Türkiye Klinikleri Tıp Bilimleri Dergisi
Turkiye Klinikleri Journal of Medical Sciences
Turkiye Klinikleri J Med Sci. 2023;43(1):49-63

ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/medsci.2022-91590

Change in Utilization of Health Services and its Affecting Factors in Kayseri City Center: A Comparative Population-Based Cross-Sectional Study in 2004 and 2017

Kayseri İl Merkezinde Sağlık Hizmetleri Kullanımındaki Değişim ve Etkileyen Faktörler: 2004 ve 2017 Yılları Karşılaştırmalı Topluma Dayalı Kesitsel Çalışma

Vesile ŞENOL[a], Ferhan ELMALI[b], Fevziye ÇETİNKAYA[c], Melis NAÇAR[d], Rukiye YALAP[a]

[a]Department of Nutrition and Dietetics, Kapadokya University Faculty of Health Science, Nevşehir, Türkiye
[b]Department of Biostatistics, İzmir Kâtip Çelebi University Faculty of Medicine, İzmir, Türkiye
[c]Department of Public Health, Erciyes University Faculty of Medicine, Kayseri, Türkiye
[d]Department of Medical Education, Erciyes University Faculty of Medicine, Kayseri, Türkiye

ABSTRACT Objective: This study aimed to examine the change in health service use and its affecting factors by comparing the findings of 2 studies conducted at different times, with the same data collection tools, in the same health service region. **Material and Methods:** The first cross-sectional study was conducted in 2004, in urban areas in Kayseri, with 501 households and 1,880 people in Primary Health Centers. The second was carried out in 2017, in 30 Family Health Centers, with 801 households and 2,253 people. The data were collected by the face-to-face interview method using a questionnaire. In statistical analysis, mean±standard deviation, median (Q1-Q3), Mann-Whitney U, Kruskal-Wallis, Pearson χ^2, logistic regression analysis were used. The value $p<0.05$ was accepted as statistically significant. **Results:** The rate of health service utilization (HSU) increased from 79.6% to 84.8%, the average number of visits to physicians per person increased from 4.9 to 6.9. While the proportion of primary HSU increased to 45.8%, requests for visits to public hospital decreased to 26.4%. Healthcare use was significantly higher in male gender (2.2-2.3 times), 65 years and older (2.8-3.2 times), in people with good income (1.8-1.5 times), and in those with negative health perception (1.8-1.9 times). **Conclusion:** There has been a significant improvement in HSU parameters, particularly in Primary Health Care Centers services. Male gender, good level income, advanced age (≥65), and negative health perception are the main determinants of healthcare use. These results require a better understanding of the factors that make access to the health facilities difficult and the development of strategies that ensure fair use of health services.

Keywords: Health services; utilization; health services accessibility; change

ÖZET Amaç: Bu çalışma, farklı 2 zaman diliminde aynı bölgelerde aynı veri toplama araçları kullanılarak yapılan 2 çalışma sonucu karşılaştırılarak, sağlık hizmeti kullanımındaki değişimi ve etkileyen faktörleri incelemeyi amaçlamaktadır. **Gereç ve Yöntemler:** Kesitsel nitelikli çalışmaların ilki 2004 yılında Kayseri'de 7 kentsel alan Sağlık Ocağı bölgesinde 501 hane ve 1.880 kişi; ikincisi 2017 yılında Kayseri kentsel alan 30 Aile Sağlığı Merkezi bölgesinde 801 hane ve 2.253 kişi üzerinde yürütülmüştür. Veriler araştırma bilgi formu kullanılarak yüz yüze görüşme yöntemi ile toplanmıştır. İstatistiksel değerlendirmede ortalama±standart sapma, medyan (Q1-Q3), Mann-Whitney U, Kruskal-Wallis, Pearson ki-kare ve lojistik regresyon analizi uygulanmıştır. $p<0,05$ değeri istatistiksel olarak anlamlı kabul edilmiştir. **Bulgular:** Örneklem gruplarının yaş ortlaması 28,01 ve 29,31'dir. Sağlık hizmeti kullanım oranı %79,6'dan %84,8'e, kişi başı hekime başvuru ortalaması 4,9'dan 6,9'a yükselmiştir. Birinci basamak hizmet kullanımı %45,8'e yükselirken, kamu hastanelerine başvurular %26,4'e düşmüştür. Sağlık hizmeti kullanımı erkek cinsiyette (2,2-2,3 kat), 65 ve üzeri yaş grubunda (2,8-3,2 kat), gelir düzeyi iyi olanlarda (1,8-1,5 kat), olumsuz sağlık algısına sahip kişilerde (1,8-1,9 kat) anlamlı düzeyde daha yüksektir. **Sonuç:** Birinci basamak sağlık hizmetleri başta olmak üzere, sağlık hizmeti kullanım parametrelerinde belirgin düzeyde iyileşme görülmüştür. Erkek cinsiyet, iyi düzey gelir, ileri yaş (≥65) ve olumsuz sağlık algısı hizmet kullanımının temel belirleyicileridir. Bu sonuçlar hizmete erişimi güçleştiren faktörlerin daha iyi anlaşılmasını ve sağlık hizmetlerinin adil kullanımını sağlayan stratejilerin geliştirilmesini gerekli kılmaktadır.

Anahtar Kelimeler: Sağlık hizmeti; kullanım; sağlık hizmetlerine erişebilirlik; değişim

Correspondence: Vesile ŞENOL
Department of Nutrition and Dietetics, Kapadokya University Faculty of Health Science, Nevşehir, Türkiye
E-mail: vesile.senol@kapadokya,edu.tr

Peer review under responsibility of Turkiye Klinikleri Journal of Medical Sciences.

Received: 28 May 2022 ***Received in revised form:*** 13 Sep 2022 ***Accepted:*** 23 Jan 2023 ***Available online:*** 07 Feb 2023

The use of health services is the result of interaction of individuals with health care needs and interaction with the health care infrastructure, including technology, materials, and professional services. The use of health services, which make up the core of a functional health system, may change in parallel with time, structural-financial reforms, and demographic transformation.[1,2] Therefore, the interest in studies that identify inequalities in access and use of health services and propose measures to reduce inequalities has increased in recent years in Türkiye, as well as in the rest of the world.[3]

According to Andersen's "Behavioral Model", health service demand is shaped based on "tendency, need, and opportunity".[1,2] In many studies on the use of health services in the literature.[4,5] It has been emphasized that the parameters for use of health services vary according to the socio-demographic and economic characteristics of the individual; use is 1.9-2.6, times higher for women, 1.1-5.4 times higher for those with health insurance, 1.8-4.0 times higher for those with medium-good monthly income, 1.7-2.0 times higher for those with one or more chronic disease, 1.2-2.3 times higher in the elderly, and 3.9 times higher in those, who have been hospitalized in the last year.[5-9] It has been reported that those, who have a negative perception of general health and who constantly have a negative perception of health, used health services more 4.9 times.[5,6]

With the effect of the structural, financial, and practical reforms brought along with the Health Transformation Program (HTP), which has been implemented in Türkiye since 2003, significant changes have been observed in the parameters of health care utilization. The main components of the program, which aims to achieve the goals of effectiveness, efficiency and equity, are family physicians, efficient health institutions, general health insurance and increasing the knowledge, skills and motivation of health workers.[10] The main objective of the HTP is to reduce the increased expenditures in the field of health and increase productivity without restricting the access of individuals to health.[10]

