25% believed they received care in a timely manner approximately. The usefulness of the healthcare services received was highly rated, with an average score of 3.95 ± 1.05, indicating a positive perception of the services. In general, marginalized residents exhibited an average satisfaction level of 3.80 ± 0.85 regarding the services they received.

When assessing the received healthcare services, service quality emerged as the most crucial factor, with an average score of 4.60 ± 0.51. On the other hand, factors such as the physical environment, attractiveness, and convenience were considered less significant, with an average score of 4.26 ± 0.93. Individual factors analysis showed that the treatment duration was 3-7 days for 50.25% of participants, and nearly 47% had limited knowledge about their illness.

In terms of psychological factors, The importance of an individual's health for society, family, and acquaintances as influential factors, with an average score of 4.67±0.66. Approximately 90% of marginalized residents believed that concealing the illness is undesirable.

Cost was identified as the most impactful situational factor influencing the choice of healthcare provider among marginalized residents, with a score of 4.06 ± 1.06. In terms of marketing factors, access to information were perceived to have an impact, with an average score of 4.05±1.11. (Table 1)

**TABLE 1: DESCRIPTIVE STATISTICS OF HSB**

| **Health- seeking behavior** | |
|---|---|
| **Variables** | **Frequency (%)** |
| **Action for disease** | |
| Yes | 576 (90.42) |
| No | 61 (9.58) |
| **The interval between the onset of symptoms and seeking medical attention** | |
| Same day | 156 (27.08) |
| The next day | 140 (24.31) |
| Two days later | 146 (25.35) |
| 3-7 days | 49 (8.51) |
| ≥ 7 days | 85 (14.76) |
| **Stage of seeking therapy** | |
| Mild symptoms | 181 (31.42) |
| Full incidence of the disease | 259 (44.97) |
| Recurrence and worsening | 136 (23.61) |
| **First consultation for illness treatment** | |
| Health care centers | 376 (65.28) |
| Specialist, hospital | 145 (25.17) |
| Pharmacy without a prescription and consult a pharmacist | 8 (1.39) |
| Pharmacy without consulting the pharmacist, traditional | 8 (1.39) |
| Self-medication | 39 (6.77) |
| **The completion period of the treatment according to the opinion of the therapist** | |
| Full recovery | 340 (59.03) |
| To relieve symptoms | 199 (34.55) |
| Not complete | 37 (6.42) |
| **Experience of receiving health care** | |
| **Variables** | **Frequency (%)** |
| **The experience of receiving health care services** | |
| Yes | 792 (96.35) |
| No | 30 (3.65) |
| **Getting health care at the right time** | |
| Completely | 351 (44.32) |
| To some extent | 398 (50.25) |
| No | 43 (5.43) |
| **Variables** | **Mean ± SD** |
| The usefulness of healthcare services | 3.95±1.05 |
| The manner of interaction and responsiveness of healthcare providers | 3.71±0.98 |
| Dignity and respect to healthcare service recipients | 3.74±1.02 |
| **Assessment of received health care services** | |
| **Variables** | **Mean ± SD** |

| | |
|---|---|
| Providers behavior | 4.29±0.88 |
| The physical environment, attractiveness, and comfort of the service provider center | 4.26±0.93 |
| Time spent on receive services | 4.50±0.80 |
| Healthcare services cost | 4.57±0.76 |
| Reliability of healthcare outcomes | 4.59±0.62 |
| Healthcare services quality | 4.60±0.51 |
| **Individual factors** | |
| **Variables** | **Frequency (%)** |
| **Duration of treatment** | |
| 3 to 7 days | 398 (50.25) |
| 7 to 14 days | 133 (16.79) |
| 14 to 21 days | 32 (4/04) |
| More than 21 days | 37 (4.67) |
| It needs constant care | 192 (24.24) |
| **Experience of current illness** | |
| Yes | 421 (53.16) |
| No | 258 (45.20) |
| Do not know | 13 (1.64) |
| **Illness severity** | |
| Mild | 183 (23.11) |
| Medium | 420 (53.03) |
| Severe | 189 (23.86) |
| **Information about the disease** | |
| Low | 367 (46.34) |
| To some extent | 348 (43.94) |
| High | 189 (23.86) |
| **Another specific disease** | |
| Yes | 85 (10.73) |
| No | 626 (79.04) |
| Do not know | 81 (10.23) |
| **Self-assessment of health status** | |
| Weak | 298 (37.63) |
| Good | 377 (47.60) |
| Excellent | 117 (14.77) |
| **Psychological factors** | |
| **Variables** | **Mean ± SD** |
| The importance of an individual's health for society, family, and acquaintances | 4.67±0.66 |
| The value placed on one's own health | 4.18±1.04 |
| Fear of treatment consequences and death | 3.38±1.38 |
| Feeling embarrassed about discussing an illness and seeking treatment | 2.00±1.32 |
| Accepting the illness | 3.79±0.56 |
| Stress related to illness and its treatment in the past three months | 2.40±1.28 |
| **Cultural, social and family factors** | |
| **Variable** | **Frequency (%)** |
| **The preference for concealing the illness** | |
| Yes | 28 (3.43) |
| No | 734 (89.95) |
| Do not know | 54 (6.62) |

