HACETTEPE UNIVERSITY

INSTITUTE OF POPULATION STUDIES

INTERRELATIONSHIPS BETWEEN SOCIODEMOGRAPHIC CHARACTERISTICS, POVERTY AND OUT OF POCKET HEALTH EXPENDITURES IN TURKEY

Fatma Özge VAROĞLU

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Master's Thesis

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Supervisor

Assoc. Prof. Dr. Mehmet Ali ERYURT

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ABSTRACT

Health expenditures have had a rapidly increasing trend around the world due to technological advancements in the health sector, population growth, changes in sociodemographic characteristics, higher quality and more accessible health care service expectations etc. Managing the increasing health expenditures by means of health financing methods has been an essential part of health policies in the last two centuries. Out-of-pocket (OOP) health expenditure has been among one of the most common health financing methods across the world. Even though, its scope within the health financing systems varies according to economic, social and developmental outlook of countries, OOP health expenditures have a wide variety of social and economic consequences. Catastrophic health expenditures and impoverishment are the most important ones.

This study is looking for answers for the research questions stated as i) "How sociodemographic characteristics of individuals and households affect OOP health expenditures and catastrophic health expenditures in Turkey?" and ii) "Do OOP health expenditures cause impoverishment of individuals and households in Turkey?"

Within the context of statistical analyses and calculations, Household Budget Surveys data is used conducted by Turkish Statistical Institute between 2004 and 2017 to observe a long period including the health transformation process of Turkey. The method of World Health Organization is applied for determining households that experienced catastrophic health expenditures for predetermined four thresholds and impoverishment.

According to the results of the logistic regression analysis of OOP health expenditures, almost all independent variables included in the model have a statistically significant effect on households' OOP health expenditures. Although from 2004 to 2012 a notable decline trend was observed in catastrophic health expenditures, as of 2012, the rate has ever-growing trend in every threshold. When impoverished households due to OOP health expenditures are examined, it is seen that health insurance status, education, household type, having pre-school age or elderly or disabled member are prominent features. In conclusion, households with low social and economic opportunities cannot benefit from health care services adequately or become poor when they access to them.

Key words: OOP health expenditure, catastrophic health expenditure, impoverishment, health insurance, health care service.

ÖZET

Sağlık harcamaları sağlık sektöründe yaşanan teknolojik gelişmeler, nüfus artışı, sosyodemografik yapıdaki değişim, kaliteli ve erişilebilir sağlık hizmeti beklentisi gibi nedenlerle dünya genelinde hızla artan bir eğilim içerisindedir. Artan sağlık harcamalarının finansman yönetimi, son iki yüzyıl boyunca ülkelerin sağlık politikalarının en önemli bileşenlerinden birisidir. Cepten yapılan sağlık harcamaları da tüm dünyada yaygın olarak kullanılan bir sağlık finansman yöntemidir. Kapsamı ülkelerin ekonomik ve sosyal yapılarına göre değişse de önemli sosyal ve ekonomik sonuçları vardır. Katastrofik sağlık harcamaları ve yoksullaşma en önemli sonuçlar arasında sayılmaktadır. Bu çalışma, iki araştırma sorusuna cevap aramaktadır: i) "Türkiye'de bireylerin ve hanehalklarının sosyodemografik özellikleri cepten yapılan sağlık harcamalarını ve katastrofik sağlık harcamalarını nasıl etkilemektedir?" ve ii) "Cepten yapılan sağlık harcamaları bireylerin ve hanehalklarının yoksullaşmasına neden olmakta mıdır?"

İstatistiksel analizler ve hesaplamalar kapsamında Türkiye İstatistik Kurumu tarafından gerçekleştirilen Hanehalkı Bütçe Anketi verileri kullanılmıştır. Türkiye'nin sağlıkta dönüşüm programı kapsamında geçirdiği dönemin etkilerini görebilmek amacıyla 2004-2017 yılları arasındaki veriler kullanılmıştır. Belirlenen eşik değerlere göre katastrofik sağlık harcaması olan hanehalkları ile yoksullaşan hanehalklarının belirlenmesi için yapılan çalışmada ise Dünya Sağlık Örgütü'nün yaklaşımı uygulanmıştır.