Current "Transformation in Primary Care the main result of the HTP put into practice in Türkiye for today". It has increased the number of admissions to healthcare centers per person in various ways". Indeed, given the general health statistics (GHS), health indicators have improved and satisfaction with health services has increased (39.5% vs.71.7%), access to health services has become easier, and the number of visits to a physician per person has increased over the years.[11] According to 2017 GHS, while the rate of physician visits to primary healthcare was 36% in 2002 among all requests for visits to hospital clinics throughout Türkiye, it decreased to 33% in 2017. The rate of physician visits to secondary and tertiary level hospital clinics increased from 64% to 67%. Physician visits to Ministry of Health Hospital clinics reached 76% throughout Türkiye and the Central Anatolian Region.[11]

According to current GHS, the number of visits to physicians per person in Türkiye is 9.5, which is higher than the Organisation for Economic Co-operation and Development countries and Development countries (6.8) and some developed (2.8 vs 6.1) countries. However, admissions to physicians are higher in Germany (9.9), Hungary (10.9), Japan (12.6), and South Korea (16.6) than in Türkiye.[11]

Despite the radical changes made in the provision of health services within the scope of HTP in Türkiye, studies based on the general population, which reveal the current situation at the national/regional level regarding the factors affecting the use of health services and access to services, have been limited. The majority of the previous studies cover only the data of people who admission to a health institution for the purpose of benefiting from health services, and do not include data from people who cannot access or use (23.4%) health services for any reason.[11] Therefore, in this study, data revealing the inability to access or not using health services for any reason and the change in these parameters over time were also collected.

Our studies, in which population-based by random sampling was carried out in the time period including the historical intervals which was implemented HTP in Türkiye. The aim of this study was to re-determine people's levels of health-care utilization and the factors influencing access to health-

care services, as well as to reveal changes in the parameters over time by comparing the findings of 2 studies conducted in the same research area using the same data collection tools in 2004 and 2017.

MATERIAL AND METHODS

The findings of this cross-sectional study carried out with 1,880 people (501 households), who received service from 7 Primary Health Care Centers (PHCs) between May-September 2005 in Kayseri and 2253 people (801 households), who received service from 30 Family Health Centers (FHCs) in the same regions between January-May 2017, were obtained by comparing the results of the 2 studies.

RESEARCH SAMPLE

In 2004, 7 out of 21 PHCs were classified as good (3), medium (9), and low (9) according to the socioeconomic level, by asking for the opinion of the Provincial Health Directorate. Similarly, 30 of 71 FHCs were classified as good (9), medium (7), or low (14) in 2017.

The names of the sampled PHCs/FHCs in 2004 and 2017 are shown in Figure 1.

SAMPLE SIZE DETERMINATION

In 2004, the rate of referral to health services throughout Türkiye was accepted as 49%, with 95% confidence interval (CI), Type I error 0.05, Type II error 0.20, effect size d=0.08, and the sample size in the study program in the package program was determined as 1,288 people (430 households).

In the 2004 study, the sample size was calculated only for individuals aged 15 and over. In this study, the population of urban health centers in the city center (64,8845) was proportioned to the number of households in the urban area health centers (16,8064), and it was calculated that there would be an average of 2.89 (≈3) people aged 15 and above in each household, and it was considered to apply a questionnaire to 3 people from each family. In the study, 13-15 households were visited in each health house, 501 households and 1,880 people were reached. A questionnaire was applied to 4.22±1.39 people in a household.

In 2017, the sample size was determined as 2,000 people, to have 80% as minimum power of representation. The rate of physician visits to PHCs was accepted as 35% and with a CI of 95%, α=0.05, β=0.20, effect size d=0.10, and using the NCSS [Statistical and Power Analysis Software PASS 11 Power Analysis and Sample Size Software (2011). NCSS, LLC. Kaysville, Utah, USA, ncss.com/software/pass]. In 2017, it was considered appropriate to include 670 households in the scope of research to reach the sample size of 2,000 people, depending on the target of reaching approximately 3 people in each household. In the study, 2,253 people were reached in 801 households. Data were collected through face-to-face interviews by visiting 26 households in each of

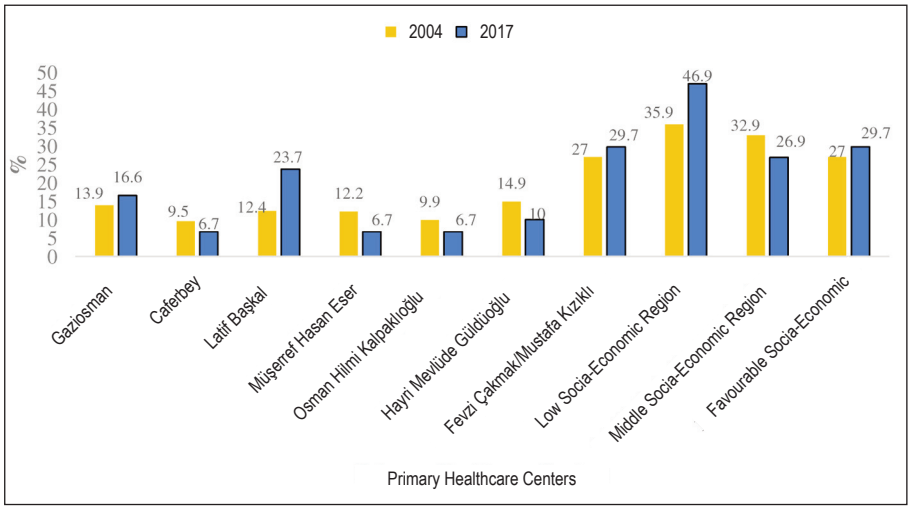

FIGURE 1: Distribution of sampled people in 2004 and 2017 by primary health centers providing health services.

the 30 FHC units. A questionnaire was applied to 3.27±0.96 people in a household (Figure 1).

DATA COLLECTION TOOLS

Research data were collected by researchers with standard training using face-to-face interviews through demographic data [family and adult (≥15 years) and elderly (≥65 years)] forms, by visiting household members.

In the questionnaires, descriptive questions (family type, monthly household income, and the distance from the home to the nearest health institution and registered family physician, as well as age, gender, education, occupation, chronic diseases, and the frequency of hospitalizations and visits to health institutions in the previous year) were asked to people.

The predictor variables included in the questionnaires were defined as[1] predisposing (age, gender, marital status), enabling (income, education, occupation, distance from healthcare services), and need/tendency [chronic disease, self-rated health (SRH)] factors, according to Andersen's Behavioral Model.

How would you describe your general health status? Is used to measure SRH. The responses were dichotomized into good and poor health perception on a five-point scale that ranged from excellent to poor.[12]

EVALUATION OF THE DATA

The data analysis was performed with IBM SPSS Statistics Standard Concurrent User V 25 (IBM Corp., Armonk, New York, ABD) program. The conformity of quantitative variables to normal distribution was investigated with the Shapiro-Wilk test. The descriptive statistics of continuous numerical variables conforming to the normal distribution are expressed as mean±standard deviation, median (Q1-Q3) for those that did not meet normal distribution. The Mann-Whitney U test was used in the comparison of the 2 independent groups, the two ratio tests were used to compare the reasons for physician visits/visitations to the health institution clinic/physician by individuals, who benefited from health services in 2004 and 2017, and the Kruskal-Wallis test was used when comparing more than 2 groups. The groups, from which the difference originated, were compared with the Bonferroni test. The relationship between categorical variables was examined with Pearson chi square analysis. A value of $p<0.05$ was considered statistically significant.