| Variable | Mean ± SD |
|---|---|
| Avoiding work and family responsibilities in receiving services | 3.04±1.28 |
| The level of dependency on others in receiving services | 3.18±1.43 |
| **Situational factors** | |
| **Variable** | **Mean ± SD** |
| The illness preventing the performance of daily activities (walking, dressing) | 2.97±1.34 |
| Concern about the confidentiality of information in the health care facilities | 3.18±1.35 |
| The impact of distance proximity on the choice of healthcare service providers | 3.93±1.13 |
| The impact of cheapness on the choice of healthcare service providers | 4.06±1.06 |
| The impact of previous experience in choosing a healthcare provider | 3.55±1.15 |
| **Variable** | **Frequency (%)** |
| **Access to medication without a prescription** | |
| Totally | 146 (17.89) |
| To some extent | 394 (48.28) |
| No | 276 (33.82) |
| **Marketing factors** | |
| **Variable** | **Frequency (%)** |
| **Source of health information** | |
| Newspaper/magazine | 16 (1.96) |
| Radio and TV | 567 (69.49) |
| Social networks | 104 (12.75) |
| Training classes | 11 (1.35) |
| Friends, colleagues, family | 49 (6.00) |
| Other | 69 (8.46) |
| **Variable** | **Mean ± SD** |
| The impact of advertising on medication, treatment methods, and healthcare service providers | 3.00 ±1.29 |
| The level of access to information for obtaining healthcare services | 4.05±1.11 |
| The ability to cover healthcare expenses | 2.65±0.95 |
| The ability to pay for healthcare expenses before receiving healthcare services | 2.36±1.01 |

## THE ASSOCIATION BETWEEN HSB AND HSU

The multivariate logistic regression analysis results examining the demographic factors and HSB in relation to hospitalization revealed significant associations ($p<0.05$) between various variables and the utilization of inpatient services. Marital status ($p= 0.02$), education level ($p= 0.03$), household size ($p= 0.001$), duration of treatment ($p= 0.01$), experience of current illness ($p= 0.00$), information about the disease ($p= 0.03$), acceptance of the illness, and related stress ($p= 0.00$) were found to influence inpatient service utilization.

Individuals who were widowed or divorced had a 5.65 higher likelihood of utilizing inpatient services compared to never married individuals. Additionally, individuals with a high school diploma or lower education level were 46% less likely to use inpatient services compared to illiterate individuals.

The analysis further indicated that for each unit increase in household size, the utilization of inpatient services increased by 35%. Additionally, the duration of disease treatment was found to be a significant factor; individuals with treatment durations exceeding 14 days had a 2.59 times higher likelihood of utilizing hospital services compared to those with treatment durations of less than 14 days. Individuals with no experience of current illness were 14.23 times more likely to use inpatient services than those who had a history of current illness. Conversely, individuals who had extensive knowledge about their disease had a 39% lower likelihood of utilizing inpatient services compared to those who lacked information. The acceptance of illness and related stress also showed a significant relationship with the utilization of inpatient services.

The analysis suggests that for each unit increase in accepting one's illness and experiencing stress, the likelihood of utilizing hospital services increased by 79% (Table 2).