Lojistik regresyon analizleri sonucunda, analize dahil edilen sosyodemografik ve ekonomik değişkenlerin neredeyse tamamının cepten yapılan sağlık harcamaları üzerindeki etkisi istatistiksel olarak anlamlı bulunmuştur. Katastrofik sağlık harcamaları ile ilgili olarak 2004-2012 arasında gözlenen azalan yöndeki eğilim, 2012 yılı itibariyle, hesaplanan tüm eşik değerler için yükselişe geçmiştir. Yoksullaşan hanehalklarının sosyodemografik ve ekonomik özellikleri incelendiğinde ise sağlık sigortası, eğitim seviyesi, hanehalkı tipi ve büyüklüğü, hanede okul öncesi yaşta, yaşlı ve engelli bireylerin varlığının öne çıktığı görülmektedir. Sonuç olarak, düşük düzeyde sosyal ve ekonomik yaşam standartlarına sahip olan hanehalkları ya sağlık hizmetlerinden yeterli ölçüde yararlanmamakta ya da yararlandıkları zaman yoksullaşmaktadırlar.

Key words: Cepten yapılan sağlık harcamaları, katastrofik sağlık harcamaları, yoksullaşma, sağlık sigortası, sağlık hizmetleri.

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ABBREVIATIONS

AIC	Akaike Information Criteria
BIC	Bayesian Information Criteria
COICOP	Classification of Individual Consumption by Purpose
Co-payment	Contribution payment
EC	European Commission
EU	European Union
GDP	Gross Domestic Product
GNI	Gross National Income
GRF	Government Retirement Fund
HBS	Household Budget Survey
HDI	Human Development Index
HIC	Health Implementation Communique
ILO	International Labour Organization
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-Pocket
SDG	Sustainable Development Goals
SII	Social Insurance Institution
SIUHI	Social Insurances and Universal Health Insurance
SSI	Social Security Institution
SSI-ASE	Social Security Institution for Artisans and the Self-Employed
TurkStat	Turkish Statistical Institute
UN	United Nations
UNDP	United Nations Development Programme
WB	World Bank
WHO	World Health Organization
SEPD	Health Economics and Policy Association

CHAPTER 1. INTRODUCTION

One of the important parts of our daily lives is social security. A country's social security system refers to the provision of all forms of social insurance, assistance, and public services for the protection of people and their families against expected and/or unexpected risks of life such as income losses due to ageing, disabilities, death, occupational accidents and diseases, maternity, and unemployment. More particularly, how a social security system functions, especially concerning the provision of old-age insurance (pension) and health insurance are affected especially by changes in the main demographic structures and social and political environment in a country is essential.

According to International Labour Organization (ILO);

"*social security is the protection that a society provides to individuals and households to ensure access to health care and to guarantee income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a breadwinner*" (ILO, 2003).

From this ILO definition, it can be said that access to health care services is one of the most important components of social security and this component should be designed in a proper and sound way. Also, it is well-known that health care service delivery and its financing methods have importance to individuals and households in accessing health care and benefitting from this service.

The importance of financing methods in health care service delivery shows itself in access to and benefit from health care services which comes to the forefront in the field of financial protection of individuals. An efficient health financing method diminishes the problem of not being able to benefit from health care services due to financial difficulties or poverty because of health care expenditures (WHO, 2000).

Health care financing methods take forms depending on cultural, historical, economic, and political characteristics of countries and therefore these methods can change from country to country. Financing based on taxes, public health insurance, private health insurance, and OOP health expenditures are among the prominent health financing methods. Medical saving accounts are also among these methods (Kutzin, 2000). Countries usually prefer a mixture of these methods rather than using a single one (Mossialos & Dixon, 2002).

OOP health expenditure means the expenditures which individuals and households have to make themselves because their public/private health insurance schemes do not fully cover the health care services. It includes direct payments, cost-sharing made by individuals. It includes informal payments as well (OECD & EU, 2018). Here are some examples of OOP health expenditures: i) payments for non-covered parts by the public health insurance, ii) user/contribution fees for health care services, drugs, and medical devices, iii) payments for getting better health care services although it is already covered by public/private health insurance, iv) payments for gratitude.

