

Unmet health-care needs: a study based on Turkey health survey (2019)

Necesidades sanitarias insatisfechas: un estudio basado en la encuesta de salud de Turquía (2019)

Cuma Çakmak^{1*}, Şenol Demirci², and Özgür Uğurluoğlu³

¹Department of Health Care Management, Faculty of Economics and Administrative Sciences, Dicle University, Diyarbakır; ²Health Institutes of Türkiye (TUSEB), Türkiye Health Care Quality and Accreditation Institute (TUSKA), Ankara; ³Department of Health Care Management, Faculty of Economics and Administrative Sciences, Hacettepe University, Ankara, Turkey

Abstract

Objective: Reasons such as difficulty in payment, long waiting times, and the distance from health institutions and health-care needs of individuals may not be met. This study aims to determine the prevalence of health needs consisting of medical care, dental care, and prescribed drugs that are not met due to insolvency in Turkey and to evaluate whether features such as gender, age, education status, marital status, employment status, perceived health status, chronic disease status, and health insurance status affect these unmet health needs. **Methods:** The study data consist of the Turkey Health Survey dataset conducted in 2019 on a sample determined in the Turkish population by the Turkish Statistical Institute. **Results:** As a result of the analyzes carried out, it was found that the participants who were under 65 years of age, had a low level of education, had a poor perceived health status, had a chronic disease, were not covered by social security, were married, divorced and widowed had high medical care, dental care and prescribed medication needs that could not be met due to insolvency. **Conclusion:** In this context, it is recommended for policymakers to develop policies for individuals in disadvantaged groups.

Keywords: Health equity. Inability to pay. Health disparities. Turkey health survey.

Resumen

Objetivo: Por motivos como la dificultad de pago, los largos tiempos de espera y la distancia a las instituciones de salud es posible que no se satisfagan las necesidades de atención médica de las personas. Este estudio tiene como objetivo determinar la prevalencia de las necesidades de salud, incluyendo atención médica, atención dental y medicamentos recetados, que no se satisfacen debido a la insolvencia en Turquía. **Métodos:** Los datos del estudio proceden del conjunto de datos de la encuesta de salud de Turquía realizada en 2019 en una muestra determinada en la población turca por el Instituto de Estadística de Turquía. **Resultados:** Los participantes menores de 65 años, con un nivel educativo bajo, un estado de salud percibida pobre, alguna enfermedad crónica, sin estar cubiertos por la seguridad social, casados, divorciados o viudos, tenían altos niveles médicos y necesidades sanitarias, odontológicas y de medicación prescrita que no pudieron cubrirse debido a la insolvencia. **Conclusiones:** En este contexto, se recomienda que los responsables de la formulación de políticas desarrollen políticas para personas de grupos desfavorecidos.

Palabras clave: Equidad sanitaria. Incapacidad para pagar. Disparidades sanitarias. Encuesta de salud de Turquía.

*Correspondence:

Cuma Çakmak

E-mail: cuma.cakmak@dicle.edu.tr

Date of reception: 05-09-2023

Date of acceptance: 08-04-2024

DOI: 10.24875/CIRUE.M25000863

Cir Cir (Eng). 2025;93(4):362-372

Contents available at PubMed

www.cirugiaycirujanos.com

2444-0507/© 2024 Academia Mexicana de Cirugía. Published by Permanyer. This is an open access article under the terms of the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

In the Universal Declaration of Human Rights, which is one of the primary documents on human rights, it is emphasized that health is a fundamental human right and need^{1,2}. States have pledged to protect this right through international declarations, international conferences, domestic legislation, and policies³. It is also stated in the Constitution of the Republic of Turkey that health is a right and that citizens have the right to access health services⁴. Since health is seen as a fundamental right, health systems aim to improve society's health and provide access to the health services that the society needs, regardless of socioeconomic status and other non-need conditions^{5,6}.

However, there are some obstacles to this goal⁷. Unmet health-care needs, expressed as the lack of availability or limited availability of health services when and where they are needed, are seen as one of the biggest obstacles to accessing health services⁸. Unmet health needs include health needs such as medical care, dental care, mental care, and prescribed medications⁹. Among the main reasons for unmet health needs are some situations such as inability to pay, long waiting times, distance from the health institution, insufficient provision of the required health service or not providing them at all, and negative attitudes and thoughts of the person about the service^{8,10}. Although the impact of these situations on unmet health needs differs from country to country, insolvency and lack of or inadequate provision of health services are seen as the most critical barriers to accessing needed health services^{10,11}. A study conducted on Organization for Economic Co-operation and Development (OECD) countries states that approximately 7% of the population in the Netherlands, the Czech Republic, and the United Kingdom; and approximately 30% of the population of countries such as Estonia, Ireland, Latvia, Greece, and Portugal, delays receiving health-care services due to insolvency or cannot receive health care at all¹². In a study conducted on approximately 230 thousand people in South Korea, it was reported that 35.8% of the participants could not access the health services they needed due to the lack of health services when they needed it, and 22.8% of them due to economic reasons such as payment difficulties¹¹. Bagshaw et al.¹³ conducted another study on 1277 people in New Zealand and found that one of the most important causes of unmet health needs is insolvency. A study

conducted on approximately 20 thousand people in Serbia determined that inability to pay is one of the leading causes of unmet health needs¹⁴.

