



ORIGINAL ARTICLE

Analysis of Compatibility between the Need and Utilization of Health Services in West of Iran: Panel of Two Cross-Sectional Studies

Ali Soroush¹, Vajihe Ramezani Doroh², Mozhgan Fardid³, Farideh Moradi⁴, Nadya Baharirad⁵, Sajad Vahedi^{6*}

¹ Cardiovascular Research Center, Imam Ali Hospital, Kermanshah, Iran

² Department of Health Services Management, School of Health, Hamadan University of Medical Sciences, Hamadan, Iran

³ Shiraz University of Medical Sciences, Shiraz, Iran

⁴ Clinical Research Development Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran

⁵ Department of Nutritional Sciences, School of Nutritional Sciences and Food Technology, Kermanshah University of Medical Sciences, Kermanshah, Iran

⁶ Bureau for Health and Social Welfare, Deputy for Scientific, Cultural and Social Affairs, Plan and Budget Organization of the Islamic Republic of Iran, Tehran, Iran

ABSTRACT

Background: Individuals with the same needs are eligible to use required healthcare services, which is rarely taken into account in health systems. The present research evaluated this issue by investigating the determinants of the need for outpatient healthcare services and subsequent utilization in Kermanshah, western Iran.

Methods: This was a before-after cross-sectional study which used two utilization surveys before (2006) and after (2015) the Health Transformation Plan (HTP) in Iran. The surveys were performed in a multi-stage sampling manner, and the data were obtained through face-to-face interviews with household members. 2626 (before) and 2089 (after) subjects who were ≤ 15 years old completed the surveys before and after the HTP, respectively, and were included in the analysis. The logistic regression was used to analyze the determinants of the needs and utilization of outpatient healthcare services.

Results: The need for outpatient healthcare services increased from 19.73% before the HTP to 27.09% after it. The utilization of such services in this period also increased from 44.78% to 57.95%. The logistic regression analysis showed that most factors caused an inverse relationship between the studied outcomes before and after HTP, except for supplementary insurance, which increased both the need for outpatient services and subsequent use.

Conclusion: Despite the increased utilization of outpatient services, it seems that some groups still have insufficient access to required healthcare services. Future healthcare reform in Iran must provide enough healthcare services to vulnerable groups.

Keywords: Healthcare Disparities, Healthcare Services, Needs Assessment, Healthcare Reform

Introduction

Since promoting health is the ultimate goal of health systems, providing health services to people is one of the most important tasks of these systems(1, 2). Increasing the provision of health and medical

services without considering distributional issues cannot contribute to health promotion. Hence, health systems must ensure that healthcare services are equally available to the public (3, 4).

Corresponding Author: Sajad Vahedi
Email: vahedi.s3@gmail.com
Tel: +989169463064

Bureau for Health and Social Welfare, Deputy for Scientific, Cultural and Social Affairs, Plan and Budget Organization of the Islamic Republic of Iran, Tehran, Iran

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Unfortunately, underutilization of needed healthcare services has been reported in various parts of the world. Underuse of healthcare services is defined as “failure to deliver a health service which is very likely to improve the quality or quantity of life. This is affordable, and favored by patients, leading to many avoidable deaths and disabilities. Underuse occurs in different healthcare systems, payment mechanisms, and health services due to various causes such as inadequate access, health system failures, etc. (5).

According to the horizontal equity paradigm(6), individuals with the same needs are eligible to take advantage of healthcare services. However, disparities in the utilization of these important services occur at different socio-demographic levels (1, 2). Despite the progress in terms of providing access to healthcare services around the world, there is persistent socioeconomic inequality in healthcare utilization among different socioeconomic groups not only in low- and middle-income countries (LMICs), but also in high-income countries (7). There are limited efforts to achieve equity in receiving healthcare services, especially outpatient services, due to the lack of evidence on effective ways to reduce health disparities (8). Therefore, policymakers seek ways to improve health systems through equal access to healthcare for individuals with the same needs, regardless of their socioeconomic and cultural backgrounds (9).