Individuals might not have the ability to pay for necessary health care services in some cases where health financing methods cannot provide the necessary protection. Lack of enough financial protection can restrict access to health care services, increase poverty, and cause inequality between health conditions and socioeconomic situations of individuals (OECD & EU, 2018).

At this point, catastrophic health expenditure concept comes to the fore. Catastrophic health expenditure means that OOP health expenditures of households for access to health care services are above a certain threshold or a certain rate of ability of households to pay (OECD & EU, 2018). If OOP health expenditures of individuals and households for health care services cause the decrease in compulsory expenditures (such as food, shelter, education, etc.) for maintaining their lives then it can be said that OOP health expenditures carry a catastrophic characteristic (Xu, et al., 2007).

In order to classify a health expenditure as a catastrophic health expenditure, it should be OOP and above a certain threshold of a household's income or its consumption. Therefore, every high amount of OOP health expenditure is not catastrophic and vice versa. In other words, sometimes, low amount of OOP health expenditures carry catastrophic characteristic for a household while the same amount of OOP health expenditure does not for another household depending on income and consumption levels of these households (Tokatlioglu, I & Tokatlioglu, Y., 2014).

Alongside catastrophic health expenditure, impoverishment is one of the main problems stemming from OOP health expenditures; it shows itself in two different cases. One of them is that people get poor owing to OOP health expenditures. The other one is that poverty level of people who have already been poor is getting worse.

Poverty, as the most devastating problem of the modern world, is at the center of economic and social policies in terms of both national and international levels (Rowden, 2010). The definition of poverty varies according to the framework of the situation and different backgrounds of people who defines it (Dartanto & Otsubo, 2013). In a more detailed way, poverty is defined as follows;

> "*Poverty is pronounced deprivation in well-being and comprises many dimensions. It includes low incomes and the inability to acquire basic goods and services necessary for survival with dignity. Poverty also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, insufficient capacity and opportunity to better one's life.*" (Haughton & Khandker, 2009).

In this World Bank (WB) definition, some significant features of poverty are directly related to the perspective of this study. First, it is deemed as the lack of necessary material for well-being. Second, the poor people experience the absence of basic tools in

order to maintain their basic needs and last, but not least, they are not sure about their tomorrow.

Therefore, in this study, poverty will be taken as one of the main results of the process to reach equal, quality, easily accessible and more significantly necessary health care services. The point of view is based on whether are/or become people impoverished and in addition to that, describing sociodemographic and economic characteristics of impoverished people in order to better understand how they can be protected from impoverishment caused by OOP health payments.

In Turkey, a mixed system of public health insurance, government contribution, private health insurance, and OOP health expenditures has been implemented as health financing methods. Universal health insurance covers almost the whole population and its health benefit package is considered very large. However, there are some expenditures of individuals that they have to make from their own resources to benefit from health care services although the public health insurance's coverage is wide in terms of both population and services. These expenditures are contribution fees for drugs, medical devices, and health care services, additional payments, difference payments, and informal payments. The literature review shows that health requirements of individuals and households differ depending on sociodemographic features, geographical and economic status of countries and etc. It is considered that since health expenditures mainly arise from health needs, they are directly associated with sociodemographic and economic features.

Since OOP health expenditures have a distinct place in Turkey's health financing system, it is significant that examining the effects of sociodemographic features of households on OOP health expenditures, catastrophic health expenditures, and impoverishing due to OOP health expenditures in order to be beneficial for health policy decisions.

The main aim of this study is to explore how social, economic, and demographic characteristics such as age, gender, size of household, education level, marital status, employment status, income level, children, elderly, and disabled members of households, etc. have an impact on OOP health expenditures and catastrophic health expenditures of households and the effect of OOP health expenditures on impoverishment of households in Turkey via using data provided from Household Budget Surveys (HBS) conducted by Turkish Statistical Institute (TurkStat). Additionally, analyzing sociodemographic and economic features of impoverished households due to OOP health expenditures is among the purposes of this study as well.

This study tries to find satisfactory answers for the research questions stated as

i) How sociodemographic characteristics of individuals and households affect OOP health expenditures in Turkey?

ii) How sociodemographic characteristics of individuals and households affect catastrophic health expenditures in Turkey? and

iii) Do OOP health expenditures cause impoverishment of individuals and households in Turkey?

