The Impact of Socioeconomic Factors on Access to Health Services in Turkey: A Logit Analysis

Türkiye'de Sosyoekonomik Faktörlerin Sağlık Hizmetlerine Erişime Etkisi: Logit Analizi

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ÖZ

Bu çalışmada Türkiye örneğinden hareketle sağlık hizmetlerindeki eşitsizliklerin nedenlerinden hareketle hangi sosyo-ekonomik faktörlerin sağlık hizmetlerine erişimde etkili olduğunun analiz edilmesi amaçlamaktadır. Analizlerde, TÜİK tarafından gerçekleştirilen 2012 Türkiye Sağlık Araştırması verileri dikkate alınmış ve analizlerde İkili Lojistik Regresyon Yöntemi kullanılmıştır. Analiz sonuçları, eğitim düzeyi ve gelir düzeyi düşük bireylerin sağlık hizmetlerine erişimlerinin zayıf olduğuna işaret etmektedir. Ayrıca, eğitim ve gelir düzeyinin düşük olması da sağlık hizmetlerine erişim olasılığının düşük olduğu anlamına gelmekte ve bu eşitsizlik önemli bir sorun teşkil etmektedir. Bununla birlikte, Genel Sağlık Sigortası Reformu sayesinde sigortalı sayısının artması beklenmekte ve böylelikle gelir düzeyi düşük insanların da sağlık hizmetlerine erişimlerinin daha iyi hale geleceği öngörülmektedir.

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ANAHTAR KELİMELER
Sağlık Ekonomisi, Sağlıkta Eşitsizlik, Lojistik Regresyon, Türkiye

ABSTRACT

This study aims to determine the causes of inequalities in health and to analyze which socio-economic factors are effective on access to health services, by examining the Turkish case. In the analysis, The Turkey Health Survey 2012 micro data from TurkStat and Binary Logistic Regression Method were used. According to the analysis, it is determined that individuals who have lower education and income level are more likely to state poor health status. Also, it is observed that lower education and income level also means lower likelihood of accessing health care and this poses a significant problem against equity. However, income level becomes insignificant on access to healthcare with the sample of individuals stating poor health, probably as a result of increased health insurance coverage by the General Health Insurance Reform.

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KEYWORDS
Health Economics, Inequality in Health, Logistic Regression, Turkey

Makale Gönderim Tarihi: *09/05/2018* ***Kabul Tarihi:*** *06/08/2018*

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INTRODUCTION

Although significant progress has been made in improving basic health indicators worldwide in recent years, there are significant differences in health indicators among the countries, between different regions of a country and even among individuals of different socioeconomic status in the same community. For the realization of "Health for all" target, which was set by WHO in 1978, increasing health spending is not enough, it also requires the elimination of inequalities in health. In this context, the identification and elimination of factors that cause inequalities in health become crucial.

World Health Organization (WHO) constitution accepted health as a fundamental innate human right for all people regardless of race, language, religion, political beliefs, economic and social status, in 1947. With this respect, health is one of the basic human rights. Therefore, the responsibility of bringing health services to all its citizens regardless of their age, gender, education and socioeconomic status belongs to the state (WHO, 2015a). Likewise, the 1982 Turkish Republic Constitution states: "Everyone has the right to live in a healthy and balanced environment. State, in order to ensure that everybody continues to live with a healthy body and soul; and to realize collaboration by increasing savings and efficiency in human and material resources, regulates and organizes health organizations centrally. State performs this task by using and supervising health and social institutions in the public and private sectors." As seen in this article, in the production and provision of health services, government plays a primary role and must fulfill this mission for everyone without discrimination, i.e. ensuring equality in health is one of the fundamental tasks of state like provision of health services.

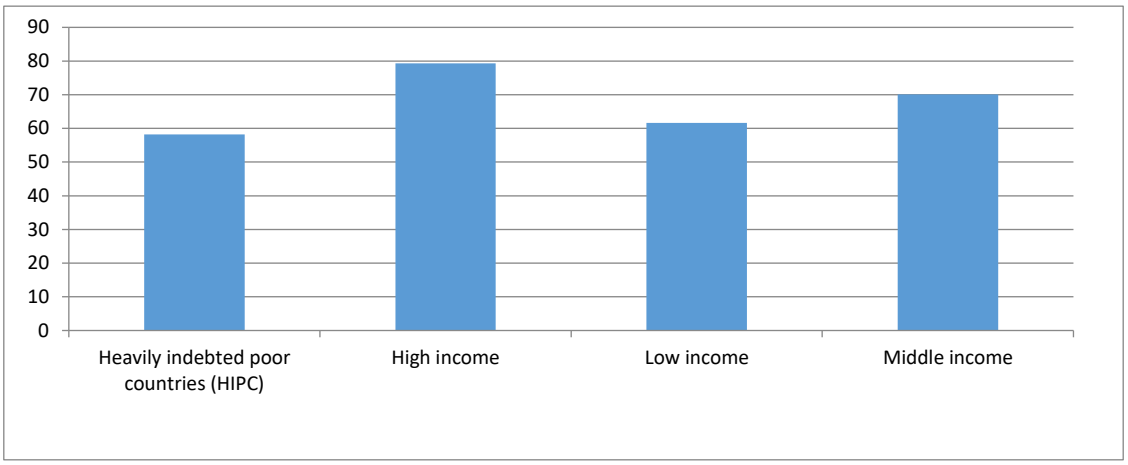
The Ministry of Health carries out important studies related to the elimination of inequalities in health in Turkey. In the strategy roadmap prepared on this issue, improving public health is considered to be one of the main objectives of the Turkish health system and it is stated that "well-being and health will be increased; inequalities in health will be reduced" (Ministry of Health, 2012). However, in order to achieve these goals, firstly socio-economic factors that lead to the problem of inequality in health should be determined. The aim of this study was to determine the causes of health inequalities and to analyze how effective socio-economic factors are on this inequality. In this context, Turkey Health Survey 2012 data, which is compiled by Turk Stat, are used in our analysis. The resulting data set was analyzed by binary logistic regression. The software packages in E-Views8 were used in the analysis.