According to the behavioral model of healthcare use (10), utilization of these services depends on the need as well as predisposing and enabling factors. Users’ perception of the need for healthcare services is the main factor affecting healthcare use. It is crucial to understand the difference between individual needs and the needs of the community, while planning and providing local healthcare. Ignoring such needs can lead to a top-down approach to health care delivery, which depends more on what some people think people need than what they really are. Ignoring such needs can lead to a top-down approach to healthcare delivery, which depends more on what some people think the individuals need than what they really are(11). In addition, other factors such as age, gender,

geographic access, socio-cultural background and economic factors can be predisposing and enabling factors; this may change the use of health care services (12).

Health system in Iran embedded a compound structure of different stockholders, mainly concentrated on the government sector. Government provides health services through a three-tier structure, including primary, secondary and tertiary facilities(13).Alongside this governmental structure, private and non-governmental organizations provide healthcare services mainly concentrated at hospital levels. Leadership of health system is defined in three main levels: Minister of Health and Medical Education (MOHME), the Supreme Council for Health and Food products Security (SCHFS), and the Supreme Council for Health Insurance (SCHI.)(14, 15).In 2016, Iran spent 8.1% of its GDP per capita on health (equivalent to 415.4 US dollars) (16). Between 1995 and 2016, Iran's health expenditure increased from 7 billion dollars to 34 billion dollars, which was higher than global average (17). Iranian health system has experienced many changes during its life. The last plan was the Health Transformation Plan (HTP). During these changes, many health system indicators have experienced improvement. However, problems such as unfair access to health services and high healthcare expenditure have a negative effect on the performance of the health system in Iran.(18).

To overcome existing challenges of healthcare disparity, Iran designed and implemented recent healthcare reforms, known as Health Transformation Plan (HTP)(19). The aim of the HTP is to address major challenges of the Iranian health system such as the high amount of out-of-pocket payments, improper quality of care in hospitals, inadequate delivery of medicines, and healthcare inequality (20). Although there are some studies on the HTP at the national level (1, 2), few studies have examined it at the local level. National studies have shown that the HTP has greatly increased access to inpatient services, but has not had much effect on access to outpatient services (1, 21). The studies conducted at the local level in Iran regarding health service utilization have pointed to

the greater concentration of the use of these services among the higher socio-economic groups(22, 23). Moreover, there are other types evidence that utilization of healthcare services may impose financial hardship on Iranian households (24). The aim of this study is to detect socioeconomic determinants of the need for outpatient healthcare services and subsequent utilization in one of the western provinces of Iran (Kermanshah). Previous studies in this province, which were mainly conducted in the city of Kermanshah, have shown high inequality regarding health and unfavorable access to health services (25, 26). In this study, instead of the city of Kermanshah, the authors studied the entire province and examined how the need for health services and the use of outpatient health services have evolved over time, and also the factors affecting them.

Materials and methods

Study design and setting

A repeated cross-sectional design was used to explore socioeconomic determinants of outpatient healthcare need and utilization in Kermanshah Province. The area of the province is 24,998 km², bordered by Kurdistan Province in the north, Ilam Province in the south, Hamadan and Lorestan Provinces in the east, and Iraq in the west. The total population of Kermanshah province in 2015 was estimated around two million people, most of whom lived in Kermanshah city, the capital. Kermanshah University of Medical Sciences is responsible for providing public health services in this province. This university is also responsible for supervising private providers of health services.

The required data for this research was obtained from two Iranian healthcare utilization household surveys (IrUHS). The first survey (2006) was conducted by the Iranian National Institute of Health Research, and the second (2015) was conducted through the collaboration of this institute and the Statistical Center of Iran. The purpose of this nationwide survey was to collect and prepare data about health and treatment needs and the status of medical services used. It further analyzed the effect of social indicators on the amount of

healthcare use in Iran's health system. Detailed information about these surveys could be found in the previous studies (1, 4).