There are some accepted methods in literature in order to measure catastrophic health expenditures. Some studies describe OOP health expenses as catastrophic when they surpass a certain percentage of income or consumption. It is also called the budget approach and focuses on rich people rather than the poor. Other studies focus on subtractions from income or consumption, rather than working on the sum of income or consumption. The point here is based on the fact that everyone has basic needs even in the least amount. For instance, food and shelter. These basic needs correspond to the consumption of most of the poor households' income compared to the rich households. The poor household has little or no resources to spare for health. Whereas the wealthy household can allocate 10% or 25% of its budget to health and still has resources for other needs (WHO & WB, 2017).

World Health Organization (WHO) identifies a financial health catastrophe when OOP health expenditures pass 40% of income of households in terms of subsistence needs. Food consumption expenditures are considered for the calculation of subsistence needs. On the other hand, WB describes a financial health catastrophe when OOP health expenditures pass 10 percentage of income (WHO, 2008a).

Financial health catastrophe can also be determined as the situation when OOP health expenditures pass 40% of a household's capacity to pay for health care services. A household's "capacity to pay" refers to a household's non-subsistence expenditures which means the difference between the household's effective income and its subsistence expenditures for which actual food spending of a household are used for calculation. In other words, when a household's expenditures on basic needs such as food and shelter are subtracted from household's total consumption expenditures, the remaining amount reveals the economic power of the household's for expenditures on health and other needs. It is also pointed to a poverty line which means line of basic requirements (Xu, et al., 2003a; Thomson, et al., 2019).

As explained in detail in the part of methodology, the calculation method of financial catastrophe and impoverishment designed by WHO is used in this study since i) HBSs provides data concerning both food expenditures and health expenditures and ii) consumption is less affected by cyclical changes compared to income.

This study is crucial in terms of examining three important issues together in one study. In addition, it covers a long and important period of time, from 2004 to 2017. The importance of this period is that it includes health transformation program and the universal health insurance system. It also includes the experiences of new implementations, regulations and legislations related health insurance and health care payments in Turkey. Data set used in the analyses provides a rich and fit for purpose data. Within the context of this study two main analyses and one calculation which are completely interrelated to each other are made from the perspective of sociodemographic

and economic features of households. The first analysis is revealed the relationship between OOP health payments and sociodemographic characteristics. The second analysis is revealed the relationship between catastrophic health expenditures and sociodemographic characteristics. The calculation is revealed impoverished households due to OOP health expenditures and determining sociodemographic characteristics of these impoverished households. Since OOP health expenditures, catastrophic health expenditures, and impoverishment due to OOP health expenditures are interactive issues, it can be said that the results of this study will make an important contribution to the literature when it is considered these issues are studied together.

Furthermore, one of the main contributions of this study is the calculation of impoverished households due to OOP health expenditures from 2004 to 2017 in Turkey. Afterward determining the number of impoverished households, sociodemographic and economic characteristics of these households were examined in order to describe which kind of households are under more the pressure of financial risks in the process of getting needed health care services. As far as is known, this study is one of the fewest studies on the subject of describing sociodemographic and economic characteristics of impoverished households due to OOP health expenditures in Turkey.

CHAPTER 2. THEORETICAL FRAMEWORK

Countries' health care expenditures are one of the most significant indicators of their development level. Economic development is closely related to the increasing amount of health expenditure per capita but at the same time it is closely related to the decreasing OOP health expenditure made by individuals and households in total health expenditure. OOP health expenditure is considered an important reason of financial difficulty and/or poverty of individuals and households all over the world (GBDHFCN, 2017a).

OOP health expenditures have been among one of the most common health financing methods throughout the world. Its significance and density in the health financing system varies according to general economic, social and developmental outlook of countries, as well as the structure of health financing system and the health policy applied.

Households health expenditures consist of four direct and indirect spending components. These are general taxes, insurance premiums, private health insurance premiums, and OOP health expenditures. The financial contribution of the households to the health financing systems is determined by how much they pay for health care services of their capacity to pay (Xu, et al., 2003a).