There are many stakeholders in the Turkish Health System, including policy, administrative decision-making, financing, and health service delivery actors. Public institutions and organizations are dominant in providing health services, and there are foundations and private health institutions. Financing of health services is provided primarily by the Social Security Institution (SSI), the Ministry of Treasury and Finance, private insurance institutions, and international agencies, and through out-of-pocket payments¹⁵. The health transformation program implemented in Turkey in 2003 by former Health Minister Recep Akdağ and his team brought about significant changes in the management and organization, financing, resource management and service delivery functions of the health system and paved the way for the rapid expansion of health insurance coverage and access to health services for all citizens, including the poorest population groups. Access to and utilization of essential maternal and child health services have been improved to help significantly reduce under-5, infant and neonatal mortality, particularly among socioeconomically disadvantaged households, and Turkey has introduced Universal Health Insurance covering the entire population to improve equity and achieve the health system goals of improved health status and distribution, fairness in financing through reduced catastrophic health expenditures, and significantly improved population satisfaction with the health system¹⁶. General Health Insurance (GHI), which was put into practice in January 2012 within the body of the SSI and obliges all citizens to have health insurance, has an important place in the financing of health services¹⁶. Citizens insured with GHI and those who receive pensions from SSI and their dependents can benefit from health services. In addition, those who do not have any social insurance or those who have optional insurance are included in the scope of compulsory insurance, provided that their premiums are paid by themselves. Therefore, almost all of the population has been provided with health insurance¹⁷. For the financing of the system, premiums are collected for the employees based on their earnings within the scope of GHI. The income test is applied to those who do not have any job/seasonal work or are optionally insured. According to the results of the income test, the amount of premium to be paid is decided¹⁸. With this application, the premium to be paid is not

associated with income, but individuals who cannot pay their premiums still face the problem of not being able to access health services. However, to solve the problem mentioned above, decisions have been taken that enable individuals to receive health services from public hospitals even if they have premium debts¹⁹. Within the scope of the GHI, the examination contribution fee is not collected from the health services that individuals receive from the family physicians they are registered with. However, a fixed contribution is collected for outpatient treatment provided by secondary and tertiary health institutions and private health institutions. In addition, it has been stated that additional fees may be charged for some services determined by SSI in health service providers belonging to private health institutions and higher education institutions. For each drug prescribed for outpatient treatment, a contribution of approximately 20% of the drug cost is collected¹⁸.

Out-of-pocket expenditures such as contributions and additional fees may prevent disadvantaged groups from accessing health services^{20,21}. Out-of-pocket health expenditures have increased in Turkey over the years, and the per capita health expenditure in 2019, according to purchasing power parity, increased to \$211, and its ratio in total health expenditure is 16.7%. The ratio of households with catastrophic health expenditure decreased steadily until 2012, when it fell to 0.14%, but after 2012 an upward trend began, rising to 0.43% in 2019²². Out-of-pocket expenditures and the resulting catastrophic expenditures can create a financial barrier to accessing health services, resulting in unmet health needs. In a study conducted in European countries, it was reported that the frequency of catastrophic health expenditures and unmet health needs is relatively high, and income inequality may be effective in unmet health needs²³. In a study conducted on people aged 15 and over in Turkey, it was determined that the prevalence of unmet health needs due to insolvency decreased from 17% in 2006 to 9% in 2013, and it is reported that disadvantaged groups are at risk in terms of unmet health needs²⁴. In a study conducted in Turkey by Yetim and Çelik²⁵, it was determined that the prevalence of unmet health needs in 2016 was 13.2%, and it was stated that the GHI was not successful enough to eliminate the problem of accessing health services. The reasons for this situation are out-of-pocket health expenditures and expenses incurred for accessing health services.

When the studies on unmet health needs were examined, it was determined that variables such as

age, gender, educational status, marital status, employment status, perceived health status based on the person's statement, chronic illness, health insurance, income, region of residence and behavioral risk factors (smoking and alcohol use, physical lack of activity are among the essential determinants of unmet health needs^{9,11,25-30}). Conditions that cause unmet health needs and determinants of unmet health services limit people's access to health-care services, resulting in an increased risk of mortality, deterioration in the quality of life, mental health, and health status⁵. In the light of this information, this study aims to determine the prevalence of unmet health needs, including medical care, dental care, and prescribed drugs in Turkey, and to determine whether the descriptive features of gender, age, education level, marital status, employment status, perceived health status, chronic disease status and health insurance status affect these unmet health needs.

Methods

Data and variables used in the research

The data set of the Turkey Health Survey (THS) conducted in 2019 on the sample determined in the population of Turkey by the Turkish Statistical Institute (TURKSTAT) constitutes the study data. Within the scope of the study, data from 17084 people aged 15 and over who participated in the research in question were used. The necessary legal permissions for the data used were obtained from TURKSTAT.

THS has been carried out regularly every 2 years since 2008, and the sample size is calculated to make estimations across Turkey. A questionnaire is used as a data collection tool in THS; the data are obtained through face-to-face interviews with the individuals reached and are based on the interviewees' statements. The THS questionnaire aims to reveal the general health profile of individuals, and many indicators are obtained³⁰. Within the scope of the survey, questions are also asked about health needs, such as medical care, dental care, and prescribed medications that are not met due to insolvency. Regarding medical care, "In the last 12 months, have you been unable to afford medical care due to inability to pay?"; Regarding dental care, "During the last 12 months, have you ever needed dental care but could not afford it due to inability to pay?" and about the prescribed drugs, "During the last 12 months, have you ever been unable to afford the prescribed medicine because you needed

it, but could not afford it?" questions are asked, and the answers are "Yes" or "No." It is deduced that those who answer "Yes" to the question have unmet health needs, and those who answer "No" do not have unmet health needs. In this study, the dependent variable is medical care, dental care and prescription drugs that cannot be met due to insufficient ability to pay. It was also conducted to assess the impact of individual characteristics on the health care needs of the dependent variable.