A multiple logistic regression analysis was performed to determine predictive factors for health service utilization in the last year. In the model, physician visits to a clinic were a dependent variable for the use of health services. Socio-demographic variables, distance from to the nearest health institution, SRH were considered as independent variables in the model.

In the multiple regression model for 2017 and 2004, the odds ratio, 95% Confidence Interval, and R^2 were calculated for each variable.

PERMISSION OBTAINED FOR THE RESEARCH

Ethics Committee Approval was obtained from the Erciyes University Clinical Research Ethics Committee (date: August 28, 2015; number: 2015/399) and written informed consent was obtained from each participants prior to the study in accordance with the Declaration of Helsinki.

RESULTS

SOCIO-DEMOGRAPHICAL CHARACTERISTICS

In 2004 and 2017, individuals constituting both sample groups were similar in terms of family structure (77.5% had a nuclear family) and gender, the mean age was 28.01 in 2004 and 29.31 in 2017 (p=0.028). Detailed data are shown in Table 1.

LEVEL OF USE OF HEALTH SERVICES AND INFLUENCING FACTORS

While the rate of physician visits to take health services in the last year was 79.6% in 2004, it was 84.8% in 2017. Detailed data are shown in Table 2.

In 2004, while the most frequently applied to institution was the social insurance hospital clinics it was the FHCs in 2017. Detailed data are shown in Table 3.

In both periods, the most common reason for referral to a health institution was disease examination (Z=2.26, p=0.025) and medication prescription (Z=1.15, p=0.248).

TABLE 1: Socio-demographic characteristics of individuals included in the study 2004 and 2017.

Socio-demographic characteristics		2004		2017		Total*		Statistical assessment	
		n	%*	n	%*	n	%*	χ^2	p value
Gender (n=1,880; 2,253)	Male	881	47.2	1,068	47.4	1,949	47.2	0.121	0.728
	Female	999	52.8	1,185	52.6	2,184	52.8		
Age groups (n=1,880; 2,253)	0-14	575	30.6	720	32.0	1,295	31.3	46.407	<0.001
	15-24	328	17.5	237	10.5	565	13.7		
	25-44	594	31.5	840	37.3	1,434	34.7		
	45-64	288	15.3	336	14.9	624	15.1		
	≥65	95	5.1	120	5.3	215	5.2		
Marital status (n=1,304; 1,533)	Single	303	23.2	277	18.1	580	20.4	15.603	<0.001
	Married	904	69.3	1,164	75.9	2,068	72.9		
	Divorced and widow	97	7.4	92	6.0	189	6.7		
Educational level (n=1,304; 1,533)	Illiterate	168	12.9	142	9.3	310	10.9	146.748	<0.001
	Primary school	513	39.3	345	22.5	858	30.2		
	Secondary school	156	12.0	373	24.3	529	18.6		
	High school	343	26.3	462	30.1	805	28.4		
	University	124	9.5	211	13.8	335	11.8		
Occupation (n=1,304; 1,533)	Worker	222	17.0	281	18.3	503	17.7	15.283	0.018
	Civil servant**	93	7.1	114	7.4	207	7.3		
	Retired	115	8.8	132	8.6	247	8.7		
	Housewife	562	43.1	616	40.2	1,178	41.5		
	Tradesman	110	8.4	129	8.4	239	8.4		
	Student	160	12.3	168	11.0	328	11.6		
	Unemployed	42	3.2	93	6.1	135	4.8		
Household income (n=1,880; 2,253)	Low	634	33.7	162	7.2	796	19.3	536.878	<0.001
	Middle	957	50.9	1,847	82.0	2,804	67.8		
	Good	289	15.4	244	10.8	533	12.9		

*The column percentage is taken; **Including self-employed and farmers.

TABLE 2: The level of utilization of health services by the research group in 2004 and 2017.

Use of health services	Level of physician visits						
	2004			2017			Total
	Number of visits (%)	$\bar{X}$±SD	Median (minimum-maximum)	Number of visits (%)	$\bar{X}$±SD	Median (minimum-maximum)	n (%)
Present	1,496 (79.6)	4.94±5.34	3.0 (1-46)	1,910 (84.8)	6.89±8.72	5.0 (1-191)	3,406 (82.4)
Absent	384 (20.4)			343 (15.2)			727 (17.6)
Total	1,880 (45.5)			2,253 (54.5)			4,133 (100.0)
χ^2/p value	19.127, <0.001						

SD: Standard deviation.

LEVEL OF UTILIZATION OF HEALTH SERVICES ACCORDING TO SOCIO-DEMOGRAPHIC FACTORS

The proportion of HSU is shown in Table 4 and Table 5.

DETERMINANTS OF HEALTHCARE USE

According to the single and multiple regression model, in 2017 and 2004, determinants of health care use are shown in Table 6.

TABLE 3: The distribution probability of visiting to hospital clinics/physicians according to scope of service by the respondents in 2004 and 2017.

Scope of service	Level of physician visits				Statistical assessment	
	2004 (n=1,496)		2017 (n=1,910)		χ^2	p value
	Institution	Number of visits (%)	Institution	Number of visits (%)		
First level	Primary healthcare center	657 (28.8)	Family healthcare center	1,534 (45.4)	36.729	<0.001
	$\bar{X}$±SD	3.59±4.13	$\bar{X}$±SD	4.30±3.89		
	Median (minimum-maximum)	2.0 (1.0-60)	Median (minimum-maximum)	3.0 (1-50)		
	Tuberculosis dispensary, maternal and child health and family planning, occupational physician	34 (1.5)	Tuberculosis dispensary, geriatrics center	14 (0.41)		
	$\bar{X}$±SD	3.22±3.15	$\bar{X}$±SD	1.70±1.05		
	Median (minimum-maximum)	2.0 (1-10)	Median (minimum-maximum)	2.0 (0-4)		
Total	691 (30.3)		1,548 (45.8)			
Secondary level	Public hospital clinic	469 (20.6)	Public hospital clinic	539 (15.9)	11.265	0.004
	$\bar{X}$±SD	3.83±4.20	$\bar{X}$±SD	3.69±7.59		
	Median (minimum-maximum)	2.0 (0-36)	Median (minimum-maximum)	2.0 (1-150)		
	Maternity hospital clinic	57 (2.5)	Maternity hospital clinic	70 (2.07)		
	$\bar{X}$±SD	1.75±1.12	$\bar{X}$±SD	2.92±2.49		
	Median (minimum-maximum)	1.0 (1.6)	Median (minimum-maximum)	2.0 (1-15)		
	Chest hospital clinic	16 (0.7)	Chest hospital clinic	48 (1.42)		
	$\bar{X}$±SD	2.43±2.36	$\bar{X}$±SD	2.31±1.77		
	Median (minimum-maximum)	2.0 (1-10)	Median (minimum-maximum)	2.0 (1-10)		
	Other (social insurance institution+military hospital clinic)	598 (26.2)	Children's hospital clinic	235 (6.9)		
Total	1,140 (49.9)		892 (26.4)			
Tertiary level	University hospital clinic	150 (6.6)	University hospital clinic	345 (10.2)	43.617	<0.001
	$\bar{X}$±SD	3.43±5.36	$\bar{X}$±SD	4.38±8.86		
	Median (minimum-maximum)	2.0 (1-45)	Median (minimum-maximum)	3.0 (1-154)		
	-	-	Faculty of dentistry clinics	206 (6.1)		
Total	150 (6.6)		551 (16.3)			
Private sector	Private hospital clinics	229 (10.0)	Private hospital clinics	357 (10.7)	32.652	<0.001
	$\bar{X}$±SD	2.55±2.37	$\bar{X}$±SD	2.94±2.59		
	Median (minimum-maximum)	2.0 (1-15)	Median (minimum-maximum)	2.0 (1-24)		
	Private physician examination	72 (3.1)	Private physician examination	32 (0.9)		
	$\bar{X}$±SD	3.18±2.44	$\bar{X}$±SD	2.28±1.95		
	Median (minimum-maximum)	2.0 (1-10)	Median (minimum-maximum)	2.0 (1-10)		
Total	301 (13.2)		389 (11.5)			