HEALTH INEQUALITIES IN THE WORLD AND TURKEY

Although the definition of equality / inequality in health, its coverage and measurement are controversial issues, according to WHO (1997), inequality in health is defined as the avoidable differences observed between individuals and groups, in health status, health service utilization and risk factors affecting the health. In this definition, noting part is that only avoidable differences are considered as inequalities. Health differences stemming from uncontrollable factors such as the age and gender are not covered by this definition. For a difference to be defined as inequality it must stem from social causes not natural and must be avoidable. For various physical and biological reasons, people with different ages or sexes are exposed to different health risks (Aday and Andersen, 1981). Therefore, for example, the life expectancy difference between men and women is not covered by health inequality term. However, if a man and a woman who have the same disease cannot access to the same treatment because of their gender, this means a health inequality and it is unacceptable, since it is preventable. As Outka (1975) stated, one of the criteria of equal access is similar treatment for similar cases. Then equality in health means not keeping everyone at the same health level but reducing or eliminating avoidable inequalities arising from unfair causes (Whitehead, 2000).

One of the most important indicators in terms of health is life expectancy at birth. Those statistics in countries with different income levels are summarized in Figure 1.

Figure 1: Life expectancy at birth for countries at different income levels, 2012



Source: Authors' calculations based on data from World Development Indicators Dataset (World Bank, 2016).

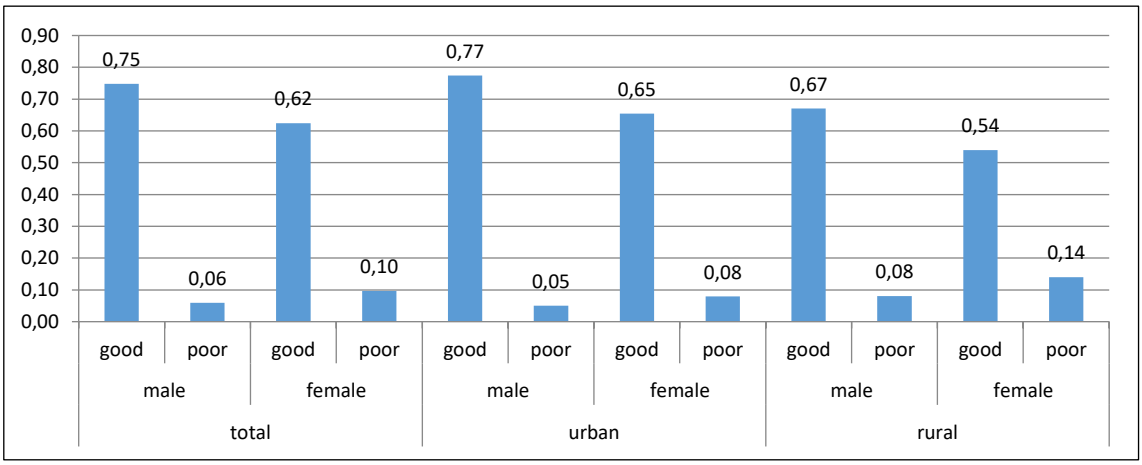
As seen in Figure 1, while life expectancy at birth in heavily indebted and low-income countries is 60 years, life expectancy at middle-income countries is about 10 years higher; and it is 20 years higher for high-income countries. A person living 20 years less just because he was born in a low-income country clearly demonstrates the extent of health inequalities in the world.

There has been a rapid increase in life expectancy in many regions of the world since 2000 and overall life expectancy increased by 6.8 years between 1990 and 2015. It has increased even higher in Africa and South-East Asia Region with 9.3 years. The gap between high and low income countries in life expectancy has dropped to 14 years from 17.5 years in 2015 (WHO, 2015b). However, these improvements seen in life expectancy do not tell the whole story. According to WHO Commission on Social Determinants of Health final report, poorest countries have higher morbidity and premature mortality, but poor health is not limited to the poor. In all countries, at all income levels, health and illness follows a social order: lower socio-economic status means poorer health (Marmot et al., 2008). Overall, disparities in disadvantaged population subgroups are against women, infants and children. The least educated, the poor and those living in rural areas have worse health outcomes and lower health coverage compared to more advantaged groups (WHO, 2015c).