In the study, the variables of gender, age, education status, marital status, employment status, perceived health status, chronic disease status, and health insurance status in the THS data set were used as independent variables.

Analysis of the data

It is stated that the most appropriate method to use is Logistic Regression Analysis if the dependent variable is binary and the independent variables are either categorical or continuous. In this study, in which the effect of the descriptive characteristics of individuals, which are the independent variables, on the unmet health needs, which is the dependent variable, is desired, Logistic Regression analysis was used because the dependent variables were binary and the independent variables were categorical³¹. Within the scope of the study, Statistical Package for the Social Sciences (SPSS) v22.0 software was used to provide descriptive statistics and conduct Logistic Regression Analysis.

Results

Table 1 shows the descriptive characteristics of the study participants. Accordingly, while 46.6% of the participants are men, 54.4% are women. 16% of the participants are in the 15-24 age range, 18% are in the 25-34, 19.9% are in the 35-44, 17.1% are in the 45-54, 14.7% are in the 55-64, and 14.4% consist of individuals aged 65 and over. When the education level of the participants was examined, it was determined that 12.8% of them did not finish any school or were illiterate, 50.2% were primary school graduates, 24.5% were high school or associate degree graduates, and 12.5% were graduates. It was detected that 68.6% of the participants were married, and 38.2% were working in a job. While 11% of the research participants described their health status as bad, 62.5% stated that they had a chronic disease.

Table 1. Descriptive characteristics of the participants

Sociodemographical characteristics	n	%
Sex		
Male	7,784	45.6
Female	9,300	54.4
Age		
15-24 years old	2,730	16.0
25-34 years old	3,070	18.0
35-44 years old	3,395	19.9
45-54 years old	2,918	17.1
55-64 years old	2,513	14.7
65 and over	2,558	14.4
Education		
No degrees of any kind	2,194	12.8
Primary education	8,577	50.2
High school and associate degree	4,180	24.5
Graduate and undergraduate	2,133	12.5
Marital status		
Single	3,610	21.1
Married	11,726	68.6
Divorced	574	3.4
Widowed	1,174	6.9
Employment status		
Employed	6,527	38.2
Unemployed	10,557	61.8
Health status		
Poor	9,988	58.5
Moderate	5,214	30.5
Bad	1,882	11.0
Chronic diseases		
Present	10,685	62.5
None	6,399	37.5
Social security		
Present	15,735	92.1
None	1,349	7.9
Total	17,084	100.0

7.9% of the participants do not have social security under the SSI.

When the health needs of the participants that they needed but could not meet due to insolvency in the last 12 months are analyzed (Table 2), it is seen that 8.6% could not receive the medical care they needed due to insolvency, 10.9% could not receive dental care, and 6.1% could not buy the prescribed drugs.

Table 3 shows the results of the Logistic Regression Analysis, showing the effect of various sociodemographic characteristics of the participants on the unmet medical care needs due to insolvency. When table 3 is examined, it is found that the percentage of explanation (Nagelkerke R²) of the revealing model is 0.125, and the variables of age, education, marital

Table 2. Levels of medical care, dental care, and prescribed medication unmet due to inability to pay in the last 12 months

Items	n	%
Have you ever needed medical care that could not be met due to your inability to pay?		
Yes	1469	8.6
No	15615	91.4
Have you ever needed dental care that could not be met due to your inability to pay?		
Yes	1864	10.9
No	15220	89.1
Have you ever needed a prescribed medicine that could not be met due to your inability to pay?		
Yes	1046	6.1
No	16038	93.6
Total	17084	100.0

status, health status, chronic illness, and having social security in the model are statistically significant. When the age variable is examined, people who are 15-25 years (OR = 4.272), 25-34 years (OR = 5.005), 35-44 years (OR = 3.805), 45-54 years (OR = 2.808), and 55-64 years (OR = 1.685) old have more unmet medical care needs than participants aged 65 and over. Compared to the participants at the graduate level, those who did not complete a school (OR = 3.006), primary school (OR = 2.352), and high school and associate degree (OR = 1.425) graduates had more unmet medical care needs, and the unmet medical care needs increased with the decrease in education level. Married (OR = 1.348), divorced (OR = 1.749), and widowed (OR = 1.644) participants were found to have more unmet medical care needs due to insolvency compared to single participants. It has been determined that there are more unmet medical care needs due to insolvency when participants with poor (OR = 4.127) and moderate (OR = 1.884) health status compared with participants with good health status, participants with a chronic disease (OR = 2.023) compared with participants without chronic disease, and participants not covered by social security (OR = 3.155) compared with the participants who are covered by the insurance.