SD: Standard deviation.

FACTORS AFFECTING ACCESS TO HEALTH INSTITUTION/PHYSICIAN

Figure 2 shows the variables that significantly improve access to healthcare services as well as their proportional changes between 2004 and 2017.

During the process, the rate of people not benefiting from healthcare significantly decreased from 20.4% in 2014 to 15.2% in 2017 (Table 2).

Figure 3 shows the factors that significantly impede access to health services, as well as their proportional changes between 2004 and 2017.

TABLE 4: The level of physician visits to health institutions according to some socio-demographic variables of the people in 2004 and 2017.

Demographic variables	Status of physician visits								Statistical assessment	
	2004				2017				χ^2	p value
	Present (%)	Absent (%)	n	%	Present (%)	Absent (%)	n	%*		
Gender (2004 n=1,880; 2017 n=2,253)										
Male	658 (74.7)	223 (25.3)	881	46.9	868 (81.3)	200 (18.7)	1,068	47.4	42.038	<0.001
Female	838 (83.9)	161 (16.1)	999	53 1	1,042 (87.9)	143 (12.1)	1,185	52.6		
Total	1,496 (79.6)	384 (20.4)	1,880	100.0	1,910 (84.8)	343 (15.2)	2,253	100.0		
χ^2/p value	24.345		<0.001		19.291		<0.001			
Age groups (years) (2004 n=1,880; 2017 n=2,253)										
0-14	491 (85.4)	84 (14.6)	575	30.6	633 (87.9)	87 (12.1)	720	32.0	63.340	<0.001
15-24	235 (71.6)	93 (28.4)	328	17.4	191 (80.6)	46 (19.4)	237	10.5		
25-44	446 (75.1)	148 (24.9)	594	31.6	684 (81.4)	156 (18.6)	840	37.3		
45-64	239 (83.0)	49 (17.0)	288	15.3	291 (86.6)	45 (13.4)	336	14.9		
≥65	85 (89.5)	10 (10.5)	95	5.1	111 (92.5)	9 (7.5)	120	5.3		
Total	1,496 (79.6)	384 (20.4)	1,880	100.0	1,910 (84.8)	343 (15.2)	2,253	2,253		
χ^2/p value	39.813		<0.001		22.432		<0.001			
Educational level (2004 n=1,304; 2017 n=1,533)										
Illiterate	135 (80.4)	33 (19.6)	168	12.9	130 (91.5)	12 (8.5)	142	9.3	65.652	0.017
Primary school	400 (78.0)	113 (22.0)	513	39.3	299 (86.7)	46 (13.3)	345	22.5		
Secondary school	117 (75.0)	39 (25.0)	156	12.0	301 (80.7)	72 (19.3)	373	24.3		
High school	254 (74.1)	89 (25.9)	343	26.3	369 (79.9)	93 (20.1)	462	30.1		
University	99 (79.8)	25 (20.2)	124	9.5	178 (84.4)	33 (15.6)	211	13.8		
Total	1,005 (77.1)	299 (22.9)	1,304	100.0	1,277 (83.3)	256 (16.7)	1,533	100.0		
χ^2/p value	3.947		0.413		14.473		0.006			

TABLE 4: The level of physician visits to health institutions according to some socio-demographic variables of the people in 2004 and 2017 *(devamı)*.

Demographic variables	Status of physician visits								Statistical assessment	
	2004				2017				χ^2	p value
	Present (%)	Absent (%)	n	%	Present (%)	Absent (%)	n	%*		
Occupation (2004 n=1,304; 2017 n=1,533)										
Worker	151 (68.0)	71 (3.0)	222	17.0	213 (75.8)	68 (24.2)	281	18.3	75.725	<0.001
Civil servant	77 (82.8)	16 (17.2)	93	7.1	92 (80.7)	22 (19.3)	114	7.4		
Retired	95 (82.6)	20 (17.4)	115	8.8	122 (92.4)	10 (7.6)	132	8.6		
Housewife	474 (84.3)	88 (15.7)	562	43.1	539 (87.5)	77 (12.5)	616	40.2		
Tradesman	70 (63.6)	40 (36.4)	110	8.4	99 (76.7)	30 (23.3)	129	8.4		
Student	113 (70.6)	47 (29.4)	160	12.3	140 (83.3)	28 (16.7)	168	11.0		
Unemployed	25 (59.5)	17 (40.5)	42	3.2	72 (77.4)	21 (22.6)	93	6.1		
Total	1,005 (77.1)	299 (22.9)	1,304	100.0	1,277 (83.3)	256 (16.7)	1,533	100.0		
χ2/p value	53.142		<0.001		34.864		<0.001			
Household income (2004 n=1,880; 2017 n=2,253)										
Low	472 (74.4)	162 (25.6)	634	33.7	133 (82.1)	29 (17.9)	162	7.2	29.716	<0.001
Middle	787 (82.2)	170 (17.8)	977	50.9	1,581 (85.6)	266 (14.4)	1,847	82.0		
Good	237 (82.0)	52 (18.0)	289	15.4	196 (80.3)	48 (19.7)	244	10.8		
Total	1,496 (79.6)	384 (20.4)	1,880	100.0	1,910 (84.8)	343 (15.2)	2,253	100.0		
χ2/p value	15.475		<0.001		5.619		0.060			
Marital status (2004 n=1,304; 2017 n=1,533)										
Single	216 (71.3)	87 (28.7)	303	23.2	224 (80.9)	53 (19.1)	277	18.1	30.960	<0.001
Married	696 (77.0)	208 (23.0)	904	69.3	970 (83.3)	194 (16.7)	1,164	75.9		
Divorced and widow	93 (95.9)	4 (4.1)	97	7.4	83 (90.2)	9 (9.8)	92	6.0		
Total	1,005 (77.1)	299 (22.9)	1,304	100.0	1,277 (83.3)	256 (16.7)	1,533	100.0		
χ2/p value	25.150		<0.001		4.426		0.059			
Closeness to the health facility (meters) (2004 n=1,880; 2017 n=2,253)										
<500	381 (78.9)	102 (21.1)	483	25.7	508 (87.6)	72 (12.4)	580	25.7	9.953	0.004
500-1000	592 (85.2)	103 (14.8)	695	37.0	876 (82.8)	182 (17.2)	1,058	47.0		
>1000	523 (74.5)	179 (25.5)	702	37.3	526 (85.5)	89 (14.5)	615	27.3		
Total	1,496 (79.6)	384 (20.4)	1,880	100.0	1,910 (84.8)	343 (15.2)	2,253	100.0		
χ2/p value	25.098		<0.001		7.012		0.030			

TABLE 5: The rate of physician visits to a health institution according to some socio-demographic variables of the people in 2004 and 2017.