> "*At least half of the world's population still lacks access to essential health services. Furthermore, some 800 million people spend more than 10 percent of their household budget on health care, and almost 100 million people are pushed into extreme poverty each year because of OOP health expenses*" (WHO & WB, 2017).

Within this context, in this chapter, theoretical background of OOP health expenditures in terms of health care demand, health system financing methods, different

dimensions of these methods, and literature review will be discussed to get a deeper understanding of the main subject of this study.

2.1. Health Care Demand: Behavioral and Human Capital Models

Like almost all goods and services available in the economy, health care has two sides: Supply and demand. Since this study focuses on OOP health expenditures of people, here, to mention about demand side of the health care would bring better understanding in terms of theoretical background of the subject. Although it is one of the main components of the economy, health care demand differs from most services in terms of its unique characteristics such as unpredictability, invaluableness, and nondeferrable. Because of these features, health care demand is not always supported with a purchasing power unlike other demand types in the economy. Nevertheless, sociodemographic and economic characteristics of individuals and households could illuminate patterns of health care demand. For instance, Celik (2016) describes the factors affect the health care demand as following; The severity of the need for goods and services, the presence and number of substitute goods, income of individuals and/or family, prices of the other goods and services (in terms of substitutes and rivals), prices of health care services and insurance packages, personal characteristics, health status of the individual, the role of the health professionals especially medical doctors, accessibility to health care services, transportation, social status of the individual, the level of the diseases and the perception of diseases by people.

In order to clarify these patterns, there have been some demand theories concerning health care based on different points of the affecting factors of health care demand. Having the context of the study in mind, two main widely accepted theories come into prominence. The first one is *"The Behavioral Model of Health Care"* and the other one is *"Human Capital Theory"*.

"The Behavioral Model of Health Care" was designed first by Andersen in the late 1960s to understand how and why households use health care services. In this way, he purposes to measure access to health services. In addition, he aims to develop policies in order to ensure equal access to health care services. In his model, Andersen claims that three main factors shape a person's health care demand which are *"predisposing factors, enabling factors, and need factors"*. *Predisposing factors* cover demographic, social, and cultural features of people regardless of their diseases. Age, gender, education, occupation, culture, and social networks can be given as examples for predisposing factors (Andersen, 1995). Types and amounts of diseases vary by age ranges of individuals. Hence, health care use differs by age groups. Past diseases also can be evaluated as a predisposing factor since they may show the possible future health care demands (Andersen & Newman, 2005). Health beliefs, such as attitudes, values that people attribute to the health, and what people know about health are included into predisposing factors as well. *Enabling factors* are mainly about accessing to health care services in terms of both personal and public sense. Knowledge about available health care providers and health professionals around the residence of the people and/or their work and waiting time for getting health care are important. Furthermore, income, health insurance status, and travel time are counted among important indicators, as well. *Need factors* express the concrete reasons for getting health services such as sign of medical problems, pain, illness etc. (Andersen, 1995). Need factors are also described in three parts. The first one is "perceived need" which refers people's own perspective for their health situations. The second one is "evaluated need" that is a professional look deciding on health care need. The last one is "environmental need" which includes injuries or illnesses stemming from occupational activities, accident and/or crime related cases, etc. (Andersen & Davidson, 2001). Andersen and Newman (2005) suggest that demographic characteristics seem to be medium level importance for use of health care services whereas the content of the illness seems to be high level importance. In addition to these, attitudes and resources based on the community have the low level importance for indicators of utilization of medical care.

"Human Capital Theory" is a demand theory for health provided by Grossman based on mostly human capital model in health economics. This theory identifies that people have a certain stock of health at first which decreases by ageing and can be improved via health investments including exercise, choice of diet and lifestyles, education, etc. Health care demand stems from health demand which means that people demand health care in order to be remain healthy (Grossman, 1999). From the economic point of view, this theory indicates that when an individual makes investment on health such as efforts for improving health status, these efforts result in most probably with good health which can be called as an increasement in health stock. Increased health stock ensures more healthy time which may most likely bring more healthy working time and through this more income and utility (Zweifel, et al., 1997).

When this study's empirical results and the main assertions of "The Behavioral Model of Health Care" and "Human Capital Theory" are evaluated together, we can come to a conclusion that these two models' suggestions substantially support the findings that sociodemographic and economic characteristics of households and/or individuals affect OOP health expenditures and catastrophic health expenditures to some extent.