The results of the Logistic Regression Analysis, showing the effect of various sociodemographic characteristics of the participants on the unmet dental care needs due to insolvency, are shown in table 4. It was found that the percentage of explanation (Nagelkerke R^2) of the model was 0.079, and the variables of age, education, marital status, health status,

presence of chronic disease, and having social security in the model had a statistically significant effect. When evaluated in terms of the age variable and compared to the participants aged 65 and over, which is the reference category, 15-25 years (OR = 3.837), 25-34 years (OR = 4.717), 35-44 years (OR = 4.250), 45-54 years (OR = 3.266) and 55-64 years old (OR = 2.064) participants were found to have more unmet dental care needs due to payment difficulties. In terms of the education variable, it was determined that those who did not complete a school (OR = 1.749), primary school (OR = 1.605), and high school and associate degree (OR = 1.218) graduates had more unmet dental care needs than graduates. In terms of marital status, married (OR = 1.416), divorced (OR = 1.750), and widowed (OR = 1.464) participants had more unmet dental care needs than single participants, and participants with poor (OR = 2.414) and moderate (OR = 1.495) health status have more unmet dental care needs than participants with good health status. It was seen that the levels of unmet dental care needs of the participants with chronic disease (OR = 1.968) and those who were not covered by social security (OR = 2.132) were higher.

Table 5 shows the results of the Logistic Regression Analysis showing the effect of the sociodemographic characteristics of the participants on the unmet prescription medicine needs due to insolvency. While the percentage of explanation (Nagelkerke R^2) of the model is 0.122, it is seen that the variables of age, education, marital status, health status, presence of chronic disease, and having social security in the model have statistically significant effects. Compared to participants aged 65 and over, it is seen that other age groups have more unmet prescription drug needs due to insolvency, and that unmet prescription drug needs decrease as the age of the participants increases. When evaluated in terms of education level, it was determined that the unmet prescription drug needs of the participants at other education levels were higher due to payment difficulties, and the unmet drug needs decreased with the increase in education level. In terms of the marital status variable, while married (OR = 1.342) and divorced (OR = 1.689), participants had higher unmet prescription drug needs than single participants. Participants with moderate (OR = 1.558) and poor (OR = 3.739) health status had more unmet prescription drug needs. It is seen that the participants with a chronic disease (OR = 1.926) have more unmet prescription drug needs due to insolvency than those who do not have it, and the

Table 3. Logistic regression analysis results on the effect of participants' sociodemographical characteristics on unmet medical care needs

Sociodemographical characteristics	β	OR (%95 CI)	p
Sex			
Male (reference)			
Female	0.103	1.109 (0.971-1.266)	0.127
Age			
15-24 years old			
25-34 years old	1.452	4.272 (3.109-5.869)	< 0.001
35-44 years old	1.610	5.005 (3.883-6.451)	< 0.001
45-54 years old	1.336	3.805 (2.997-4.832)	< 0.001
55-64 years old	1.032	2.808 (2.232-3.533)	< 0.001
65 and over (reference)	0.522	1.685 (1.336-2.124)	< 0.001
Education			
No degrees of any kind			
Primary education	1.101	3.006 (2.276-3.970)	< 0.001
High school and an associate degree	0.855	2.352 (1.845-3.000)	< 0.001
Graduate and undergraduate (reference)	0.354	1.425 (1.095-1.853)	0.008
Marital status			
Single (reference)			
Married	0.298	1.348 (1.086-1.673)	0.007
Divorced	0.559	1.749 (1.246-2.455)	0.001
Widowed	0.497	1.644 (1.198-2.257)	0.002
Employment status			
Employed (reference)			
Unemployed	0.056	1.057 (0.920-1.215)	0.433
Health status			
Good (reference)			
Moderate	0.633	1.884 (1.629-2.179)	< 0.001
Poor	1.418	4.127 (3.438-4.955)	< 0.001
Chronic diseases			
Present			
None (reference)	0.705	2.023 (1.721-2.378)	< 0.001
Social security (SSI)			
Present (reference)			
None	1.149	3.155 (2.691-3.699)	< 0.001

p < 0.05.

Nagelkerke R²: 0.125.Hosmer-Lemeshow: $\chi^2 = 5.175$; p = 0.739.

Correct classification percentage: 91.4%.

participants who are not covered by social security (OR = 3.022) compared to the participants who are covered by social security.

Discussion

The rate of unmet health needs is increasing world-wide⁸. In addition, unmet health needs, which are seen as an important public health problem, are an essential consideration for health system planners and policymakers to ensure equitable access to health services³². The most common causes of unmet health needs are: difficulty in paying, long waiting time for a planned visit/medical examination, physical distance,

and transportation problems to the health-care provider²⁷. Effective health policies that will be developed to eliminate unmet health needs can increase patients' quality of life with serious diseases, prolong their life expectancy, and improve the course of the disease^{5,27}. This study aims to make international comparisons by revealing the prevalence of unmet health needs in Turkey and its relationship with various sociodemographic variables.

When the studies investigating the level of unmet health needs are examined, according to the study conducted by Chaupain-Guillot and Guillot³³ on 29 European countries, the level of unmet health needs in the European Union (EU) is 6.3%. Looking at other

Table 4. Logistic regression analysis results on the effect of participants' sociodemographic characteristics on unmet dental care needs