Demographic variables	Level of physician visits				Statistical assessment
	2004		2017		
	$\bar{X}$±SD	Median (Q_1-Q_3)	$\bar{X}$±SD	Median (Q_1-Q_3)	
Gender					
Male	4.50±5.15	3.0 (1.0-5.0)	6.23±8.23	4.0 (2.0-8.0)	M-W U: 5.707 p<0.001
Female	5.29±5.55	3.0 (2.0-7.0)	7.44±9.07	5.0 (3.0-9.0)	
M-W U/p	3.192	<0.001	5.124	<0.001	
Age groups					
0-14	4.61±4.70	3.0 (2.0-5.0)	6.34±6.17	4.0 (3.0-8.0)	K-W H: 73.299 p<0.001
15-24	4.40±4.93	3.0 (1.0-6.0)	6.62±7.22	4.0 (2.0-9.0)	
25-44	4.46±5.40	2.0 (1.0-5.0)	6.66±9.80	4.0 (2.0-8.0)	
45-64	7.43±7.14	5.0 (2.0-11.0)	10.26±15.26	8.0 (5.0-12.0)	
K-W H /p	45.562	<0.001	38.901	<0.001	
Marital status					
Single	3.90±4.53	2.0 (1.0-5.0)	6.50±7.31	4.0 (2.0-9.0)	K-W H: 31.807 p<0.001
Married	5.19±5.70	3.0 (2.0-6.0)	7.04±9.24	5.0 (3.0-8.0)	
Divorced and widow	7.23±7.21	4.0 (2.0-10.0)	9.58±18.39	5.0 (2.0-11)	
K-W H/p	23.027	<0.001	5.895	0.052	
Educational level					
Illiterate	6.27±6.39	4.0 (2.0-9.0)	8.51±7.89	7.0 (4.0-10)	K-W H: 23.553 p<0.001
Primary school	5.23±5.82	3.0 (2.0-6.0)	8.18±11.92	5.0 (3.0-10)	
Secondary school	4.20±5.28	2.0 (1.0-5.0)	7.25±12.45	4.0 (3.0-8.5)	
High school	4.62±5.24	3.0 (1.0-6.0)	6.54±6.93	4.0 (2.0-8.0)	
University	5.27±5.53	3.0 (1.0-7.0)	5.61±5.32	4.0 (2.0-7.0)	
K-W H /p	17.249	0.002	25.367	<0.001	
Occupation					
Worker	3.43±3.68	2.0 (1.0-4.0)	5.60±6.52	4.0 (2.0-6.0)	K-W H: 86.123 p<0.001
Civil servant	5.94±6.05	4.0 (2.0-10)	5.10±4.43	4.0 (2.0-6.0)	
Retired	6.02±6.01	4.0 (2.0-9.0)	9.72±15.47	6.0 (3.0-12.2)	
Housewife	5.79±6.17	3.0 (2.0-8.0)	8.28±11.21	6.0 (3.0-10.0)	
Tradesman	2.91±2.58	2.0 (1.0-4.0)	5.74±6.27	4.0 (2.0-7.0)	
Student	4.49±5.53	3.0 (1.0-5.0)	6.37±6.28	4.0 (2.0-9.0)	
Unemployed	4.80±7.17	2.0 (1.5-6.0)	5.23±3.84	4.0 (2.0-7.0)	
K-W H/p	47.040	<0.001	61.607	<0.001	
Household income					
Low	5.09±5.70	3.0 (2.0-6.0)	6.63±5.99	5.0 (2.0-9.0)	K-W H: 45.778 p<0.001
Middle	4.89±5.29	3.0 (2.0-6.0)	6.94±9.16	5.0 (3.0-8.0)	
Good	4.80±5.06	3.0 (2.0-6.0)	6.67±6.30	4.0 (3.0-7.7)	
K-W H /p	0.280	0.869	0.215	0.898	
Closeness to the health facility (meters)					
<500	5.41±5.75	3.0 (2.0-7.0)	6.71±6.56	5.0 (3.0-8.0)	K-W H: 15.373 p<0.001
500-1000	4.66±5.12	3.0 (2.0-5.0)	7.25±9.36	5.0 (3.0-8.7)	
>1000	4.91±5.39	3.0 (1.0-6.0)	6.46±9.39	4.0 (2.0-7.0)	
K-W H/p	4.980	0.083	14.719	<0.001	

SD: Standard deviation.

TABLE 6: Univariate and multiple logistic regression (Backward-Wald method) analyses for models predicting utilization of health services in 2017 and 2004 (n=2,812).

Predictor variables	Univariate regression				Multivariate regression			
	Wald	OR	95% CI	p value	Wald	OR*	95% CI**	p value
Gender								
Female	Reference	1			Reference	1		
Male	76.040	2.335	1.930-2.826	<0.001	57.635	2.170	1.777-2.651	<0.001
Age groups (years)								
0-14	Reference	1			Reference	1		
25-44	2.506	1.204	0.957-1.515	0.113	0.853	1.179	0.831-1.672	0.356
45-64	16.406	1.826	1.365-2.445	<0.001	5.988	1.666	1.107-2.508	0.014
>65	19.178	3.297	1.933-5.622	<0.001	10.952	2.852	1.533-5.304	0.001
Marital status								
Single	Reference	1			Reference	1		
Married	5.879	1.312	1.053-1.633	0.015	0.290	0.910	0.646-1.282	0.590
Divorced and widow	22.041	4.161	2.295-7.545	<0.001	2.651	1.762	0.891-3.487	0.103
Closeness to the health facility (meters)								
<500	Reference	1			Reference	1		
500-1000	0.899	1.121	0.885-1.419	0.343	0.817	1.120	0.876-1.432	0.366
>1000	1.601	0.856	0.673-1.089	0.206	2.083	0.832	0.649-1.068	0.149
Household income								
Low	Reference	1			Reference	1		
Middle	27.051	1.698	1.391-2.072	<0.001	34.850	1.897	1.534-2.347	<0.001
Good	4.272	1.490	1.021-2.173	0.039	8.031	1.771	1.193-2.630	0.005
Self-perceived health status								
Positive (good)	Reference	1			Reference	1		
Negative (poor)	40.296	1.985	1.606-2.452	<0.001	30.127	1.887	1.504-2.366	<0.001

OR: Odds ratio; CI: Confidence interval.