In recent years, structural changes in health care have been implemented in Turkey. Significant improvements have been made in the above-mentioned health indicators in Turkey, with the reform and regulation movement "Transformation in Health" initiated by The Ministry of Health. It aims to improve the quality, effectiveness, availability and use of services while reducing inequalities in the access to health services. Focusing on the protection of individuals with special needs is also mentioned. In basic analysis made by using household survey data collected for these purposes, for three indicators Infant Mortality Rate (IMR), Children Under 5 Mortality Rate (U5MR) and stunting), inequalities seem to exist between different groups in terms of socioeconomic status, rural / urban areas, and education levels, but rural / urban discrepancy has been reduced between 1993 and 2008. Although for some indicators the gap is closing, U5MR in the Eastern Anatolia two times higher compared to Western and Central Anatolia Regions, and the IMR in the Central East and Southeast Anatolia are significantly higher. IMR and U5MR decreases proportionally with the level of education. IMR is 41/1000 and U5MR is 53/1000 for those who have not completed primary education, these rates dropped to 24 per thousand and 29 per thousand respectively for those who have completed primary education. This data proves that there are significant improvements in health indicators, but also inequalities are still evident and continuing (Ministry of Health, 2012).

Health status of the individuals depending on gender and settlement place is summarized in Figure 2.

Figure 2: Health status of the individuals depending on gender and settlement place, 2012

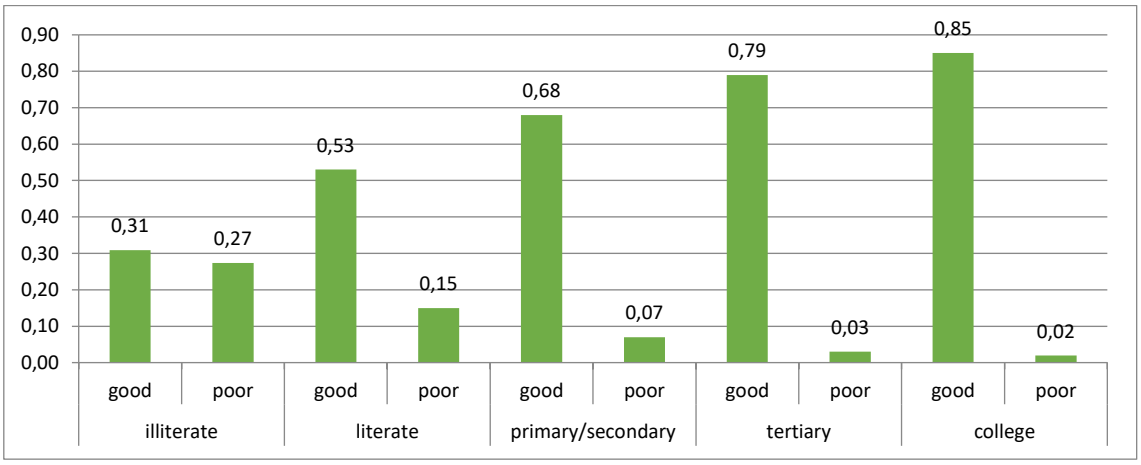


Source: Authors' calculations based on data from Turkey Health Survey 2012 Data (TurkStat, 2016).

As it can be seen from Figure 2, individuals' self-assessed health status differs for men and women, these are also different for men and women living in rural and urban areas. While regardless of where they live, men state good /very good health at a higher rate than women, both men and women living in urban areas report good /very good health at a higher rate compared to those in the rural areas. The share of reporting poor /very poor health is almost twice as much in the rural than in the urban areas.

On the other hand, *health status of the individuals depending on gender and education level is shown in Figure 3.*

Figure 3: Health status of the individuals depending on gender and education level, 2012

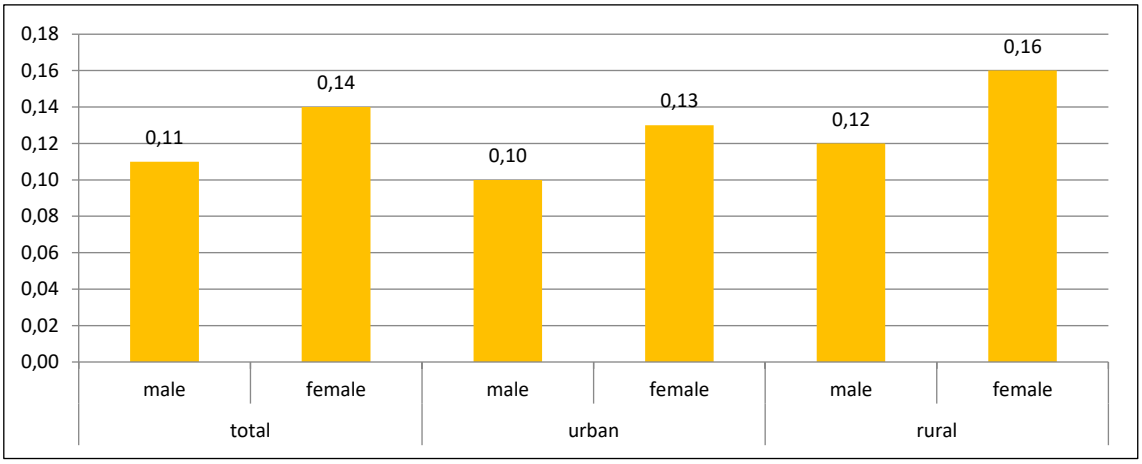


Source: Authors' calculations based on data from Turkey Health Survey 2012 Data (TurkStat, 2016).