Socio-demographic characteristics	β	OR (%95 CI)	p
Sex			
Male		1.010 (0.900-1.134)	0.860
Female (reference)	0.010		
Age			
15-24 years old			
25-34 years old	1.345	3.837 (2.862-5.146)	< 0.001
35-44 years old	1.551	4.717 (3.714-5.990)	< 0.001
45-54 years old	1.447	4.250 (3.391-5.326)	< 0.001
55-64 years old	1.183	3.266 (2.622-4.067)	< 0.001
65 and over (reference)	0.725	2.064 (1.655-2.575)	< 0.001
Education			
No degrees of any kind			
Primary education	0.559	1.749 (1.391-2.198)	< 0.001
High school and associate degree	0.473	1.605 (1.335-1.929)	< 0.001
Graduate and undergraduate (reference)	0.197	1.218 (0.999-1.484)	0.048
Marital status			
Single (reference)			
Married	0.348	1.416 (1.173-1.710)	< 0.001
Divorced	0.560	1.750 (1.297-2.363)	< 0.001
Widowed	0.381	1.464 (1.085-1.975)	0.013
Employment status			
Employed			
Unemployed (reference)	0.013	1.013 (0.898-1.143)	0.831
Health status			
Good (reference)			
Moderate	0.402	1.495 (1.320-1.693)	< 0.001
Poor	0.881	2.414 (2.038-2.859)	< 0.001
Chronic diseases			
Present			
None (reference)	0.677	1.968 (1.721-2.251)	< 0.001
Social security (SSI)			
Present (reference)			
None	0.757	2.132 (1.829-2.484)	< 0.001

p < 0.05.

Nagelkerke R²: 0.079.Hosmer-Lemeshow: $\chi^2 = 6.350$; p = 0.608.

Correct classification percentage: 89.1%.

studies, it is 12.7% in Montenegro, 10.8% in Macedonia, 7.5% in Croatia, and 0.4% in Slovenia²⁷. According to Chaupain-Guillot and Guillot³³, the highest level of unmet health needs in the EU was found in Bulgaria and Latvia. In these two countries, more than 15% of individuals aged 16 and over are reported to have unmet medical care/dental examination, or treatment needs in the past 12 months. In a study conducted on OECD countries; in the Netherlands, the Czech Republic, and the United Kingdom, approximately 7% of the population; and in countries such as Estonia, Ireland, Latvia, Greece, and Portugal, approximately 30% of the population delays receiving health-care services due to insolvency or cannot receive health care at all¹².

This study revealed that 8.6% of the participants could not get the medical care they needed due to payment difficulties, 10.9% could not get dental care, and 6.1% could not get the prescribed drugs in the last 12 months. Yardim and Üner²⁴ state that the level of unmet health needs due to insolvency shows a downward trend from 2006 to 2013, and this rate was 9% in 2013. Yetim and Çelik²⁵ state that Turkey's level of unmet health needs due to insolvency is 13.2%, and the level of unmet health needs in Turkey may be higher compared to developed European countries.

Research on sociodemographic factors associated with barriers to access, accessibility, and acceptability of health services revealed that variables such as

Table 5. Logistic regression analysis results on the effect of participants' socio-demographic characteristics on unmet needs for prescribed medicines

Sociodemographic characteristics	β	OR (%95 CI)	p
Sex			
Male (reference)			
Female	0.072	1.074 (0.919-1.256)	0.367
Age			
15-24 years old			
5-34 years old	1.941	6.963 (4.802-10.099)	< 0.001
35-44 years old	2.028	7.602 (5.593-10.334)	< 0.001
45-54 years old	1.651	5.210 (3.883-6.990)	< 0.001
55-64 years old	1.278	3.589 (2.698-4.774)	< 0.001
65 and over (reference)	0.642	1.900 (1.417-2.548)	< 0.001
Education			
No degrees of any kind			
Primary education	1.661	5.266 (3.701-7.492)	< 0.001
High school and an associate degree	1.197	3.311 (2.405-4.558)	< 0.001
Graduate and undergraduate (reference)	0.590	1.804 (1.282-2.540)	0.001
Marital status			
Single (reference)			
Married	0.294	1.342 (1.052-1.711)	0.018
Divorced	0.524	1.689 (1.141-2.502)	0.009
Widowed	0.351	1.421 (0.971-2.078)	0.070
Employment status			
Employed (reference)			
Unemployed	0.146	1.158 (0.984-1.362)	0.078
Health status			
Good (reference)			
Moderate	0.463	1.588 (1.340-1.882)	< 0.001
Poor	1.319	3.739 (3.030-4.613)	< 0.001
Chronic diseases			
Present			
None (reference)	0.655	1.926 (1.926-1.604)	< 0.001
Social security (SSI)			
Present (reference)			
None	1.106	3.022 (2.533-3.605)	< 0.001

p < 0.05.

Nagelkerke R²: 0.122.Hosmer-Lemeshow: $\chi^2 = 3.386$; p = 0.908.

Correct classification percentage: 93.9%.

gender, age, and education level, region of residence, household income, insurance status, smoking status, and poor health status are factors related to unmet health needs^{27,35}. Within the scope of this research, the effects of sociodemographic factors on health needs that are not met due to insolvency were revealed and, in this context, those who are under 65 years old, have a low education level, have a bad health status, have a chronic illness, are not covered by social security, are married, divorced and widowed had higher needs for medical care, dental care and prescribed medication that could not be met due to insolvency. Within the scope of this study, it was determined that individuals

aged 65 and under have unmet health needs. However, when the literature was examined, it was found that there were different findings on this issue. For example, according to a study conducted in Barcelona with 1315 elderly individuals (aged 65-97 years) in which the relationship between unmet health needs and mortality was examined, 10- 25% of elderly individuals could not benefit from health services and it was revealed that mortality rates were high in those with unmet health needs³⁶. Another study investigating the unmet needs of people in need of long-term care in China, the country with the world's largest population of older people, and examining the 3-year mortality rate of 3,089