DISCUSSION

This study aimed to examine the change in the use of health services and its affecting factors based on the results of studies conducted in 2004 and 2017. In summary, a significant change was found in both the parameters of the use of health services and the pattern of physician visits according to the service steps in 2017. When considered in terms of the general trend, the change is very similar to the health services usage pattern reached throughout Türkiye.[11]

In fact, the rate of admission to health services in all sectors increased from 79.6% to 84.8% and the average number of visits to the physicians per person increased from 4.9 to 6.9 (Table 2). When the utilization of health services is analyzed according to the scope of service, physician visits to primary care services increased, contrary to the trend across the country, and constituted approximately one out of every two (45.8%) physician visits in 2017.[11] According to 2018 GHS data, the rate of physician visits to PHC services across the country decreased from 36% in 2002 to 33% in 2017.[11]

According to this study, while the average number of physician visits per person in PHCs was 3.6 in 2004, it increased to 4.3 in FHCs in 2017. However, on the same dates, the figures in Türkiye were 1.1 vs. 2.9.[11] While the rate of physician visits to the PHCs, which accounted for approximately one out of every three requests of visits (30.3%) in 2004, were lower than the country average (36%), it remained at a higher level (33%) in 2017, accounting for approximately one out of every two physician visits.[11]

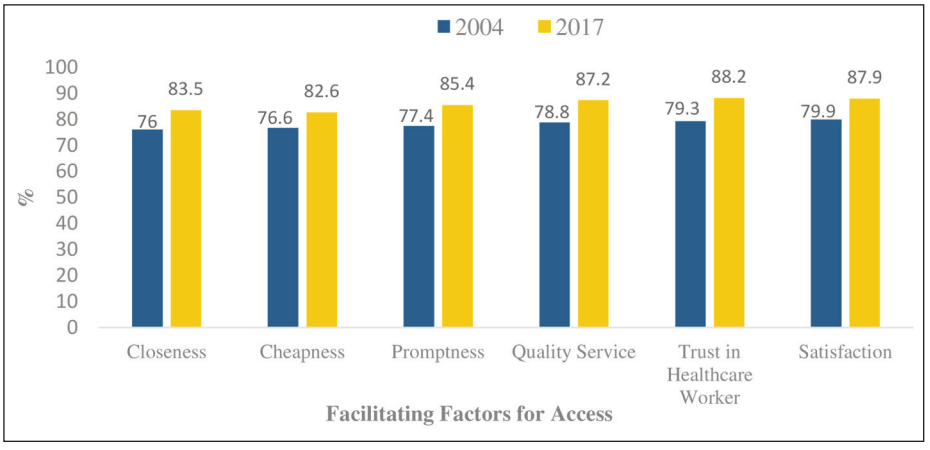

FIGURE 2: The level of physician visits to hospital clinics/physicians according to some facilitating factors.

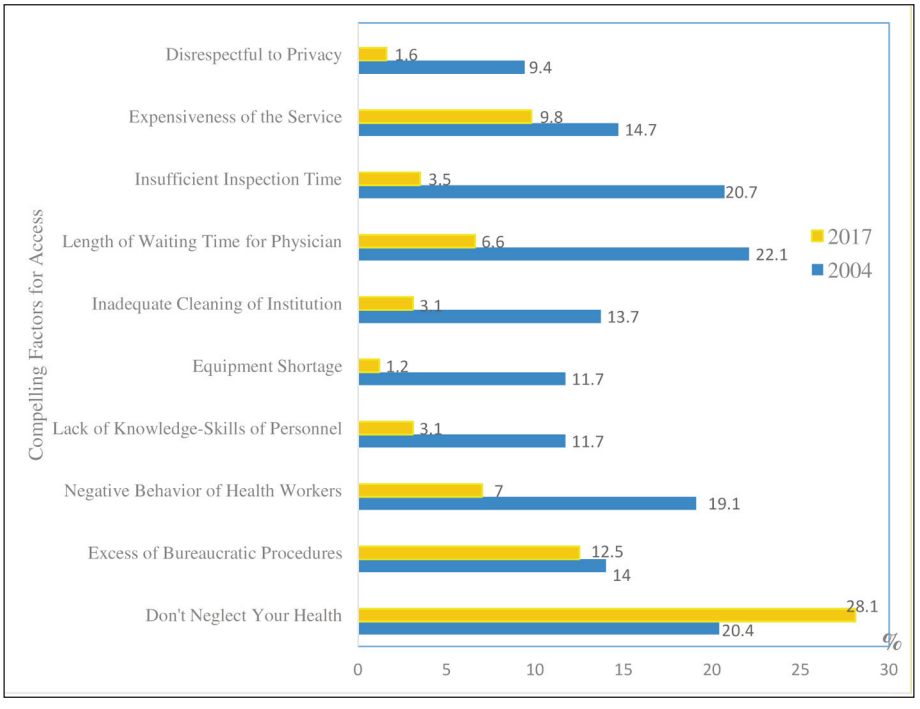

FIGURE 3: Compelling factors for non-requests of visits to a health institution/physician in 2004 and 2017.

Based on the results, the services that cannot be met within the scope of the Family Physicians System, which has been implemented in Türkiye since 2003, and the problems experienced in the referral chain system, admissions, such as increasing accessibility to the health services, general health insurance, which brings everyone under one roof, and health care approach based on patient satisfaction, it may have positively affected the functionality of PHC services in the research region and contributed to the significant increase of physician visits to FHCs.[10,13,14]

Moreover, this study results in line with previous studies, gender, age, educational level, household income, marital status, occupation and distance to the nearest healthcare-center showed a significant association with HSU.

In line with most of studies this study results demonsrated that females were frequently use health services than male.[4,5,15-20] This can be explained by the fact that female exposure more discomfort due to peculiar reproductive health needs. Moreover, female would be more likely to accompany their children to

health institutions where they seek treatment for themselves too, as stated by Girma et al.[21]

Similarly this study indicated that older individuals were most likely to use health services, consistent with some previous studies.[16,22] In epidemiology, diseases draw a curve in the form of the letter "u" at the beginning and end of life. Therefore, in parallel with the increase in aging and age-related chronic diseases, the use of healthcare services is also increasing.

This study results in accordance with another study concluded that a lower level of education was associated with a higher likelihood of health services utilization.[22] This can be explained by the fact that insufficient education indirectly reduces the probability of finding a well-paid job and earning sufficient income. Moreover low-educated individuals have poor information about the procedures in health lifestyle behaviors and they are more aware about health promotion and prevention.[23] Therefore, poor people get more illness because they cannot eat adequate and balanced nutrition and maintain their health, and they tend to seek health services.

According to our study findings, income level is an important factor affecting the use of health services. Middle-income people benefited more from both general health services and primary health-care. This is in line with some studies reported that individuals with middle household incomes were more likely to use health services.[5,21] In these studies HSU was found to be 1.9 times higher in the middle income group. Another hypothesis is that individuals living in regions with low socioeconomic status have more health problems due to exposure to more negative environmental factors, and therefore they are more likely to use health services.[24]

Income level can affect usage by increasing financial and physical accessibility to the health services. In the study conducted by of Kim and Casado it has been defined that people in the high-income group benefit more from preventive health services because the cost of service and related expenditures directly affect, and the poverty cause a significant decrease in physician visits compared to middle and high income earners.[17]

Contrary to previous study results, in this study, individuals who experienced separation by either death or divorce marriage was positively associated with increased HSU.[15,21-26] Moreover, our results indicated that in line with previous literature, greater use of PHC services by married individuals than the others.[15,21-26]

Our study outcomes in line with the previous literature demonstrated there is a significant association between distance to the nearest healthcare facilitate and HSU.[5,26-28] As a matter of fact, in our study, those who lived among 500-1000 meters to the nearest health institution in 2004 and those who lived closer 500 meters to the nearest health center in 2017 benefited more from all health care services.