In this Figure 3, the remarkable point is that people who are illiterate report poor health at higher rates than those who completed primary school. This rate is substantially lower for those with higher education. Based on this table, we can conclude that as individuals' level of education increase; they know about what is good for their health and act accordingly, so they have a better level of health as informed individuals. Therefore, in order to improve the health level, giving emphasis on efforts to raise the awareness of society and to ensure that everyone has at least basic information on health are critical for the overall health status of the community.

Figure 4 shows the distribution of individuals who could not see a physician in last 12 months according to gender and settlement place.

Figure 4: The rate of people who could not see a physician even though they have needed in the last 12 months according to gender and settlement place, 2012



Source: Authors' calculations based on data from Turkey Health Survey 2012 Data (TurkStat, 2016).

In Figure 4, the rate of people who could not see a physician even though they have needed in the last 12 months is 11% for men and 14% for women. In the same figure, this rate for both women and men is higher in rural areas. For women living in rural areas, this ratio is as high as 16.4%. Such factors as place of residence and gender being effective in access to health services stand as another example pointing to inequality in health.

Although the rate of people, who could not take health services while inpatient treatment or a day treatment have been recommended by a physician within last year, is low nationwide, this rate is higher for women than men and higher for those in rural areas than urban areas (Health Ministry, 2012). While need for inpatient treatment shows that there is a serious health problem, this rate, though being low, implies there are parts in the community which have inadequate access to health services. A person's not receiving treatment while having a serious health problem indicates problems with access to health care rather than individual's personal choice.

LITERATURE

The number of studies on inequality in health has been increasing since the 1970s. Outka (1975) have suggested that some social justice criteria have to be satisfied in order to provide equal access to health services. These are the merit or desert, social contributions, the contributions to satisfying whatever desired by others in open market, needs and similar treatment for similar cases. Aday and Andersen (1981) discussed the conceptual and empirical findings by reviewing the criteria put forward by Outka in their study on US access data. According to this, they have pointed out that existing concepts and criteria in the evaluation of equity in access to health care is uncertain and access is a complex issue that cannot be explained by the overall utilization rate of hospitals and physicians.

Mooney (1983) and Le Grand (1982, 1987, 1991) have made various definitions of equity in the provision of health services. The first of these equity definitions is the equality of per person health spending. But this definition constitutes a deficiency because "need" is not included in the concept. The second definition is distribution according to need. However, this definition is not clear because there is no compromise provided in the concept of need. The third definition is equality of access, but like the concept of need, concept of access

is also vague. The fourth definition is equity in health and with this definition, ensuring the equality in terms of health status of individuals in the society is identified as a target which is quite difficult to achieve.

Culyer and Wagstaff (1993) follow the way of Mooney and Le Grand, and by revising their definition of equity in health care, reconsider the vague concepts of "distribution according to need" and "equal access". As a result, they stated that good health is essential for the development of the individual as a human being, the health services are necessary for good health, therefore, distribution of health services are of great importance. Thus they conclude that, distribution of health services will be fair only as long as it ensures equal health for all. In this way, Culyer and Wagstaff refused the principles of equality of health spending, distribution according to need and equality in access to health care, because none of them will ensure equitable distribution of health for individuals having different initial health status, different budget constraints and capacity to benefit from health services.

In the light of the studies which tried to define the inequality in health, many empirical studies have been made on the micro and macro levels. Wagstaff, Van Doorslaer and Rutten compared the 10 industrial countries' health care financing and distribution of health services in terms of health equity (Van Doorslaer et al, 1993). While Le Grand tried to measure equity in health by using health indicators in the UK, Mapelli has done the same for Italy. O'Donnell and Proper (1991) have used the health care distribution data of UK and find out that individuals with a low income level have a poorer health status than those with higher income level and they face with more frequent and more serious health problems. Gerdtham (1997) using Swedish micro data, conducted tests on equity in health in terms of possibility and frequency of seeing a physician and since he determined socio-economic factors are effective in use of health services, he has rejected the hypothesis that inequalities do not exist in health in Sweden.

Since it is hard to find accurate data on health spending and health financing in developing countries, measuring equity in health becomes even more complicated. Baker and Van der Gaag (1993) compared five developing countries' health indicators, health care use and health expenditure data by income quintile and urban-rural level and found that the percentage of individuals receiving health care among the individuals having an illness, differ substantially according to income quintile. Makinen et al. (2000), using household survey data in developing countries, concluded that wealthier groups are more likely to get health care when they need.

Morris et al. (2005), in their study with UK health and socio-economic data sets during 1998-2000, examined the inequality in the use of health services and have found that there are disparities based on income status, race and education level. According to this study, people with low-income levels and ethnic minorities can benefit less from secondary health care services. Another study assessing the impact of socioeconomic factors on health, Min et al. (2014), using California Health Interview Survey 2005 data, examines how individual health assessment varied between whites, Hispanics and Asians. Accordingly, Hispanics, and Asians reported worse health compared to whites, and it is stated that this is associated with socioeconomic status and access to health services. Srivastava and Mcguire (2015) investigated the factors determining the demand for health services. In this study with the household data of 35 low-income countries they have reached the conclusion that demand in health varies according to the insurance status, having a chronic illness, household income and marital status. Depending on the fact that income and insurance status are significant factors affecting the demand for health services, they show that poor can have access problems.