2.2. Health System Financing Methods

Under this section, it is considered that it would be beneficial providing at first health financing models in general and then given elaborated information concerning OOP health expenditures as a health financing model.

2.2.1. In General

The concept of health financing ensures directing resources and economic incentives for operating health systems. It is also decisive for health system performance in the context of equality, effectiveness and health outcomes (Schieber, et al., 2006).

Two main points of view shape the financing policies of health services across the world. One of these approaches deals with the concept of health as a basic human right in social terms and suggests that providing health services is the duty of states as a social responsibility. The other approach addresses the concept of health individually. Market rules are valid for the provision of health services and people benefit from the health services in proportion to their opportunities (Celik, 2016).

Health care financing methods are examined under four essential headings in general. According to the world practices, it is seen that countries prefer to use health financing methods together with different weights (Celik, 2016). Health financing systems are often defined by considering the dominant financial source of the system (Placeholder1). Health financing makes health systems collect money from individuals, employers and other sources; collection and management of resources in a risk pool; provides intervention in terms of provision of health services (Schieber, et al., 2006), no matter which method is applied.

The first method is financing with public revenues called also *tax-based* financing method. The basic logic of this method is based on the allocation of a certain proportion of public revenues for health financing. The financial burden required to provide health services is distributed to the whole society (Celik, 2016). Financing with taxes does not have a standard function mechanism. In theory, it can be expressed as the transfer of resources to health services through a fund in which the state collected all taxes. It is a system where certain management levels have a certain power and responsibility and differs greatly from country to country. Tax-based health financing system is widely seen in northern countries such as Canada, Denmark, Finland, Sweden and southern Europe countries such as Spain and Portugal (Evans, 2002).

The second method is the public health insurance method called also *social health insurance*. In this system, it is predetermined who, when and how much premiums will pay to the insurance institution. The premiums are independent of individual risks and are

proportional to income. The system operates with the contribution of employees, employers and the state. It is compulsory to pay premiums and join the system for people in coverage. The scope varies from country to country. If there is a tendency to cover the entire population, it is called universal health insurance (Celik, 2016). Public health insurance is a health funding system that is mandatory for the majority or all of the population with various health and/or sickness funds with or without a risk pool. For people who do not work or need support, the government contributes to these funds on behalf of them (Normand & Busse, 2002).

While the biggest part of financing of health care services in the United Kingdom is derived from tax revenues, the financing of health care services in the Netherlands is covered by the compulsory social insurance system, also called the sickness fund, and private health insurance. In both countries, almost all of the population benefit from the health services they need. They have not the risk of financial difficulty (Kutzin, 2000).

The third method is private health insurance based on volunteering and profit. This method is generally used in order to protect people against the risks that may occur as of the insurance policy date and as a supplementary tool of public health insurances. The premiums are determined by considering the characteristics of individuals such as age, gender, and health history (Celik, 2016).

Financing health services via public/private health insurance, and taxes is a risk pooling strategy. Premium payments for them are not made during health care and are known in advance. These are also not about people's health status or whether they use health care or not (Wagstaff, et al., 2019).

The fourth method is the payments that people make directly from their own pockets while using the health services called OOP health payments. It takes place in different ways such as direct payments, user contributions and informal payments in cash

and in kind (Celik, 2016). Further detailed information related to this payment method will be given.

In addition to the abovementioned four main methods, medical saving accounts may be counted in health financing methods although the number of countries implementing this method is very limited. In the medical savings account system, individuals make contribution to this account with a certain proportion of their income. This account is used when health care is needed (Mossialos & Dixon, 2002).

2.2.2. OOP Health Expenditure as a Method of Health Financing

OOP health expenditures have an important role in all health financing systems. Moreover, it is the main part of health financing systems in low income countries (OECD & Eurostat & WHO, 2017). While OOP health expenditures occur in every country and in every health systems, the amount of expenditure reflects significant differences in how health insurance payment and benefit packages are designed in a country and the characteristics of the health system (OECD, 2019).