Place of residence can affect the use of health services for a variety of reasons. The geographical distribution and local availability of health units can create barriers to the use of health services, and a short walking distance to health units is a good indicator of HSU.

In addition, the primary care-intensity structuring of the physician visits pattern according to the scope of service in the research region can be considered as a development that meets the call to "*strengthen your health systems in line with the primary care values and principles*", which was sent to countries in the 62nd World Health Assembly.[29]

In this study, when the applications are examined according to the scope of service, the rate of benefiting from PHC services, which was one in three in 2004, increased to one in two in 2017. Different from the general health service user characteristics, in accordance with the literature 0-14 age group children, women (especially housewives), married people, primary school graduates and middle distance to the nearest health institution residents benefited significantly more from family medicine services.[5,16,17,21,25,26]

In this study, the frequency of physician visits to all secondary and tertiary hospitals, including private sector requests of visits, was 69.7% in 2004, but decreased to 54.2% in 2017 (Table 3). This result is responsible for the dramatic decrease in physician visits to secondary public hospitals, which accounted for

half of all admissions in 2004, to the level of only one in four requestion. However, according to the 2018 GHS, hospital visits affiliated with the Ministry of Health, both throughout the country and in the Central Anatolia Region, were at a level of 76% among hospital visits in all sectors.[11] Similarly, according to the same statistical data, the rate of physician visits to secondary and tertiary hospitals throughout the country increased from 64% to 67%.[11]

There were a low number of physician visits to secondary level public hospitals detected in the research region (Table 3). People, covered by general health insurance can apply to all public health institutions under the Ministry of Health, based on service coverage, especially hospitals affiliated with the Social Insurance Institution.[10] The shift in 2017 of visits to tertiary university hospitals may have contributed to this result. Furthermore, in our study, in consistent with previous studies disease severity and comorbidity and the need of hospitalization may have increased the demand of inpatient treatment facilities provided higher form of medical specialist services.[30,31] In conclusion, because there is no mandatory referral chain system in primary care, patients can apply to secondary and tertiary health institutions without being referred by PHC institutions.[10]

In this study, as mentioned above, the use of health services was found to be closely related to socio-demographic factors and general health status (Table 4 and Table 5). However, in the multiple regression analysis, the main predictor factors for utilization of health services in 2017 and 2004 were determined as 2.2-2.3 times higher for men, 2.8-3.3 times higher for the 65 and over age group, and 1.9-1.7 times higher for the middle-income group. It was determined that the good income group used health services 1.8-1.5 times more, and those with a negative health perception 1.8-1.9 times more (Table 6).

In terms of determinants of health care use, our findings are similar to the results of current studies in the literature, except for gender. In our study, according to the results of the two ratio tests, it was observed that women use more health services than men, but in further analysis, it was determined that male gender was the determinant of health services use. However, in many studies in the literature, female gender was found to be a determinant in the use of health services.[4-7,9]

In this study, similar to the findings of previous studies, it was determined that the group aged 65 and over used health services 2.8-3.3 times more than other age groups.[7-9,32] In the literature, Wu et al. reported 1.5 times higher use in those aged 60 and over. Araujo et al. and Awoke et al. reported 1.2 and 2.3 times higher use in those in the 70-79 age group, respectively.[7-9] Zhang et al. reported 1.2 times higher use of health services in those aged 70 and over.[32]

In this study, in line with the findings of the previous study on the subject, those with medium and good household incomes benefited from health services 1.5-1.9 times more in 2017 and 2014.[5,8,9] These studies have reported that those with middle-level income above the poverty line and people with good incomes benefit from health services 1.8-4.0 times more.

Similar to the present study, the results of a study carried out by Şenol et al. and the results of other studies in the literature, individuals with a negative perception of health use more health services.[5,6,21,26,32]

Physical and financial accessibility of health services, as well as service quality, effectiveness, efficiency, and fair-based presentation of services that take into account the most fundamental human right, are the criteria that people with health problems prioritize when using health services. In this study, satisfaction with health services increased the admissions rates significantly (79.9% vs. 87.9%). While the most important factor facilitating access to services was the presence of social security in 2004, it was the trust in health personnel and the provision of quality services in 2017 (Figure 2). In the literature, some studies reported that people, who are satisfied with health services use more health services, similar to the findings of this study.[33,34] On the other hand, in a study carried out by Abera Abaerei et al., it was reported that poor health care quality reduces referral rates.[4] While the main factor compelling access to health services in 2004 was the length of time spent visiting the physician, in 2017, it was the intensity of bureaucratic procedures in the use of health

services (Figure 3). Consistent with the findings of this study, Çiçeklioğlu et al. found that the increase in bureaucracy in service usage process is a major factor that makes access difficult.[35] In this context, with the separation of services offered to the individual and the society in the new service model, the regional-based holistic health care approach before the HTP was eliminated, thus creating unnecessary biduality and bureaucracy.

CONCLUSION

In this study, which evaluated the change in the level of use of health services of people and its affecting factors in 2004 and 2017. With the applied HTP in Türkiye, it was determined that significant improvement in service usage parameters, and physician visits were concentrated in FHCs. Male gender, advanced age, middle-good income level, and poor SRH were the main determinants uses of health services. Trust in health workers/service quality is the main enabling factor and intensity of bureaucratic barriers and neglecting their own health are the main compelling factors for accessibility. These results require a better understanding of the factors that make access to the health services difficult and the development of strategies that ensure fair use of health services.

Acknowledgements

The authors thank the scholarship students (Aytül KILINÇ, Özge ZOR, and Sibel KÖSE), who collected the data in the current study. The authors would also like to thank Maria Iskenderoglu, a native speaker who edited this article.

Source of Finance

This study was approved way TÜBİTAK (Project no:215S670 3001/215S670) and supported by TÜBİTAK Research Fund.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Vesile Şenol, Fevziye Çetinkaya;* ***Design:*** *Vesile Şenol, Fevziye Çetinkaya;* ***Control/Supervision:*** *Vesile Şenol;* ***Data Collection and/or Processing:*** *Vesile Şenol, Rukiye Yalap;* ***Analysis and/or Interpretation:*** *Vesile Şenol, Fevziye Çetinkaya, Melis Naçar Ferhan Elmalı;* ***Literature Review:*** *Rukiye Yalap, Melis Naçar;* ***Writing the Article:*** *Vesile Şenol, Ferhan Elmalı, Fevziye Çetinkaya, Melis Naçar;* ***Critical Review:*** *Erciyes University Editing Ofice: Maria İskenderoğlu, Fevziye Çetinkaya;* ***References and Fundings:*** *TUBİTAK.*