In Turkey the number of studies on health inequalities is quite a few. Erengin and Dedeoğlu (1998) with a survey conducted in Antalya determined that the health status of women, people living in slums and people with low income level are worse. Dikmetaş (2006), in his survey study that gave place to different definitions of equality and inequality in health, draws attention to the differences between health and distribution of health resources according to geographical regions and rural-urban areas for Turkey. Özdemir and Karabulut (2009),

by using Turkey provincial data in 2000, have analyzed the variability in infant mortality rate by the Gini coefficient technique and indicated that inequality measures like Gini coefficient should be used in the evaluation of services in the field of health. Şimşek and Kılıç (2012) have made a survey of studies explaining the basic concepts of inequalities in health, examined the dependent and independent variables used in previous studies, and stated that the classified structure of the society stands at the heart of the problems. So there is clearly need for a study to measure inequity in health in Turkey.

METHODOLOGY

In this study, Turkey Health Survey 2012 micro data sets are used. This data set includes socioeconomic status, health status of the households and access to health services data that are obtained from a comprehensive study conducted in 2012 by Turkish Statistics Institute (TurkStat). Thus, by looking at whether the factors such as gender, age, education, income and the settlement place are effective on the health status of individuals and their access to health services, it is tried to understand the size and the reasons of the inequalities in health. Corresponding to the hypothesis that the socioeconomic factors are not effective on the access to health services, a logit model, in which the relationship between variables indicating socio-economic status of the individual and taking any health service in case of having health-related problems, was estimated. Under the assumption that there are no inequalities in access to health services, it is expected to find no relationship between the socio-economic factors and the possibility of receiving health care in case of a health problem. However, if the likelihood of receiving health care depends on the socio-economic factors, this shows that there are inequalities which must be addressed in health. In order to test this hypothesis, two different logit models with two different dependent variables were estimated. These are

Model-1:

P(Bad=1) = f(Chr, Disable, Acc, Prob, Single, Male, Urban, Middle, Old, Inc1, Inc2, Illiterate, Primary, Tertiary, Fruit, Juice, Veg, Tobacco, Alcohol)

Model-2:

P(Hcare=1) = f(Bad, Fair, Chr, Disable, Acc, Prob, Single, Male, Urban, Middle, Old, Inc1, Inc2, Illiterate, Primary, Tertiary, SSI, Green, Private, Employed)

Definitions of the variables and descriptive statistics in these models are given in Table 1.

Table 1: Variable Definitions and Descriptive Statistics

Variable	Description	Ort	Max	Min	Std.Dev.	Total
Bad	=1 if individual reports his health as poor/very poor	0,08	1	0	0,27	2.175
Good	=1, if individual reports his health as good/very good	0,68	1	0	0,47	18.727
Fair	=1 if individual reports his health as fair	0,24	1	0	0,43	6.597
Hcare	=1 if individual receives any health care services in the last 12 months	0,79	1	0	0,41	21.630
Chr	=1 if individual has any chronic health problem	0,46	1	0	0,5	12.676
Prob	=1 if any health problem enduring 6 months or longer has been experienced	0,36	1	0	0,48	9.984
Acc	=1 if individual have an accident resulting in injury in the last 12 months	0,06	1	0	0,24	1.719
Disable	=1 if daily activities severely restricted due to health problems	0,32	1	0	0,47	8.724
Break	=1 if individual interrupted their work due to health problems in last 12 months	0,05	1	0	0,22	1.375

Single	=1 if individual is single	0,23	1	0	0,42	6.248
Male	=1 if individual is male	0,46	1	0	0,5	12.651
Urban	=1 if individual lives in urban area	0,74	1	0	0,44	20.288
Young	=1 if age is between 15 and 44	0,58	1	0	0,49	15.937
Middle	=1 if age is between 45 and 64	0,3	1	0	0,46	8.239
Old	=1 age is over 64	0,12	1	0	0,33	3.323
Inc1	=1 income is between 350-1100 TL	0,46	1	0	0,5	12.513
Inc2	=1 if income is between 1101-2300 TL	0,35	1	0	0,48	9.697
Inc3	=1 if income is over 2300 TL	0,18	1	0	0,38	4.969
Illiterate	=1 if individual is illiterate	0,1	1	0	0,3	2.812
Primary	=1 if individual is primary school graduate	0,54	1	0	0,5	14.839
Tertiary	=1 if individual is tertiary school graduate	0,24	1	0	0,43	6.524
College	=1 if individual have college or higher degree	0,12	1	0	0,33	3.324
Fruit	=1if individual consumes fruit at least 1 time a week	0,93	1	0	0,26	25.546
Veg	=1 if individual consumes vegetable at least 1 time a week	0,97	1	0	0,18	26.629
Juice	=1 if individual consumes fruit juice at least 1 time a week	0,53	1	0	0,5	14.468
Tob	=1 if individual uses tobacco products regularly	0,34	1	0	0,47	9.346
Alcohol	=1 if individual uses alcohol regularly	0,03	1	0	0,16	752
Employed	=1 if individual is employed in last week	0,37	1	0	0,48	10.253
SSI	=1 if individual has SSI	0,85	1	0	0,36	23.248
Green	=1 if individual has Green Card*	0,09	1	0	0,28	2.412
Private	=1 if individual has private insurance	0,01	1	0	0,11	357
Uninsur	=1 if individual has no insurance	0,06	1	0	0,24	1.731

*: This card given to poor people by SSI.