OOP health expenditures cover all payments made by individuals and households. These payments involve direct payments, cost sharing payments and informal payments. Direct payments are the cost of consumers bear in order to reach health care services that are not covered by the public health system or have limited access because of long waiting periods or features of health services provided. Direct payments are usually made for over-the-counter medicines, or medicines not covered, and to private health care providers for health care services such as dental health, private examination, laboratory, and test procedures. Cost sharing payments are contributions and additional fees made for health services that are entirely or partly included in the scope of public health insurance coverage. It is claimed that the cost sharing method decreases consumer demands and increases the amount that can be allocated to health care services (Mossialos & Dixon, 2002). One of the main purposes of OOP health care spending is decreasing health

expenditures by way of reducing unnecessary and ineffective use of health care services. Thus, it will be possible to restrict demand and use resources more effectively (Bremer, 2014). Informal payments refer to the payment made to the health care personnel for the purpose of appreciation after the use of the health service or to ensure a better service before the health service is used. Informal payments are often made due to insufficient public health system resources, insufficient private health service, cultural habits and traditions (Mossialos & Dixon, 2002).

The distinctive feature of household OOP health expenditures is that it is made from the income or accumulation of the households to the health care providers during utilization the health care services. Therefore, OOP health expenditures indicate the burden of medical payments incurred while households use health care services (OECD & Eurostat & WHO, 2017). However, third-party payments[2] are not included in OOP health expenses (Wagstaff, et al., 2017a).

The characteristics of OOP health expenses can be summarized as follows. i) First, it is based on voluntariness. It is shaped according to the will and affordability of the person or household. ii) Second, it is based on contribution. The person or household can only get the service in return for payments iii) Third, the person decides to use the health care service and pays for it. Governments can promote it with some applications such as tax deduction. iv) Finally, the amounts paid do not form a pool, it is only for usage (OECD & Eurostat & WHO, 2017).

2.3. Different Dimensions of Health Financing Methods

Health financing methods are one of the most important parts of health policies in all countries. The current financial method directly affects financial resources allocated to

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[2] "*Third party financing schemes are distinct bodies of rules that govern the mode of participation in the scheme, the basis for entitlement to health services and the rules on raising and then pooling the revenues of the given scheme.*" (OECD & Eurostat & WHO, 2017)

health, health outcomes, access to equal and quality health care services. Hence, health status both today and in the future, income distribution, social, economic, and demographic developmental features of the country should be considered with health financing models.

Neither the tax-financing method nor the public health insurance method can cover the financing of all health care services. Often, in order to limit demand and alleviate the burden of the public, they demand contribution payments, sometimes in an informal form, when health care is provided (Yardim, et al., 2010).

When the amount of OOP health expenditures for the required health care services is high, many people give up receiving health care services. Some people spend out of their pocket, but consequently face financial difficulties. Both situations seem more likely to occur in low-income households. Low-income people are generally in weaker health and need more health care, which increases the negative impact of OOP health expenditures (OECD, 2019).

2.3.1. The Protection Feature of Health Financing Methods

One of the most important instruments for the healthiness of the entire population is the health financing method applied (Yardim, et al., 2010).

Health is a cornerstone of a good education, working life and good living conditions. Having said that, differences in education and income bring inequality in the field of health. Ensuring that people have access to health independent of their socio-economic conditions will enable the entire population to share opportunities. Health systems can make substantial contribution in terms of reducing inequalities if they manage to consider the need for service rather than the ability to pay (OECD, 2019).

Health insurance coverage is the basic regulation that shows when, to what extent and under which conditions households will spend from their pocket on health (Thomson, et al., 2019).

Financial protection is closely related to the content and accessibility of the public health benefit package, quality of service and timely delivery. The contents of the health benefit package may not be completely clear and understandable. It may not be clear how much money people should pay for the services as contribution fee that are also included in the benefit package. Problems experienced in issues such as the quality and timing of the service can lead to informal payments (Thomson, et al., 2019).

Health insurance coverage has three pillars: individuals, health care services and costs. Primarily, health insurance must first meet the objectives of total population coverage, then wide scope and quality of health services, and finally, costs are largely covered by risk pooling created by premiums collected previously. In conclusion, it can be possible to assure that no one faces financial difficulties (Thomson, et al., 2019).