In this study, all IrUHS questionnaires entitled Household Questionnaire (to collect household socio-demographic and healthcare needs information) and Individual Questionnaire (to gather detailed information about utilization status of household members) were used. The need for and subsequent utilization of outpatient and inpatient healthcare services were asked in these questionnaires. The questionnaires were completed through face-to-face interviews with household members who were ≤ 15 . Regarding the household members of < 15 , the interviews were conducted with the head of household. Due to recall bias, the authors excluded individuals younger than 15 from the analysis. In this study, in the first survey, 2,626 people, and in the second survey 2,089 people were analyzed.

Variables and measurements

The outcome variables in this study were the need for outpatient healthcare services and subsequent utilization of these services in the 2-week period. The need for outpatient healthcare services was based on participants' self-reported healthcare conditions and was estimated according to the response to the following question: "Have you needed outpatient healthcare services in the past two weeks?" The utilization of these services was estimated according to the answer to the question: "Have you used outpatient healthcare services in the past two weeks?"

In this study, the authors supposed that the self-reported need for outpatient healthcare services and the subsequent utilization were the functions of age, gender (male/female), location of residence (urban/rural), educational level, economic status of basic health insurance (yes/no), and supplementary health insurance (yes/no). Age was categorized into four groups (15–29 years old; 30–44 years old; 45–59 years old; and over 60 years old). This categorization was also done for education; this variable was considered with the following three levels: primary (less than 6 years), secondary (7-12

years), and higher (more than 12 years).

Statistical analysis

The IrUHS did not have any information on income and expenditure, and the authors had to use principal component analysis (PCA) to construct the economic status of the household. This method is well accepted to create socio-economic status in developing countries (27). A wide range of household variables and assets such as house ownership and land area, personal car, motorcycle, computer, Internet use, kitchen, telephone and central heating device were included in the PCA analysis. The variables obtained from PCA were sorted in ascending order and then classified into five classes. The first and fifth quintiles included the poorest and the richest people, respectively (2). Since the needs and utilization of outpatient healthcare services in this study were binary, logistic regression was used to analyze the determinants of these outcomes. This research was approved by the ethics committee of Kermanshah University of Medical Sciences (ethical code: IR.KUMS.REC. 1400.013).

Results

In the first survey conducted prior to the HTP, 2,626 individuals over the age of 15 were asked about their need for healthcare use, 518 of whom reported a need for outpatient healthcare services. The need for such services was raised in the subsequent survey, where 566 of 2089 participants reported this need. In the same way, the utilization rate increased from 44.78% before HTP to 57.95% after HTP. The distribution of the study population based on the characteristics of the participants is presented in Table 1.

Table 2 shows the association between determinants of the need for outpatient healthcare services and the subsequent utilization of these services in 2006. In this period, females (OR=1.76, 95%CI: 1.43-2.16) reported higher need for outpatient healthcare services; however, there was no significant difference in the utilization regarding gender. The same pattern was observed in the age groups where an increase in age increased the incidence of reporting the need, and there was no significant

variation in the subsequent utilization between different age groups. Rural residents were less likely to report the need for outpatient services, but were more likely to receive these healthcare services. Likewise, unmarried participants reported less need and use of outpatient services. Education and basic health insurance had no relationship with self-reported needs for healthcare services, but those with higher education had an increased chance of receiving such services. Supplementary health insurance increased the need and subsequent utilization of outpatient healthcare services. Although participants with higher economic status had lower levels of healthcare needs, they were more likely to receive outpatient services.