Individuals were asked about their overall health status in the Turkey Health Survey 2012 and using the answers given to this question, three dummies have been identified. Bad = 1 if the individual reports his health as poor or very poor, Fair = 1 if the individual reports his health as fair and Good=1, if individual evaluates his health as good or very good. “Bad” dummy variable is defined as dependent variable in the first model and it is tried to be determined whether socioeconomic factors besides experiencing health problems are effective on an individual reporting his health as poor or very poor.

Other dependent variable "Hcare" was formed by utilizing a number of questions posed to individuals in the health survey, since this question is not asked directly to individuals. Basically, this variable takes the value 1 for situations where individuals receive any health care services in the last 12 months, takes the value 0 otherwise. While creating this variable, Hcare=1 if the individual sees a practitioner, a family physician or a specialist physician, or taking any inpatient or outpatient health care services in last 12 months, Hcare=0 for those who benefit from none.

There are different questions about different health problems and different dummy variables were created based on the answers to these questions. Individuals were asked if they have a chronic health problem and they have experienced it in last 12 months and "Chr" dummy variable was formed. Another question that was asked to individuals is that if they have experienced any health problem enduring 6 months or longer and accordingly if the answer is yes, “Prob” equals to 1, otherwise “Prob” equals to 0. With regard to health issues other than illness, individuals were asked about if they have an accident resulting in injury in the last 12 months, according to their responses "Acc" dummy takes the value of 1, if the answer is yes and takes the value 0 otherwise. In addition, for those whose daily activities severely restricted due to health problems, "Disable" dummy variable

equals to 1. Moreover, individuals have been asked whether they interrupt their work due to health problems in the last 12 months and accordingly "Break" dummy was created. All these dummy variables pointing a different health problem are expected to be positively related with an individual's poor health status and probability of taking health care services and to explain dependent variable largely if socio-economic factors are ineffective as our hypothesis suggests.

"Single" dummy variable indicates the marital status of individuals and takes value 1 for single individuals, while it takes value 0 for married individuals. "Male" dummy variable is added to the model to see whether there is gender inequality. "Urban" is included in the model for individuals living in an urban area, in order to see whether health inequality exists based on urban-rural division in health status and access to care.

Three dummy variables were created to indicate the individual's age group. Survey was implemented to individuals with age over 15, so for individuals aged 15-44 years "Young" dummy, for individuals aged 44-64 years "Middle" dummy and for individuals over 65 years "Old" dummy variable were created. Since the health status of individuals changes depending on their age, middle aged and over 65 years' individuals' health status is expected to be worse than the younger individuals. However, as the need for health services will increase with age, access to health services should increase, too. In contrast, if individuals have less access to health services in the older age groups, it will be an indicator of health inequalities.

In Turkey Health Survey 2012, monthly income is also among the questions asked to respondents. The responses are grouped according to the poverty line in 2012, and for individuals whose household income is between 350 and 1100 TL "Inc1" dummy, for those whose income is between 1101 and 2300 TL "Inc2" dummy, and for individuals with income over 2300 TL "Inc3" dummy variables were created. In this way, the effect of income on health status and access to health services is assessed. Compared to the reference group "Inc3", being in the "Inc1" and "Inc2" group making a significant difference in health status and access to health services, while health problems are among dependent variables, is a sign of health inequalities based on income.

Dummy variables created to represent educational status of individuals are "Illiterate", "primary", "tertiary" and "college". Among these variables, "illiterate" shows that individual is unable to read or write; "primary" shows graduates from elementary school, "tertiary" shows secondary or high school graduates and the reference category "College" shows college or higher degree graduates. Education is expected to have a positive impact on health status, since more educated individuals are more informed on health and better able to look after themselves. However, compared to "college" group, the likelihood of receiving health care being lower for individuals in other groups can be an indicator of health inequality.

In terms of determining the health status of the individuals, some consumption habits were also included in the model. In Turkey Health Survey 2012, individuals were asked how often they consume fruits, vegetables and fruit juice and based on the responses, "fruit" dummy showing consuming fruit at least 1 time a week, "vegetables" dummy for consuming at least 1 time a week and "juice" dummy for the ones consuming juice at least 1 time a week, have been created. Since consuming vegetables and fruit is expected to have a positive impact on individual's health and fruit juice consumption is seen as a sign of paying attention to the health, these dummies are expected to have a negative relation to bad health status. On the other hand, two dummy variables indicating tobacco (Tob) and alcohol (Alcohol) use were also added to the model. The probability of reporting poor health is expected to be higher for individuals having those harmful consumption habits.

Except these, employment and insurance status of the individuals should be included in the model as variables that may affect access to health services. According to the results of survey, one of the reasons that the individual cannot access to health services is unavailability of time to get health care. For this reason, "Employed" dummy variable showing that individual is working in the last week was included in the model. Also the insurance status of the individual exists in the model as a factor facilitating access to health services.

For individuals whose treatment costs covered by Social Security Institution "SSI" dummy, those who have Green card "Green" dummy, those who have private insurance "Private" and as the reference category, for those without insurance "Uninsured" dummy variable were created. The probability of accessing health services is expected to be higher for individuals with any kind of health insurance compared to those who are uninsured.

EMPIRICAL RESULTS

Estimation results of Model-1, in which Bad dummy variable is determined as the dependent variable, are summarized in Table 2.