Chinese adults aged 65+ in need of long-term care, found that older adults with unmet health needs had an approximately 10% higher risk of death than those with met needs, controlling for demographic characteristics. Risks were particularly elevated among older women and urban older adults³⁷. Similarly, there are many studies examining the relationship between unmet health needs and mortality and morbidity³⁸⁻⁴⁰. On the other hand, studies have found that unmet health needs have serious effects not only on mortality but also on morbidity or health status. For example, in a study conducted in Korea with the data of 7717 individuals, it was found that there was a relationship between unmet health needs and health outcomes, and it was determined that unmet health needs decreased quality of life by 1%⁴⁰. Within the scope of this study, it was determined that the gender factor did not have an effect on unmet health needs. Similarly, Yardim ve Üner²⁴ found that adult men and women in Turkey are less likely to report unmet health needs due to insolvency. Another study conducted by Yetim and Çelik²⁵ in Turkey determined that women have more unmet health needs due to economic reasons.

In a study conducted by Lim³⁵ in Korea, it was revealed that gender has an effect on unmet health needs. According to Lim³⁵, women have more unmet health needs than men. This is also supported by other studies, and it is revealed that women have more unmet health needs than men^{41,42}. Pappa et al.⁵ explain this situation with the dual role of women; that is, women's responsibilities at work and home are an important predictor of unmet health needs.

According to the results of this research, it was revealed that the working status did not have an effect on the unmet health needs. This finding is also supported by the study of Yetim and Çelik²⁵. The authors found that the levels of unmet health needs in working and non-working individuals were close to each other. However, different results may emerge in some international studies. For example, a Swedish study reports that 37% of unemployed respondents, including those who are economically inactive, have unmet health needs. This rate is 12% higher than that of working participants⁴³. The unemployed are more likely to perceive the need to seek care for psychological problems than the employed. Lack of employment may be related to unmet care needs, especially among the unemployed who experience psychological symptoms⁴⁴.

Within the scope of this research, it was determined that married, divorced, and widowed participants have more unmet health needs due to payment difficulties

than singles. The findings of this study are supported by various studies^{25-27,45}. It is stated that divorced individuals communicate more with professional health-care providers (general practitioners, psychiatrists, and psychologists) due to social or emotional problems, and they perceive unmet health needs more frequently⁴⁶. Women living alone are more likely to have difficulty finding available health-care resources, given the fact that they lack social support and social capital compared to men. Therefore, their limited knowledge of where and how to access the services they need can be seen as the reason for their unmet health needs⁴⁷.

When evaluated in terms of age, it was revealed that participants under the age of 65 in this study had more unmet health needs. According to Lim³⁵ research, the rate of unmet medical needs of individuals aged 60 and over is significantly lower than those aged 19-29. Yetim and Çelik²⁵ report that individuals between the ages of 35-54 have more unmet health needs. Therefore, it is seen that unmet health needs increase as age decreases. On the other hand, the study's findings conducted by Pappa et al.⁵ in Greece also support this situation. According to the study in question, people in the 25-34 age group are twice as likely to have unmet health needs as the elderly (65+ years). The findings of another study conducted in Korea also support this situation⁴². Among the possible reasons youth have more unmet health needs are poor knowledge of health resources and different self-assessments of diseases^{5,48}.

In terms of education level, it was determined that participants with low education levels have more unmet health needs. Mitrasevic et al.²⁷ obtained similar results in their study. According to the study's findings, it has been shown that lower education levels increase the probability of the unmet need for health services. Another study conducted in Korea shows that those with low education levels have more unmet health needs⁴². It is seen that the need for health that cannot be met increases with the decrease in the level of education. It can increase the unmet health needs of people with lower and secondary education levels (representing lower and middle social classes) compared to those with a university education⁵. A previous study found that people with higher education use private health services more by paying out-of-pocket for the health services they need, and therefore, they have fewer unmet health needs⁴⁹. Considering that a low education level is associated with low quality and low-paid jobs, it may

be difficult for them to meet their health needs out of pocket⁵. Those with low levels of education work in precarious employment, low-paying jobs with little or no benefits, and high job insecurity. In this case, it may be difficult for these people to meet their health needs, and they may delay addressing these needs due to payment difficulties.

It was found that the unmet health needs are higher in participants with poor health status. A study carried out in Turkey by Yardim and Üner²⁴ supports this situation. Among the health status variables, groups with poor health status have the highest level of unmet health-care needs. Looking at other studies, in a study conducted with 9205 people in Canada, it was reported that unmet health needs are higher among those with poor health status⁵⁰. Another study conducted in Greece stated that poor health status is associated with increased unmet health needs⁵. Again, in the study carried out with 14,800 young participants in the USA, it was revealed that 19.2% of the youth had poor health status, and this situation increased their unmet health needs⁵¹. It is thought that several of the pathways to poor health and unmet health-care needs may be related to income and housing insecurity⁵². It is an important fact that those with poor health status cope with more diseases, and at the same time, lag behind in working life and cannot earn an income. Based on this fact, it is possible that while coping with the disease, on the one hand, the health needs that they cannot meet due to payment difficulties, on the other hand, increase.

Previous research shows that those with chronic diseases have more unmet health needs. A national study of 11,620 participants in Korea shows that those with at least one chronic disease have more unmet health needs⁴². Again, the findings of a study conducted with 360,105 adults in Canada showed that those with at least one chronic disease reported more unmet health needs than those without the chronic disease⁵³. The findings of this study support this situation. Those with chronic diseases are likely to face catastrophic medical expenses⁴². Out-of-pocket expenses, which may lead to higher medical costs, may cause delays in addressing their health needs and increase unmet health needs.