Table 3 shows the association between determinants of the need for outpatient healthcare services and subsequent utilization of these services in 2015. Just like before the HTP survey, females had a higher incidence of reporting the need for outpatient healthcare services, but there was no significant relationship between them and males. Aging increases the likelihood of needing outpatient health services; thus, the participants over 60 reported a higher rate of incidence (OR=3.05, 95%CI: 2.06-4.52). On the other hand, the elderly had a lower chance of using outpatient services (OR=0.46, 95%CI: 0.24-0.92). There was no significant association between residence and the need for outpatient services, but rural residents reported less use of these services (OR=0.47, 95% CI: 0.30-0.71). Unmarried participants were less likely to report needing outpatient services, but no significant association was observed between marital status and use. Moreover, there was no significant relationship between education and having basic insurance and the need and utilization of outpatient services. Having supplementary insurance increased the self-reported need and subsequent utilization of outpatient healthcare services. While the authors found no relationship between economic status and self-reported need, the wealthiest participants reported higher use of outpatient services.

Table 1. Distribution of the study population by the participants' characteristics n (%), Kermanshah, Iran

Variables	2006					2015				
	Total population	Need		Reception		Total population	Need		Reception	
	N (%)	N	%(95% CI)	N	%(95% CI)	N	%(95% CI)	N	%(95% CI)	
Gender										
Male	1,343 (51.14)	208	15.49 (13.55, 17.42)	97	46.63 (39.8, 53.45)	1,053 (50.41)	241	22.89 (20.35, 25.43)	145	60.17 (53.96, 66.37)
Female	1,283 (48.86)	310	24.16 (21.82, 26.51)	135	43.55 (38.0, 49.09)	1,036 (49.59)	325	31.37 (28.54, 34.20)	220	67.69 (62.59, 72.80)
Age group										
15-29	1,194 (45.47)	164	13.74 (11.78, 15.69)	64	39.02 (31.52, 46.53)	779 (37.29)	125	16.05 (13.46,18.62)	78	62.40 (53.85,70.94)
30-44	723 (27.53)	142	19.64 (16.74, 22.54)	63	44.37 (36.15, 52.59)	600 (28.72)	169	28.17 (24.56,31.77)	112	66.27 (59.10,73.43)
45-59	421 (16.03)	110	26.13 (21.92, 30.33)	59	53.64 (44.25, 63.02)	417 (19.96)	141	33.81 (29.26,38.61)	99	70.21 (62.62,77.80)
60<	288 (10.97)	102	35.42 (29.88, 40.95)	46	45.10 (35.37, 54.83)	293 (14.03)	131	44.71 (39.00, 50.41)	76	58.02 (49.51,66.51)
Location										
Urban	1,215 (46.27)	271	22.30 (19.96, 24.65)	106	39.11 (33.28, 44.95)	1,394 (66.73)	359	25.75 (23.45,28,05)	253	70.47 (65.73,75.20)
Rural	1,411 (53.73)	247	17.51 (15.52, 19.49)	126	51.01 (44.75, 57.27)	695 (33.27)	207	29.78 (26.37,33.18)	112	54.10 (47.28,60.92)
Education										
Primary	1,455 (55.41)	347	23.85 (21.66, 26.04)	161	46.40 (41.13, 51.66)	861 (41.22)	314	36.46 (33.25,39.68)	200	63.69 (58.35, 69.03)
Secondary	938 (35.72)	140	14.93 (12.64, 17.21)	63	45.00 (36.71, 53.29)	855 (40.93)	186	21.75 (18.98,24.52)	118	63.44 (56.48, 70.39)
Higher	233 (8.87)	31	13.30 (8.93, 17.68)	8	25.81 (10.11, 41.50)	373 (17.86)	66	17.69 (13.81,21.57)	47	71.21 (60.18, 82.24)
Marriage										
Married	1,502 (57.20)	362	24.10 (21.94, 26.27)	177	48.90 (43.73, 54.06)	1,257 (60.17)	408	32.45 (29.86,35.04)	273	66.91 (62.33, 71.49)
Unmarried	1,124 (42.80)	156	13.88 (11.86, 15.90)	55	35.26 (27.72, 42.80)	832 (39.83)	158	18.99 (16.32,21.65)	92	58.22 (50.49, 65.95)
Basic insurance										
Yes	2,063 (78.56)	399	19.34 (17.64, 21.05)	198	49.62 (44.70, 54.55)	1919 (91.86)	537	27.98 (25.97,29.93)	348	64.80(60.75, 68.85)
No	563 (21.44)	119	21.14 (17.76, 24.51)	34	28.57 (20.40, 36.74)	170 (8.14)	29	17.05 (11.38,22.73)	17	58.62 (40.33, 76.90)
Supplementary insurance										
Yes	196 (7.46)	56	28.57 (22.23, 34.91)	32	57.14 (44.03, 70.25)	155 (7.42)	68	43.87 (36.02,51.71)	53	77.94 (67.99, 87.89)
No	2,430 (92.54)	462	19.01 (17.45, 20.57)	200	43.29 (38.76, 47.82)	1,934 (92.58)	498	25.74 (23.79,27.70)	312	62.65 (58.38, 66.91)
Economic status										
Quintile 1 (Poorest)	541 (20.60)	115	21.26 (17.80, 24.71)	56	48.70 (39.50,57.89)	539	154	28.57 (24.75, 32.39)	83	53.89 (45.98, 61.81)
Quintile 2	505 (19.23)	107	21.19 (17.62, 24.76)	38	35.51(26.38,44.65)	406	129	31.77 (27.24, 36.31)	76	58.91 (50.37, 67.45)
Quintile 3	524 (19.95)	96	18.32 (15.00, 21.64)	41	42.71(32.74,52.68)	557	142	25.49 (21.87, 29.12)	99	69.71 (62.11, 77.31)
Quintile 4	521 (19.84)	108	20.73 (17.24, 24.22)	51	47.22(37.74,56.70)	170	53	31.18 (24.19, 38.16)	37	69.811 (57.30, 82.31)
Quintile 5 (Richest)	535 (20.37)	92	17.20 (13.99, 20.40)	46	50.00(39.70,60.29)	417	88	21.10 (17.18, 25.03)	70	79.54 (71.05, 88.03)
Total	2626	518	19.73(18.20, 21.24)	232	44.78(40.49, 49.08)	2089	566	27.09(25.18, 29.00)	328	57.95(53.87, 62.02)