Table 2: Model-1 estimation results

Dependent Variable: BAD
Method: ML - Binary Logit (Quadratic hill climbing)
Sample: 1 27499
Included observations: 27499
Convergence achieved after 6 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-5.758517	0.226162	-25.46186	0.0000
CHR	0.605174	0.085390	7.087189	0.0000
DISABLE	2.086216	0.095443	21.85831	0.0000
ACC	0.326575	0.092661	3.524400	0.0004
PROB	1.328993	0.096078	13.83239	0.0000
BREAK	0.460030	0.136246	3.376464	0.0007
EMPLOYED	-0.589647	0.087137	-6.766917	0.0000
SINGLE	0.159788	0.107623	1.484702	0.1376
MALE	0.094621	0.067048	1.411246	0.1582
URBAN	0.037745	0.057658	0.654641	0.5127
MIDDLE	0.585225	0.075247	7.777372	0.0000
OLD	1.068129	0.084643	12.61923	0.0000
INC1	0.294156	0.092226	3.189529	0.0014
INC2	-0.018167	0.095443	-0.190341	0.8490
ILLITERATE	1.140686	0.154485	7.383805	0.0000
PRIMARY	0.542637	0.143503	3.781363	0.0002
TERTIARY	0.204536	0.153221	1.334908	0.1819
FRUIT	-0.393964	0.099228	-3.970289	0.0001
JUICE	-0.168227	0.053690	-3.133287	0.0017
SEBZE	-0.215835	0.138383	-1.559697	0.1188
TOBACCO	0.055944	0.065413	0.855243	0.3924
ALCOHOL	0.244502	0.151284	1.616177	0.1061

McFadden R-squared	0.353465	Mean dependent var	0.079094
S.D. dependent var	0.269890	S.E. of regression	0.234496
Akaike info criterion	0.359199	Sum squared resid	1510.913
Schwarz criterion	0.365777	Log likelihood	-4916.812
Hannan-Quinn criter.	0.361319	Restr. log likelihood	-7604.862
LR statistic	5376.100	Avg. log likelihood	-0.178800
Prob(LR statistic)	0.000000		

Obs with Dep=0	25324	Total obs	27499
Obs with Dep=1	2175		

As it can be seen from Table 2, all of the variables showing that individual suffers from any health problem has a positive and significant effect on determining the probability of individual self-assessment of his health as poor in 99% confidence interval. Another factor in having a poor health status is the age of the individual.

According to the estimation results of the Model 1, middle-aged and older individuals are more likely to assess their health as poor compared to younger individuals, as expected. Although tobacco and alcohol habits of the individual is found insignificant in determining the health status, consumption of fruit and fruit juice, in terms of both their benefits to health, and showing the individual's attention to his health, are emerging as factors reducing the probability of an individual stating his health status as poor.

However, based on the estimation results of Model-1, besides having a health problem, the age and consumption habits of individuals, the probability of individual stating poor health is affected by socioeconomic factors such as income and educational status. In this study, compared to those in group Inc3 who have income above a certain limit, low-income individuals that are identified as Inc1 have a higher probability of reporting a bad health status. On the other hand, there is no such significant difference for individuals in Inc2 group. When we look at the impact of education on the health status, illiterate individuals or primary school graduates are seen more likely to report poor health status than individuals who have college or higher degree. It is observed that factors like marital status, place of residence and gender are insignificant in determining the likelihood that an individual reporting poor health. According to these findings, individuals with the lowest income and education level in the society are also disadvantaged in terms of health and in order to ensure equality in health, there is need to show more attention to individuals in this group.

Estimation results of Model-2, in which receiving health care is considered as dependent variable, are listed in Table 3.

Table 3: Model-2 estimation results

Dependent Variable: HCARE
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 01/25/15 Time: 17:24
Sample: 1 27499
Included observations: 27499
Convergence achieved after 4 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.759048	0.092356	8.218677	0.0000
BAD	0.388120	0.106650	3.639203	0.0003
FAIR	0.372856	0.054500	6.841448	0.0000
CHR	1.014154	0.044858	22.60827	0.0000
DISABLE	0.359144	0.060671	5.919542	0.0000
ACC	0.499715	0.077446	6.452429	0.0000
PROB	0.591898	0.057894	10.22382	0.0000
BREAK	1.178854	0.108559	10.85907	0.0000
EMPLOYED	-0.372094	0.039380	-9.448765	0.0000
SINGLE	-0.361327	0.040236	-8.980200	0.0000
MALE	-0.514815	0.036916	-13.94554	0.0000
URBAN	0.208766	0.038445	5.430295	0.0000
MIDDLE	-0.151409	0.042816	-3.536288	0.0004
OLD	-0.039945	0.074919	-0.533173	0.5939
INC1	-0.196826	0.050195	-3.921207	0.0001
INC2	-0.128066	0.048119	-2.661432	0.0078
ILLITERATE	-0.456470	0.088587	-5.152779	0.0000
PRIMARY	-0.276101	0.057238	-4.823721	0.0000
TERTIARY	-0.232550	0.058360	-3.984754	0.0001
SSI	0.710524	0.058704	12.10359	0.0000
GREEN	0.198887	0.075957	2.618419	0.0088
PRIVATE	0.265204	0.146359	1.812006	0.0700