**TABLE 2: MULTIVARIATE ANALYSIS OF THE ASSOCIATION BETWEEN HSB AND UTILIZATION OF INPATIENT SERVICES.**

| Variables | β Coefficient | Adjusted OR | 95% CI for OR adjusted | |
|---|---|---|---|---|
| | | | Lower | Upper |
| **Age** | - 0.02 | 0.97 | 0.95 | 1.00 |
| **Marital status** | | | | |
| Single (referent) | | | | |
| Married | 0.13 | 1.14 | 0.39 | 3.28 |
| Divorced/deceased spouse | 1.73 | 5.65 | 1.22* | 26.01 |
| **Education** | | | | |
| Illiterate (referent) | | | | |
| Diploma and less | - 0.76 | 0.46 | 0.23* | 0.94 |
| University | - 0.35 | 0.69 | 0.29 | 1.67 |
| **Household size** | 0.30 | 1.35 | 1.12* | 1.64 |
| **Type of Insurance** | | | | |
| No insurance (referent)Social security insurance | 0.20 | 1.22 | 0.65 | 2.31 |
| Armed forces | - 0.14 | 0.86 | 0.23 | 3.18 |
| Relief committee | 1.46 | 4.34 | 0.91 | 20.62 |
| Health insurance organization | 0.20 | 1.23 | 0.61 | 2.46 |
| Other | 0.00 | 1.00 | | |
| **History of illness in the last three months** | | | | |
| Acute (referent) | | | | |
| Chronic | 0.60 | 1.82 | 0.98 | 3.39 |
| Not sick | | | | |
| **The interval between the onset of symptoms and seeking medical attention** | | | | |
| 2 days later (referent) | | | | |
| 2-7 days | - 0.33 | 0.71 | 0.44 | 1.16 |
| ≥ 7 days | - 0.60 | 0.54 | 0.28 | 1.04 |
| **First consultation for illness treatment** | | | | |
| Centers, specialists, hospitals (referent) | | | | |
| Pharmacy, traditional healer | - 0.63 | 0.52 | 0.13 | 2.10 |
| Self-medication | - 0.10 | 0.89 | 0.35 | 2.23 |
| **The completion period of the treatment according to the opinion of the therapist** | | | | |
| Full recovery (referent) | | | | |
| To relieve symptoms | - 0.06 | 0.93 | 0.60 | 1.46 |
| Not complete | 0.27 | 1.32 | 0.56 | 3.07 |
| **Satisfaction with past experience** | - 0.20 | 0.81 | 0.63 | 1.04 |
| **Duration of treatment** | | | | |
| 3-14 days (referent) | | | | |
| ≥14 days | 0.95 | 2.59 | 1.23* | 5.45 |
| Need to constant care | 0.36 | 1.44 | 0.74 | 2.81 |
| **Experience of current illness** | | | | |

| | | | | |
|---|---|---|---|---|
| No (referent) | | | | |
| Do not know | 2.65 | 14.23 | 2.65* | 76.31 |
| Yes | -0.13 | 0.87 | 0.55 | 1.39 |
| **Illness severity** | | | | |
| Mild (referent) | | | | |
| Medium | - 0.13 | 0.87 | 0.49 | 1.55 |
| Severe | 0.23 | 1.26 | 0.65 | 2.45 |
| **Information about the disease** | | | | |
| Low (referent) | | | | |
| To some extent | - 0.01 | 0.98 | 0.63 | 1.52 |
| High | - 0.91 | 0.39 | 0.17* | 0.91 |
| **Another specific disease** | | | | |
| No (referent)Do not know | 0.28 | 1.32 | 0.63 | 2.79 |
| Yes | 0.02 | 1.02 | 0.53 | 1.93 |
| **Self-assessment of health status** | | | | |
| Weak (referent) | | | | |
| Good | - 0.24 | 0.78 | 0.48 | 1.27 |
| Excellent | - 0.18 | 0.82 | 0.36 | 1.87 |
| **Accepting the illness and related stress** | 0.58 | 1.79 | 1.27* | 2.53 |
| **The preference for concealing the illness** | | | | |
| No (referent)Do not know | - 0.30 | 0.73 | 0.29 | 1.83 |
| Yes | 0.02 | 1.02 | 0.32 | 3.19 |
| **Avoiding work and family responsibilities and the level of dependency on others in receiving services** | - 0.08 | 0.91 | 0.73 | 1.13 |
| **Situational factors** | 0.12 | 1.13 | 0.80 | 1.60 |
| **The impact of advertising and access to information for obtaining health care services** | 0.21 | 1.24 | 0.95 | 1.61 |
| **Ability to pay health care costs** | 0.03 | 1.03 | 0.78 | 1.36 |

* Significant at the 0.05 alpha level

## UTILIZATION OF OUTPATIENT SERVICES

Significant findings also emerged from the regression analysis regarding the impact of demographic factors and HSB on the utilization of outpatient services in marginalized areas of Kerman.