Table 2. Socioeconomic determinants of the need for outpatient healthcare services and subsequent outpatient use, 2006, Kermanshah, Iran

Variable	Need				Utilization			
	Adjusted odds ratio	P-value	95% CI		Adjusted odds ratio (95% CI)	P-value	95% CI	
			Upper limit	Higher limit			Upper limit	Upper limit
Gender								
Male	1				1			
Female	1.76	0.00	1.43	2.16	0.92	0.68	0.63	1.36
Age group								
15-29	1				1			
30-44	1.08	0.61	0.80	1.46	0.84	0.56	0.48	1.50
45-59	1.57	0.01	1.13	2.20	1.35	0.33	0.74	2.47
60<	2.54	0.00	1.80	3.59	0.90	0.76	0.47	1.73
Location								
Urban	1							
Rural	0.62	0.00	0.48	0.82	1.89	0.01	1.14	3.13
Marriage								
Married	1							
Unmarried	0.65	0.00	0.49	0.84	0.57	0.02	0.35	0.91
Education								
Primary	1							
Secondary	0.84	0.20	0.65	1.10	0.94	0.82	0.54	1.63
Higher	0.67	0.09	0.42	1.06	0.34	0.03	0.13	0.91
Basic insurance								
Yes	0.85	0.25	0.65	1.12	1.73	0.05	1.00	3.00
No	1				1			
Supplementary insurance								
Yes	2.17	0.00	1.48	3.17	1.95	0.06	0.97	3.92
No	1				1			
Economic status								
Quintile 1 (poorest)	1							
Quintile 2	0.90	0.48	0.66	1.21	0.65	0.14	0.37	1.15
Quintile 3	0.67	0.02	0.48	0.94	1.17	0.61	0.65	2.11
Quintile 4	0.71	0.06	0.50	1.01	1.37	0.30	0.75	2.51
Quintile 5 (richest)	0.51	0.00	0.34	0.76	1.70	0.16	0.82	3.54