McFadden R-squared	0.150054	Mean dependent var	0.786574
S.D. dependent var	0.409733	S.E. of regression	0.377945

Akaike info criterion	0.882927	Sum squared resid	3924.882
Schwarz criterion	0.889505	Log likelihood	-12117.81
Hannan-Quinn criter.	0.885047	Restr. log likelihood	-14257.15
LR statistic	4278.678	Avg. log likelihood	-0.440664
Prob(LR statistic)	0.000000		
Obs with Dep=0	5869	Total obs	27499
Obs with Dep=1	21630		

According to the estimation results of Model-2, the likelihood of taking healthcare is significantly higher for individuals reporting poor / very poor, or fair health, compared to people reporting good/very good health. Likewise, those who have a chronic illness, who have experienced a health problem, whose daily activities seriously restricted because of health problems, who had an accident resulting in injury and who have interrupted their work due to health problems are more likely to take healthcare significantly. However, despite the inclusion of all these variables related to health situation, variables such as age, gender, marital status, place of residence, income level and education are also seeming to be effective on the probability of an individual's taking health care. Among these variables, being male and being in the middle age group are emerging as factors that reduce the likelihood of taking healthcare.

When it comes to socio-economic factors, being employed exhibits a negative and significant relationship with the likelihood of the individual taking healthcare, as it is expected. It is possible that employees are less likely to receive health care since they may not get permit or allow time for accessing health services. Being single is surprisingly emerged as a factor affecting the likelihood of receiving health services negatively. Urban dummy variable is positive and statistically significant; that means compared to those in rural areas, probability of receiving health care is higher for those in urban areas. This shows that there is urban-rural disparity in access to health services.

The level of education seems very significant in this study. All three dummy variables indicating the level of education have a negative and significant relationship with the likelihood of receiving healthcare. This implies that people with lower level of education are less likely to receive health care compared to individuals with college or higher degree. This can be stemming from that individuals with relatively low education level do not know how to access to health services and they cannot receive the healthcare they need. The complexity of pursuing health-related bureaucratic procedures can have a deterrent effect on individuals below a certain level of education in access to health services. Without the help of more educated relatives or contacts, those people experience serious difficulties in receiving health care. This situation reveals the inequality in access to health services depending on education. Therefore, health system should operate in a simple and easy to follow way so that individuals with any education level can benefit. Moreover, organizing campaigns to raise the individuals' awareness in this issue are very important to provide individuals with low level of education access to health services.

Dummy variables indicating the income also shows a negative and significant relationship with the probability of accessing health services, like education dummies. Likelihood of receiving health care for Inc1 and Inc2 groups i.e. individuals with income below the poverty line is significantly lower compared to individuals with higher income. This could mean income-based inequality in access to health services. However, in order to confirm this, we estimated the same model by narrowing the sample to individuals reporting poor / very poor health or suffering any health problem, income dummies lost their importance while other variables maintaining their significance. So while it is given that individuals are in poor health, having a health problem or accident, income has no impact on the likelihood of receiving health care. Nevertheless, this

does not change the fact that the likelihood of receiving preventive care services is lower for individuals with income below a certain level.

Finally, it has been confirmed by model estimation results that insurance status of the individual has a positive and significant effect on the probability of taking health care. It is identified that individuals whose treatment costs met by SSI in 99% confidence interval, those with private insurance in 90% confidence interval are more likely to receive health services. Therefore, ensuring the majority of the population covered by public health insurance has become a very important step in preventing health inequalities by increasing access to health services. The reason behind that no health inequality based on income found in Model-2 with the restricted sample is probably increased insurance coverage by General Health Insurance Reform.

CONCLUSION AND DISCUSSIONS

In this study, it is intended to determine the causes of inequalities in health, and to analyze how socio-economic factors are effective on the access to health services. In the analysis, Turkey Health Survey 2012 micro data set is used.

In analysis, two models have been used. Model-1 estimation results show that individual's self-assessed health status is affected by socioeconomic variables like education and income level, beside the variables such as problems related to health, age and consumption habits. These findings are parallel to that of Min et al. (2014) stating health status of the individual varies according to socioeconomic factors such as poverty and educational level.

Model-2 is estimated to see which factors determine access to health services and results indicate that socioeconomic factors are also effective on receiving health services as well as health status. Lower income and education level emerge as factors reducing the likelihood of accessing health care. According to Gerdtham (1997), while education seems insignificant in Sweden context in contrary to Turkey; findings on income are in similar direction. These socio-economic factors having an impact on access to health care means that there are inequalities in health based on income and education, as indicated in Morris (2005). Moreover, our analysis has confirmed Srivastava and McGuire (2015)'s result stating that having insurance is a factor increasing access to health services.

According to the analysis, it is concluded that there are still disparities to be overcome in individual's health status and access to health services based on education and income despite the improvements achieved with *General Health Insurance Reform*. Individuals with lower education and income level are more likely to report their health as poor, so it is determined that they need health care services more. However, it is found that lower education and income level means lower likelihood of receiving health care. When these two results are considered together, disadvantaged people most likely to need health services having limited access to health services poses a significant equity problem. Expanding the scope of the arrangements made in the healthcare and insurance systems to include measures and improvements for the disadvantaged in terms of education and income is important to overcome the inequalities in health.

In future researches in order to obtain more specific data, different surveys can be conducted related to access to health services. Also it will be beneficial to compare the cases of different countries.

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