Notably, the first consultation for illness treatment was found to significantly influence outpatient service utilization (p = 0.01). Individuals who resorted to self-medication as their first course of action were found to utilize outpatient services 87% less frequently than those who sought medical assistance from general practitioners, healthcare centers, specialist physicians, or government/private hospitals.

Additionally, insurance status (p = 0.00) played a significant role. Individuals covered by Relief Committee Insurance were 99% less likely to utilize outpatient services compared to those without insurance. The timing of healthcare services was another significant factor (p = 0.01). Those who received healthcare services at the right time had a 97% higher chance of utilizing outpatient services compared to those who did not receive timely care.

The assessment of received healthcare services also significantly influenced outpatient service utilization (p = 0.00). For each unit increase in the assessment of received healthcare services, the likelihood of utilizing outpatient services decreased by 89%.

Furthermore, individuals who preferred to conceal their illness were 99% less likely to use outpatient services (p = 0.02).

It is also important to note that for each unit increase in situational factors, the likelihood of utilizing outpatient services decreased by 66% (p = 0.04). However, for each unit increase in advertising and access to information regarding healthcare services, the likelihood of using outpatient services increased by 2.16 times (p = 0.03) (Table 3).

**TABLE 3: MULTIVARIATE ANALYSIS OF THE ASSOCIATION BETWEEN HSB AND UTILIZATION OF OUTPATIENT SERVICES**

| Variables | β Coefficient | Adjusted OR | 95% CI for OR adjusted | |
|---|---|---|---|---|
| | | | Lower | Upper |
| **Age** | 0.02 | 1.02 | 0.97 | 1.08 |
| **Household income level (US$)** | | | | |
| ≤ 40 (ref) | | | | |
| 40-80 | 0.76 | 2.14 | 0.56 | 8.19 |
| 80-160 | 0.90 | 2.47 | 0.45 | 13.65 |
| 160-250 | 2.94 | 18.96 | 0.38 | 92.05 |
| ≥ 250 | 0.76 | 2.15 | 0.00 | 181.42 |
| **Education** | | | | |
| Illiterate (ref) | | | | |
| Diploma and less | - 0.51 | 0.59 | 0.08 | 0.02 |
| University | - 1.07 | 0.34 | 0.02 | 4.49 |
| **Household size** | 0.55 | 1.73 | 0.42 | 7.16 |
| **Type of Insurance** | | | | |
| No insurance (ref) | | | | |
| Social security | - 1.01 | 0.36 | 0.06 | 1.89 |
| Armed Forces | 0.77 | 2.17 | 0.05 | 87.78 |
| Aid Committee | - 4.10 | 0.01 | 0.00* | 0.27 |
| Health of Iran | - 1.15 | 0.31 | 0.06 | 1.65 |
| Other | 0 | | | |
| **Supplementary insurance** | | | | |
| No (ref) | 0.35 | 1.41 | 0.33 | 6.01 |
| Yes | | | | |
| **History of illness in the last three months** | | | | |
| Acute (ref) | | | | |
| Chronic | - 1.06 | 0.34 | 0.07 | 1.59 |
| Not sick | | | | |
| **The interval between the onset of symptoms and seeking medical attention** | | | | |
| 2 days later (ref) | | | | |
| 2-7 days | 0.27 | 1.31 | 0.39 | 4.37 |
| ≥ 7 days | 0.84 | 2.32 | 0.49 | 10.9 |
| **Stage of seeking therapy** | | | | |
| Mild symptoms (ref) | | | | |
| Full incidence of the disease | - 0.99 | 0.37 | 0.09 | 1.42 |
| Recurrence and worsening | - 0.73 | 0.48 | 0.11 | 2.06 |
| **First consultation for illness treatment** | | | | |
| Centers, specialists, hospitals (ref) | | | | |
| Pharmacy, traditional healer | - 1.31 | 0.27 | 0.01 | 6.38 |