Table 3. Socioeconomic determinants of the need for outpatient healthcare services and subsequent outpatient use, 2015, Kermanshah, Iran

Variables	Need				Utilization			
	Adjusted odds ratio	P-value	95% CI Upper limit	Higher limit	Adjusted odds ratio (95% CI)	P-value	95% CI Upper limit	Upper limit
Gender								
Male	1				1			
Female	1.52	0.00	1.23	1.88	1.33	0.14	0.91	1.95
Age group								
15-29	1				1			
30-44	1.74	0.00	1.30	2.32	0.80	0.43	0.45	1.40
45-59	2.19	0.00	1.54	3.12	0.65	0.20	0.34	1.25
60<	3.05	0.00	2.06	4.52	0.46	0.03	0.24	0.92
Location								
Urban	1				1			
Rural	1.17	0.18	0.93	1.48	0.47	0.00	0.30	0.71
Marriage								
Married	1				1			
Unmarried	0.75	0.03	0.59	0.97	0.70	0.12	0.45	1.09
Education								
Primary	1				1			
Secondary	0.91	0.52	0.70	1.20	0.62	0.08	0.35	1.07
Higher	0.80	0.28	0.54	1.19	0.80	0.56	0.38	1.68
Basic insurance								
Yes	1.55	0.05	0.99	2.41	1.16	0.74	0.49	2.72
No	1				1			
Supplementary insurance								
Yes	1.80	0.00	1.24	2.61	2.65	0.01	1.31	5.33
No	1							
Economic status								
Quintile 1 (Poorest)	1				1			
Quintile 2	1.14	0.39	0.84	1.55	1.06	0.81	0.64	1.76
Quintile 3	0.89	0.41	0.67	1.18	1.68	0.05	1.00	2.83
Quintile 4	1.22	0.37	0.79	1.86	1.66	0.18	0.79	3.51
Quintile 5 (Richest)	0.72	0.07	0.51	1.02	2.64	0.01	1.33	5.26

Discussion

The primary aims of this study were investigating the pattern of need and utilization regarding outpatient services among Kermanshah province residents, and the related variables for two periods (before and after HTP). Many studies have demonstrated that using outpatient and inpatient services has increased since the HTP (28-31). However, the authors observed different variations

with regard to the need and subsequent utilization of outpatient services among different groups in the studied periods. While in both periods, women required more outpatient services, they received the same services as men. This shows the deterioration of horizontal equity between men and women in Iran, which was confirmed in another study in Iran. It showed that women had more unmet needs(32). A recent study at the national level in Iran indicated

that women had a greater need for inpatient and outpatient services, but they had equal use of health services compared to men. (1). In another study in Singapore, females with poor health status used more outpatient services than males(33). Given the greater need for services by women in both periods, it was expected that they would seek outpatient services more often. Nevertheless, there still seemed to be barriers to access, which prevented women from meeting their needs. According to some studies, woman with chronic condition postpone the utilization of health services(34, 35). This could hinder individuals' access and cause inequity in health system.

Age was another predisposing factor that could shape health seeking behavior(36). Prior to the HTP, older age groups reported a greater need for outpatient services, but the services had not been used frequently. After the HTP, there was still a need for more outpatient services in older age groups. The use of the surveyed services, however, was similar among <60 respondents, and the chance of using the services decreased in >60 age groups. Older people were expected to have a greater need for health services (1, 37), and thus, using them more. The results suggested that there were still obstacles related to the demand such as being supported by relatives and society as a facilitator of access to health services for the aged individuals(38). In other words, there were other factors that could explain differences between need and utilization of aged respondents. It reminds us again that removing financial barriers such as reduction of direct medical cost of healthcare services is necessary but not sufficient; it is necessary to take a broader policy for deprived groups.