REFERENCES

1. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in the United States. Milbank Mem Fund Q Health Soc. 1973;51(1):95-124. [Crossref] [PubMed]
2. Babitsch B, Gohl D, von Lengerke T. Re-revisiting Andersen's behavioral model of health services use: a systematic review of studies from 1998-2011. Psychosoc Med. 2012;9:11. [PubMed] [PMC]
3. Landmann-Szwarcwald C, Macinko J. A panorama of health inequalities in Brazil. Int J Equity Health 2016;15:174. [Crossref] [PubMed] [PMC]
4. Abera Abaerei A, Ncayiyana J, Levin J. Health-care utilization and associated factors in Gauteng province, South Africa. Glob Health Action. 2017;10(1):1305765. [Crossref] [PubMed] [PMC]
5. Bazie GW, Adimassie MT. Modern health services utilization and associated factors in North East Ethiopia. PLoS One. 2017;12(9):e0185381. [Crossref] [PubMed] [PMC]
6. Capilheira MF, da Silva Dos Santos I. Fatores individuais associados à utilização de consultas médicas por adultos [Individual factors associated with medical consultation by adults]. Rev Saude Publica. 2006;40(3):436-43. Portuguese. [Crossref] [PubMed]
7. Araujo MEA, Silva MT, Galvao TF, Pereira MG. Prevalence of health services usage and associated factors in the Amazon region of Brazil: a population-based cross-sectional study. BMJ Open. 2017;7(11):e017966. [Crossref] [PubMed] [PMC]
8. Awoke MA, Negin J, Moller J, Farell P, Yawson AE, Biritwum RB, et al. Predictors of public and private healthcare utilization and associated health system responsiveness among older adults in Ghana. Glob Health Action. 2017;10(1):1301723. [Crossref] [PubMed] [PMC]
9. Wu D, Lam TP, Lam KF, Zhou XD, Sun KS. Public views towards community health and hospital-based outpatient services and their utilisation in Zhejiang, China: a mixed methods study. BMJ Open. 2017;7(11):e017611. [Crossref] [PubMed] [PMC]
10. Akdağ R. Turkey Health Transformation Program, Evaluation Report (2003-2011). Ankara: T.C. Ministry of Health; 2012. [Link]
11. The Ministry of Health of Turkey Health Statistics Yearbook 2018. Utilization of health care services, chapter 8, p.159-205. (Date of access:12.02.2023). [Link]

12. Wannamethee G, Shaper AG. Self-assessment of health status and mortality in middle-aged British men. Int J Epidemiol. 1991;20(1):239-45. [Crossref] [PubMed]
13. Çilhoroz Y, Arslan İ. Sağlıkta dönüşüm programı uygulamalarının değerlendirilmesi: akademisyenler üzerinde nitel bir araştırma [Evaluation of health transformation program practices: a qualitative research on academics]. Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi. 2018;10(26):798-810. [Crossref]
14. Bankur M. Aile hekimliğinde zorunlu sevk zincirinin uygulanmamasının sağlık harcamalarına etkisi: üst solunum yolu enfeksiyonları üzerine bir uygulama [The impact of failure to apply mandatory referral chain at family medicine practices on the healthcare expenses: an application to upper respiratory tract infection cases]. Sosyal Güvence Dergisi. 2017;12:60-88. [Crossref]
15. Mojumdar SK. Determinants of health service utilization by urban households in India: A multivariate analysis of NSS case-level data. Journal of Health Management. 2018;20(2):105-21. [Crossref]
16. Nouraei Motlagh S, Sabermahani A, Hadian M, Lari MA, Mahdavi MR, Abolghasem Gorji H. Factors affecting health care utilization in Tehran. Glob J Health Sci. 2015;7(6):240-9. [Crossref] [PubMed] [PMC]
17. Kim K, Casado BL. Preventive health services utilization among Korean Americans. Soc Work Public Health. 2016;31(5):431-8. [Crossref] [PubMed]
18. Sözmen K, Ünal B. Explaining inequalities in health care utilization among Turkish adults: Findings from Health Survey 2008. Health Policy. 2016;120(1):100-10. [Crossref] [PubMed]
19. Fujita M, Sato Y, Nagashima K, Takahashi S, Hata A. Impact of geographic accessibility on utilization of the annual health check-ups by income level in Japan: A multilevel analysis. PLoS One. 2017;12(5):e0177091. [Crossref] [PubMed] [PMC]
20. Ranjbar Ezzatabadi M, Khosravi A, Bahrami MA, Rafiei S. Socioeconomic inequalities in health services utilization: a cross-sectional study. Int J Health Care Qual Assur. 2018;31(1):69-75. [Crossref] [PubMed]
21. Girma F, Jira C, Girma B. Health services utilization and associated factors in jimma zone, South west ethiopia. Ethiop J Health Sci. 2011;21(Suppl 1):85-94. [PubMed] [PMC]
22. Gan-Yadam A, Shinohara R, Sugisawa Y, Tanaka E, Watanabe T, Hirano M, et al. Factors associated with health service utilization in Ulaanbaatar, Mongolia: a population-based survey. J Epidemiol. 2013;23(5):320-8. [Crossref] [PubMed] [PMC]
23. Cutler DM, Lleras-Muney A. Education and Health: evaluating theories and evidence. 2006. [Crossref]
24. Yip AM, Kephart G, Veugelers PJ. Individual and neighbourhood determinants of health care utilization. Implications for health policy and resource allocation. Can J Public Health. 2002;93(4):303-7. [Crossref] [PubMed] [PMC]
25. López-Cevallos DF, Chi C. Health care utilization in Ecuador: a multilevel analysis of socio-economic determinants and inequality issues. Health Policy Plan. 2010;25(3):209-18. [Crossref] [PubMed]
26. Şenol V, Çetinkaya F, Balcı E. Factors associated with health services utilization by the general population in the center of Kayseri, Turkey. J Med Sci. 2010;30(2):721-30. [Crossref]
27. Jahangeer R. PHS82 determinants of health service utilization in Urban Pakistan. Value in Health. 2012;15:A533. [Crossref]
28. Zhang X, Wu Q, Shao Y, Fu W, Liu G, Coyte PC. Socioeconomic inequities in health care utilization in China. Asia Pac J Public Health. 2015;27(4):429-38. [Crossref] [PubMed]
29. The World Health Report. Primary health care now more than ever. Geneva, WHO ISBN 978 92 4 156373 (Date of access:11.02.2023). [Link]
30. Singh JA, Sarkin A, Shieh M, Khanna D, Terkeltaub R, Lee SJ, et al. Health care utilization in patients with gout. Semin Arthritis Rheum. 2011;40(6):501-11. [Crossref] [PubMed] [PMC]
31. van Doorslaer E, Wagstaff A, van der Burg H, Christiansen T, De Graeve D, Duchesne I, et al. Equity in the delivery of health care in Europe and the US. J Health Econ. 2000;19(5):553-83. [Crossref] [PubMed]
32. Zhang X, Yu B, He T, Wang P. Status and determinants of health services utilization among elderly migrants in China. Glob Health Res Policy. 2018;3:8. [Crossref] [PubMed] [PMC]
33. Atun R, Aydın S, Chakraborty S, Sümer S, Aran M, Gürol I, et al. Universal health coverage in Turkey: enhancement of equity. Lancet. 2013;382(9886):65-99. [Crossref] [PubMed]
34. Onyeneho NG, Amazigo UV, Njepuome NA, Nwaorgu OC, Okeibunor JC. Perception and utilization of public health services in Southeast Nigeria: Implication for health care in communities with different degrees of urbanization. Int J Equity Health. 2016;15:12. [Crossref] [PubMed] [PMC]
35. Çiçeklioğlu M, Öcek Z, Yücel U, Özdemir R, Türk M, Taner Ş. Aile hekimliği birinci basamak sağlık ortamını nasıl dönüştürdü? İçinde: Öcek Z, Çiçeklioğlu M, eds. Ankara:TTB Yayınları; 2013. p. 22,92,103,162. (Date of access:11.02.2023) [Link]