| | | | | |
|---|---|---|---|---|
| Self-medication | - 1.95 | 0.13 | 0.03* | 0.65 |
| **Getting health care at the right time** | | | | |
| No | | | | |
| To some extent | - 3.28 | 0.03 | 0.01* | 6.35 |
| Completely | - 2.43 | 0.09 | 0.00 | 1.20 |
| **Assessment of received health care services** | - 2.10 | 0.11 | 0.03* | 0.38 |
| **Duration of treatment** | | | | |
| 3-14 days (ref) | | | | |
| ≥14 days | 0.75 | 0.70 | 0.08 | 5.57 |
| Need constant care | 0.17 | 0.63 | 0.13 | 2.96 |
| **Experience of current illness** | | | | |
| No (ref) | | | | |
| Do not know | 0.55 | 0.90 | 0.07 | 39.50 |
| Yes | - 0.87 | 0.36 | 0.14 | 1.17 |
| **Illness severity** | | | | |
| Mild (ref) | | | | |
| Medium | - 0.34 | 0.52 | 0.18 | 2.68 |
| Intense | 0.05 | 0.60 | 0.21 | 5.17 |
| **Information about the disease** | | | | |
| Low (ref) | | | | |
| To some extent | 0.65 | 1.84 | 0.64 | 5.73 |
| High | 2.09 | 7.81 | 1.17 | 45.67 |
| **Another specific disease** | | | | |
| No (ref) | | | | |
| Do not know | 0.34 | 1.37 | 0.21 | 9.26 |
| Yes | 1.23 | 3.32 | 0.73 | 15.89 |
| **Self-assessment of health status** | | | | |
| Weak (ref) | | | | |
| Good | - 0.29 | 0.72 | 0.23 | 2.37 |
| Excellent | - 0.66 | 0.48 | 0.08 | 3.01 |
| **Accepting the illness and related stress** | 0.23 | 1.17 | 0.56 | 2.79 |
| **The preference for concealing the illness** | | | | |
| No (ref) | | | | |
| Do not know | - 0.45 | 0.64 | 0.09 | 4.45 |
| Yes | - 4.56 | 0.01 | 0.00* | 0.72 |
| **Situational factors** | -1.02 | 0.34 | 0.13* | 0.93 |
| **Access to medication without a prescription** | | | | |
| To some extent | | | | |
| No | -0.38 | 0.70 | 0.23 | 2.03 |
| Completely | -0.61 | 0.48 | 0.12 | 2.24 |
| **Source of health information** | | | | |
| Newspaper, magazine | | | | |
| Radio and TV | - 1.09 | 0.30 | 0.03 | 3.45 |
| Social Networks | - 0.10 | 0.78 | 0.06 | 13.07 |
| Training Classes | 0 | 1.00 | | |
| Friends, colleagues, family | - 0.82 | 0.46 | 0.03 | 6.11 |
| Other cases | | 1.00 | | |
| **The impact of advertising and access to information for obtaining health care services** | 0.77 | 2.16 | 1.06* | 4.35 |

## DISCUSSION

This study examined HSB and its association with HSU among marginalized populations in Kerman, Iran, as a developing country, aiming to provide a comprehensive understanding of their behavior and subsequently improve access to services. Additionally, this analysis contributes to policy decisions and improvements in the healthcare system, fostering greater utilization of health services in these areas. Individuals in marginalized communities often make treatment decisions influenced by the severity of their illness and their perception of its importance. Timely HSB is essential for early diagnosis. This study found that many individuals sought healthcare only when their illness had advanced, suggesting that marginalized groups may overlook preventive care due to insufficient health awareness. Musinguzi et al. support these findings, highlighting the role of symptoms and signs in prompting individuals to seek diagnosis and treatment. Patients assess their symptoms and decide on appropriate actions based on their perception of the illness's severity. When they consider the illness to be severe, they seek specialized care, whereas if they perceive it as less severe, they opt for self-care measures to alleviate discomfort [21].