This study determined that those who are not covered by social security have more unmet health needs. Lack of health insurance is associated with unmet health needs, according to the results of a study by Tumin et al.⁵⁴ covering 88 counties of Ohio. According to the information obtained from the SSI data, Yardim

ve Üner²⁴ draws attention to the fact that 9% of the population of Turkey has premium debts and that these people are faced with the dilemma of spending more out-of-pocket in case of using health services or giving up seeking care.

Conclusion

It was revealed that those under 65 years of age, those with low education level, those with chronic diseases, those without health insurance, those with poor perceived health status, and those with marital status who are married, divorced or widowed, are in the high-risk group in terms of unmet health needs due to insolvency. Since unmet health-care needs are a critical indicator of a country's health system, it is very important to remove all barriers that prevent access to health services or limit the use of health services²⁶. Unmet health-care needs due to insolvency may lead to various problems, including worsening health status and quality of life of citizens, mortality, and morbidity. In this context, it is recommended that policymakers develop policies for individuals in this disadvantaged group. Considering that certain groups are riskier than others as a result of the study, it is recommended to ensure and support these risky groups' social and economic development. Contribution exemptions or reductions may be provided to disadvantaged groups with unmet health needs due to insolvency, as this will increase out-of-pocket expenditures. The depth of the GHI can be increased in order to overcome the negative situations that will lead to out-of-pocket health expenditures and even catastrophic expenditures, and to facilitate access to health services. Future studies recommend investigating the leading causes of unmet health needs due to insolvency and examining which health-care needs cannot be met.

Funding

The authors declare that they have not received funding.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The study does not involve patient personal data nor requires ethical approval. The SAGER guidelines do not apply.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