The location of residence showed different patterns in the two periods: in 2006, residence in rural areas decreased the odds ratio of reporting the need for outpatient services and increased their utilization of such services compared to urban residents. In 2015, although rural residents had the same needs as urban dwellers, there was a lower probability of utilizing outpatient services. Lower odds of

utilization among rural residents had been reported by other cross-sectional studies (1, 22). It seems that health status and access to required health services by rural people decreased over time in Iran which necessitates urgent policies to address such unethical inequality.

Many studies have shown that marital status is an important variable for the need for and utilization of health services (1, 39, 40). The results of this study were in line with former national study (1). They found that married respondents were more likely to report the need for outpatient services. However, utilization was not changed by marital status. Based on Andersen's model, there are still factors that could give access to health services(38). Time limitation and receiving support from the spouse during the illness of married people could probably explain why their needs were not met(41). Before the HTP, the most educated respondents were less likely to express the need for outpatient services(1) and subsequently utilized the services less frequently(42), This was while, after HTP, the probability of using outpatient services was related to the level of education, and those with secondary education were less likely to use outpatient services. Better health literacy of educated individuals (43, 44) could be associated with their better health status, fewer needs, and consequently lower utilization before the HTP.

Many studies indicated the enabling role of health insurance in healthcare utilization (39, 40, 45). While in 2006, those covered by basic insurance reported the same needs as those eligible for services, they tended to use more than their peers, indicating the enabling role of health insurance. After the HTP, the insured were more inclined to express their needs, but at that time, they had equal uses. The increased perceived need for outpatient services among people with basic health insurance could be related to the expansion of insurance coverage (46) and the increased need for such services induced by post-HTP providers. The observed pattern of the need and utilization related to supplementary insurance demonstrated

insufficient coverage of services with insurance in the study periods. The finding of this study was in contrast to other national studies in Iran (1).

Although in 2006, along with an increase in the socioeconomic class the probability of reporting the need for outpatient services decreased in almost all SES categories similar utilization of outpatient services was reported. After the HTP, the fifth quintile was the only SES quintile with less probability of reporting the need for outpatient services and higher probability of healthcare use. A study in the United States (47), in line with this study, showed that the disparities in health status and access to healthcare services were persistent for low-income groups over time. Still, there was some degree of socioeconomic inequality in the utilization of health services. The inappropriate payment system and the health workers' perceived inequity in the HTP (48) could increase provider's inclination to induce more needs and more health services to the individuals.

Addressing the need for and utilization of healthcare services was an important strength of this research, but there were limitations. First, the need and utilization pattern were not sufficiently studied over time. Further time series studies can provide a better picture of these patterns. Second, the status of inpatient services among the most influential services in the HTP was not investigated. Other studies are needed to track these services before and after HTP. Third, the need was measured subjectively. There are other variables which could assess individuals' needs more reliably such as chronic disease and symptoms. Fourth, between 2006-2016, Iran underwent many changes that may have affected the health sector, which was not controlled in this study. Therefore, the authors encourage the design of future health service utilization surveys using these questions.

Conclusion

This study revealed that some subgroups of population during the studied years need more health services; however, their service utilization

was less. This indicates the existence of horizontal inequality in Iran's health sector which seems to have worsened over time. There are some factors related to the need and utilization that could expand the gap between the individuals' need for and utilization of outpatient services. Therefore, by conducting more studies with the aim of quantifying the amount of this difference, evidence-based policy-making is needed to reduce inequality in the health sector, especially at the local level in Iran.

Acknowledgements

The authors would like to thank National Institute of Health Research (NIHR) in Iran for their support and free access to the IrUHS' original data.

Conflict of interests

The authors declared no conflict of interests.

Authors' contributions

Soroush A and Vahedi S designed research; all authors conducted the research; Vahedi S and Ramezani-doroh V analyzed data; and Vahedi S, Ramezani-doroh V and Fardid M wrote the paper. Vahedi S had primary responsibility for final content. All authors read and approved the final manuscript.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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