Moreover, the choice of healthcare provider is influenced by several factors, as demonstrated by this research. Most individuals initially opt for government-designated health centers for their healthcare needs. A study by Latunji et al. in Nigeria also found a preference for official health centers [22], supporting our findings. Similarly, a study conducted in India reported that a significant proportion of slum dwellers preferred government centers for treatment [23].

Additionally, the findings indicate that, among contextual factors, the affordability of services plays a more decisive role in provider selection than other factors. This aligns with studies by Lilford et al. [24], Ajloni et al. [25], Aleemi et al. [26], and Latunji et al. [22]. in separate studies. Marginalized individuals acknowledge the impact of healthcare costs on their access to services. The limited utilization of health services in these populations can be attributed to low income and poor economic status, consistent with findings by Lindsay et al. [27], Chung et al. [28], and Hussain et al. [29].

The analysis also reveals that radio and television are the primary sources of healthcare information among marginalized residents of Kerman city. However, research in Congo suggests that most individuals sought health information from healthcare professionals, with fewer turning to media or family/community resources. Among the study population in Congo, only a quarter reported obtaining information from the internet or media sources such as television or radio [30]. This discrepancy may arise from differences in infrastructure and access to technology in the two regions, as refugees in Congo may have limited access to the internet, radio, or television.

In the multivariate analysis, illness acceptance and related stress were found to have significant associations with the use of inpatient services. As acceptance of illness increases, so does the likelihood of using inpatient services. This aligns with Bahrami et al.'s research, which emphasized the role of illness acceptance in HSU [31]. Andersen's model of health and treatment beliefs also supports the idea that illness acceptance influences service utilization, particularly inpatient care. However, this acceptance has a distinct effect on outpatient service usage. Individuals who tend to hide their illness are significantly less likely to seek outpatient care, potentially avoiding treatment to conceal their condition, resulting in lower utilization rates [32]. Ganeshkumar et al. conducted a study examining HSB among children residing in slum areas and found that the main reason for seeking appropriate care was the perception that early detection could prevent the severity of illness [33].

Additionally, individuals who were divorced or widowed were more likely to use inpatient services than their single or married counterparts. This may be attributed to the older age of individuals who have experienced such events, as well as their higher likelihood of illness. The psychological effects of divorce or widowhood may also contribute to a higher incidence of illness. This finding is supported by Sarwar et al. who demonstrated that divorced individuals had higher inpatient service utilization in Pakistan [34].

Education level was also identified as an influential factor in HSU. Individuals with a high school diploma or below were less likely to use inpatient services compared to illiterate individuals. Illiterate individuals generally have less awareness about health conditions and personal hygiene maintenance, leading to higher illness incidence and greater reliance on inpatient services. This finding is consistent with Borhaninejad et al.'s research, which showed that illiterate individuals utilize inpatient services more than those with higher educational levels [35]. Similarly, Azimzadeh et al. emphasized the effect of education on HSU [36].

It is important to note that individuals with limited knowledge about their disease are less likely to use hospitalization services. This suggests that a lack of understanding about their condition may prevent them from seeking treatment early, leading to lower outpatient service utilization. This delayed care-seeking behavior may result in hospitalization when the condition worsens. These findings align with the study by Kalhor et al., which explored patient awareness levels [37].

Among marginalized residents in Kerman, there was a positive association between household size and the utilization of hospitalization services. This suggests that individuals living in larger households benefit from increased social support, which facilitates access to hospitalization services when needed. Larger households may provide additional care and assistance, making hospitalization more feasible. However, Manzi et al. discovered more unmet needs in larger families [38]. The discrepancy in findings may be explained by differences in insurance coverage. Larger families, facing financial challenges, may have limited access to services unless they are covered by insurance.