References

- United Nations. Universal Declaration of Human Rights. United States: United Nations General Assembly; 1948.
- WHO. Health is a Fundamental Human Right. <https://www.who.int/news-room/commentaries/detail/health-is-a-fundamental-human-right> [Last accessed on 2021 May 09].
- WHO. The Right to Health. Factsheet No. 31. Switzerland: WHO; 2008.
- Grand National Assembly of Turkey. Constitution of the Republic of Turkey. 1982.
- Pappa E, Kontodimopoulos N, Papadopoulos A, Tountas Y, Niakas D. Investigating unmet health needs in primary health care services in a representative sample of the Greek population. *Int J Environ Res Public Health*. 2013;10:2017-27.
- WHO. Health Systems: Improving Performance. Switzerland: World Health Organization; 2000.
- Newacheck PW, Hughes DC, Hung YY, Wong S, Stoddard JJ. The unmet health needs of America's children. *Pediatrics*. 2000;105:989-97.
- Chen J, Hou F. Unmet needs for health care. *Health Rep*. 2002;13:23-34.
- Shi L, Stevens GD. Vulnerability and unmet health care needs. The influence of multiple risk factors. *J Gen Intern Med*. 2005;20:148-54.
- OECD. Health at a Glance 2009: OECD Indicators. France: OECD Publishing; 2009.
- Lee SE, Yeon M, Kim CW, Yoon TH. The association among individual and contextual factors and unmet healthcare needs in South Korea: a multilevel study using national data. *J Prev Med Public Health*. 2016;49:308-22.
- OECD. Health at a Glance 2019: OECD Indicators. France: OECD Publishing; 2019.
- Bagshaw P, Bagshaw S, Frampton C, Gauld R, Green T, Harris C, et al. Pilot study of methods for assessing unmet secondary health care need in New Zealand. *NZ Med J*. 2017;130:23-38.
- Popovic N, Terzic-Supic Z, Simic S, Mladenovic B. Predictors of unmet health care needs in Serbia; analysis based on EU-SILC data. *PLoS One*. 2017;12:e0187866.
- Tengilimoğlu D, Işık O, Akbolat M. Sağlık İşletmeleri Yönetimi. Norway: Nobel Publication; 2021.
- Atun R, Aydın S, Chakraborty S, Sümer S, Aran M, Gürol I, et al. Universal health coverage in Turkey: enhancement of equity. *Lancet*. 2013;382:65-99.
- Yenimahalleli Yaşar G. Genel sağlık sigortasının tam kapsayıcılık düzeyi: on yıllık değerlendirme. *Çalışma Ortamı Dergisi*. 2019;162:1-39.
- Republic of Turkey Social Security Institution. https://www.sgk.gov.tr/wps/portal/sgk/en/detail/universal_health_ins [Last accessed on 2021 Oct 06].
- Official Gazette of the Republic of Turkey. <https://www.resmigazete.gov.tr/eskiler/2019/03/20190329-6.pdf> [Last accessed on 2021 Oct 06].
- WHO. Impact of Out-of-Pocket Payments for Treatment of Non-Communicable Diseases in Developing Countries: A Review of Literature. Switzerland: World Health Organization; 2011.
- Baji P, Pavlova M, Gulácsi L, Groot W. Changes in equity in out-of-pocket payments during the period of health care reforms: evidence from Hungary. *Int J Equity Health*. 2012;11:36.
- Ministry of Health. Health Statistics Yearbook 2019. New Delhi: Ministry of Health; 2021.
- Thomson S, Cylus J, Ewetovits T. Can People Afford to Pay for Health Care? New Evidence on Financial Protection in Europe. Switzerland: World Health Organization; 2019.
- Yardim MS, Uner S. Equity in access to care in the era of health system reforms in turkey. *Health Policy*. 2018;122:645-51.
- Yetim B, Çelik Y. Access to healthcare: the issue of unmet needs. *J Soc Soc Work*. 2020;31:423-40.
- Hwang J. Understanding reasons for unmet health care needs in Korea: what are health policy implications? *BMC Health Serv Res*. 2018;18:557.
- Mitravesci M, Radovanovic S, Radevic S, Maricic M, Macuzic IZ, Kanjevac T. The unmet healthcare needs: evidence from Serbia. *Iran J Public Health*. 2020;49:1650-8.
- Sibley LM, Glazier RH. Reasons for self-reported unmet healthcare needs in Canada: a population-based provincial comparison. *Health Policy*. 2009;5:87-101.
- Sohn M, Che X, Park HJ. Unmet healthcare needs, catastrophic health expenditure, and health in South Korea's universal healthcare system: progression towards improving equity by NHI type and income level. *Healthcare (Basel)*. 2020;8:408.
- Türken A. Evaluation of quality of life in patients with muscular dystrophy by socio-demographic characteristics. *Ann Med Res*. 2022;9:968-73.
- Turkstat. Turkey Health Survey Micro Data Set. <https://www.tuik.gov.tr/media/microdata/pdf/turkiye-saglik-arastirmasi.pdf> [Last accessed on 2021 May 12].
- Hosmer DW Jr., Lemeshow S, Sturdivant RX. Applied Logistic Regression. United States: John Wiley and Sons; 2013.
- Haggerty JL, Roberge D, Levesque JF, Gauthier J, Loignon C. An exploration of rural-urban differences in healthcare-seeking trajectories: implications for measures of accessibility. *Health Place*. 2014;28:92-8.
- Chapain-Guillot S, Guillot O. Health system characteristics and unmet care needs in Europe: an analysis based on EU-SILC data. *Eur J Health Econ*. 2015;16:781-96.
- Lim JH. Regional disparity and factors influencing unmet medical needs: a study based on the sixth Korea national health and nutrition examination survey (2015). *Osong Public Health Res Perspect*. 2017;8:295-301.
- Alonso J, Orfila F, Ruigomez A, Ferrer M, Antó JM. Unmet health care needs and mortality among Spanish elderly. *Am J Public Health*. 1997;87:365-70.
- Zhen Z, Feng Q, Gu D. The impacts of unmet needs for long-term care on mortality among older adults in China. *J Disabil Policy Stud*. 2015;25:243-51.
- Lindström C, Rosvall M, Lindström M. Unmet health-care needs and mortality: a prospective cohort study from southern Sweden. *Scand J Public Health*. 2020;48:267-74.
- Kim YS, Lee J, Moon Y, Kim KJ, Lee K, Choi J, et al. Unmet healthcare needs of elderly people in Korea. *BMC Geriatr*. 2018;18:98.
- Ko H. Unmet healthcare needs and health status: panel evidence from Korea. *Health Policy*. 2016;120:646-53.
- Nelson CH, Park J. The nature and correlates of unmet health care needs in Ontario, Canada. *Soc Sci Med*. 2006;62:2291-300.
- Kim J, Kim TH, Park EC, Cho WH. Factors influencing unmet need for health care services in Korea. *Asia Pac J Public Health*. 2015;27:NP2555-69.
- Ahs A, Burell G, Westerling R. Care or not care—that is the question: predictors of healthcare utilisation in relation to employment status. *Int J Behav Med*. 2012;19:29-38.
- Ahs AM, Westerling R. Health care utilization among persons who are unemployed or outside the labour force. *Health Policy*. 2006;78:178-93.
- Kolasa K, Rybnik T. Socio-demographic determinants of inequity of access to health care in Poland in 2011—based on social diagnosis. *Przegl Epidemiol*. 2012;66:681-8.
- Colman E, Symoens S, Bracke P. Professional health care use and subjective unmet need for social or emotional problems: a cross-sectional survey of the married and divorced population of Flanders. *BMC Health Serv Res*. 2012;12:420.
- Deroose KP, Varda DM. Social capital and health care access: a systematic review. *Med Care Res Rev*. 2009;66:272-306.
- Marshall EG. Do young adults have unmet healthcare needs? *J Adolesc Health*. 2011;49:490-7.
- Pappa E, Niakas D. Assessment of health care needs and utilization in a mixed public-private system: the case of the Athens area. *BMC Health Serv Res*. 2006;6:146.
- Levesque JF, Pineault R, Hamel M, Roberge D, Kapetanakis C, Simard B, et al. Emerging organisational models of primary healthcare and unmet needs for care: insights from a population-based survey in Quebec province. *BMC Fam Pract*. 2012;13:66.
- Hargreaves DS, Elliott MN, Viner RM, Richmond TK, Schuster MA. Unmet health care need in US adolescents and adult health outcomes. *Pediatrics*. 2015;136:513-20.
- Bryant T, Leaver C, Dunn J. Unmet healthcare need, gender, and health inequalities in Canada. *Health Policy*. 2009;91:24-32.
- Ronksley PE, Sanmartin C, Quan H, Ravani P, Tonelli M, Manns B, et al. Association between chronic conditions and perceived unmet health care needs. *Open Med*. 2012;6:e48-58.
- Tumin D, Menegay M, Shriver EA, Nau M, Tumin R. Local income inequality, individual socioeconomic status, and unmet healthcare needs in Ohio, USA. *Health Equity*. 2018;2:37-44.