In this study, individuals who preferred concealing their illness were less likely to utilize outpatient services compared to those who were more open about their health. This indicates that individuals who hide their illness may delay treatment, resulting in lower utilization of outpatient services. Atashbahar et al. also highlighted this issue in their study [39]. Stigma leads individuals to avoid or delay seeking healthcare, especially for socially stigmatized conditions like mental illnesses and chronic diseases. This fear of judgment worsens health outcomes, particularly for marginalized populations facing additional challenges. Reducing stigma through education, supportive healthcare environments, and community-based interventions can encourage timely care, improve health outcomes, and reduce the overall disease burden [40-42]. The current study also found that individuals without health insurance were more likely to use outpatient services than those covered by Relief Committee insurance. This contradicts the findings of studies in Vietnam and Nigeria [43, 44], where increased health insurance coverage led to greater service utilization. It seems that Relief Committee insurance is more effective for inpatient services, while it may not cover certain outpatient services, leading individuals to seek care elsewhere. The findings suggest that advertising and access to information significantly influence HSB among marginalized populations. Increased advertising and better access to information improve awareness of available health services, leading to higher utilization of outpatient services. Marginalized individuals, often with lower education and health literacy, have limited awareness of primary healthcare services. Improved access to information can raise awareness, prompting individuals to seek care. Moreover, social marketing has proven to be an effective framework for improving public health [45]. Public support through community mobilization, advertising, and interpersonal communication can further enhance healthcare provision. Finally, the analyses revealed that situational factors, such as information confidentiality, the ability to perform daily tasks, and service affordability, reduce the utilization of outpatient services. Financial challenges faced by marginalized individuals may exacerbate this issue. In this context, Malmir et al. addressed the impact of cost-related factors on outpatient service utilization, confirming the current findings [46].

## STUDY LIMITATIONS AND STRENGTHS

This study provides a comprehensive analysis of HSB among marginalized populations, offering valuable insights into the factors influencing inpatient and outpatient service utilization. Unlike many studies that primarily focus on economic barriers, this research considers a broader range of determinants, including psychological aspects such as illness concealment and the social factors like household size and education level.

This study has some limitations. First, the generalizability of this study's findings may be limited due to its focus on marginalized populations in a specific geographic region. The healthcare-seeking behaviors observed in this context may not fully represent those of individuals in different socio-economic settings or other regions with distinct healthcare

infrastructures, cultural norms, and policy environments. Additionally, factors such as the availability and accessibility of healthcare services, insurance coverage, and health literacy levels vary across different populations, which may influence the applicability of the results to broader or more diverse groups.

Another limitation is the potential for self-reporting bias. Participants' responses regarding their healthcare-seeking behavior and attitudes may be influenced by recall bias or social desirability, leading to an over- or underestimation of certain findings. Future studies using objective healthcare utilization records could help validate these results.

Finally, while the study explores various socioeconomic and psychological factors, it does not account for potential cultural and behavioral influences that might affect healthcare-seeking decisions. Cultural norms regarding illness disclosure, traditional healing practices, and gender-related healthcare disparities could provide further insights into variations in service utilization.

## CONCLUSION

HSB among marginalized populations is influenced by multiple socioeconomic and demographic factors, including education level, marital status, household size, and access to health insurance. The findings indicate that individuals with lower education levels, those who are divorced or widowed, and those from larger households tend to utilize inpatient services more frequently. Additionally, financial constraints and a lack of awareness about available healthcare services contribute to delayed care-seeking behavior, potentially leading to more severe health conditions requiring hospitalization. The study highlights the critical role of targeted interventions in improving healthcare utilization. Enhancing public awareness through educational programs, social marketing, and mass media campaigns—particularly via television and radio—can effectively increase health literacy and encourage timely healthcare access. Moreover, financial and structural barriers must be addressed to ensure equitable access to both inpatient and outpatient services. Policymakers should focus on strengthening healthcare coverage, particularly for marginalized populations, by improving insurance effectiveness and expanding service coverage. Addressing situational and economic constraints can help reduce disparities in healthcare utilization and promote better health outcomes. Ultimately, a comprehensive approach that integrates economic support, health education, and policy interventions can lead to improved HSB and reduced health inequities among marginalized communities.

### ETHICAL APPROVAL AND CONSENT:

This study received ethical approval from the ethics committee of Kerman University of Medical Sciences with ID number IR.KMU.REC.1397.053. All participants provided written informed consent before participating in the study, ensuring their voluntary and informed participation in accordance with ethical standards.


### FUNDING

This study is part of an MSc dissertation, which was partly financed by the Research and Technology Deputy affiliated with the Kerman University of Medical Sciences with ID number 96001117. The funding bodies were not involved in the study design, study execution, or the writing of this manuscript


### AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request (in Persian language).

### ABBREVIATION

Health-Seeking Behavior: HSB
Health service utilization: HSU

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