It may not be enough that the health care services are included in the health benefit package. It is also important to make them be accessible, timely and good quality. When people experience problems in these points, OOP health expenditures are going to increase. People spend more OOP on health in order to get faster, better quality and more comprehensive health care and kindly service from health care professionals (Thomson, et al., 2019).

The protection side of health financing has been studying regularly by researchers both in nationwide and international area. Since United Nations declared "The 2030 Agenda for Sustainable Development", countries across the world, international associations related to health, economy, and social security focus their attention on increasing financial protection, widening health benefit package and decreasing OOP health expenditures.

United Nations "*Sustainable Development Goals (SDG), Target 3.8. of the Goal Number 3*" regarding good health and well-being has declared that it is essential to ensure universal health implementation and to protect people from financial risks; to have access to main health care services and to reach to all kinds of good quality and accessible health care (UN, 2015).

The main point of this target is the importance of providing people with necessary health care and keeping them away from financial risks (UNDP, 2019a).

The SDG indicator 3.8.2, in order to measure the success of the target 3.8, "*Proportion of population with large household expenditures on health as a share of total household expenditure or income*" (UNDP, 2019b) emphasizes the amount of households' OOP health expenditures and is an essential determinant in the process of universal health insurance and protecting households from financial health problems.

This indicator underlines that no one should have to choose between health care spending and spending on basic needs, such as food, education, housing, etc., no matter what income level he/she is in. One of the ways to determine the rate of financial difficulties that the health system puts people in is to calculate the share of the household's OOP health expenditures in the total consumption expenditure or income (UNDP, 2019a).

Actually, at least half of the world's population lack access to the health care services they need and many of them are in financial difficulty. In both rich and poor countries, health issues can cause households to go into bankruptcy or impoverishment. Considering these, it is necessary to act together and in harmony in order to achieve universal health insurance coverage and sustainable development in the field of health financing (UN, 2019).

National health systems can create a variety of financing ways to protect people from catastrophic health spending and provide access to the needed health care. The

clearest and simplest way is to reduce OOP health expenses through the development of the social insurance systems and the use of general taxes. If the share of OOP health spending in total health spending is reduced to less than 15 percent, the number of households affected by catastrophic health spending will decrease (Wagstaff, et al., 2019).

Xu et al (2007) found that public health insurance systems are protecting people regarding financial risks more than tax-based health financing systems. Besides this, the form of prepayment is found meaningful only in middle income countries.

2.3.2. The Destructive Features of Health Financing Methods in Terms of Catastrophic Health Expenditure and Impoverishment

If a health system relies mostly on OOP health expenditures, people must have sufficient income to access the necessary health care services. Otherwise, it means that households or individuals are in financial danger. Also, if OOP health payments cause catastrophic spending, many people, especially poor people, may prefer not to receive health care, even though they need it (Xu, et al., 2003b).

Protection against financial difficulties focuses on the distribution of risks among people and how it is possible to collect more funds. To give an example, OOP health expenditures have negative impacts on people forgoing or giving up health care since they pay the same amount regardless of being rich or poor. Moreover, the method is far away the financial protection as it forces people to make payment when they are sick. Therefore, some people have financial catastrophes due to OOP health expenditure and in some cases, people become impoverish (Wagstaff, et al., 2019).

If health care expenditures exceed the income of household's, they primarily use their savings. Then, they sell some possession, borrow money or use loans. In cases where the household head is sick and unable to work, members of the household who did not

work before start working to bring home money and pay debts and loans (Xu, et al., 2003b).

In this part, financial catastrophe and impoverishment of households and individuals arising out of OOP health expenditure are tackled as main financial outcomes of OOP health expenditures. Beside these, overall arguments concerning destructive features of health financing methods are mentioned below.

2.3.2.1. Financial Outcomes of OOP Health Expenditures for Households

There are two main indicators used in measuring financial difficulties stemming from OOP health expenditures. The first one is that households become impoverished owing to OOP health expenses. The second one is that households make high/catastrophic health expenditures compared to their resources (OECD, 2019). Furthermore, besides financial catastrophe and impoverishment, postponed health needs due to financial difficulties result in deterioration of health status of individuals sooner or later. This fact will inevitably lead to much higher health costs for both individuals and health systems (Bremer, 2014).

High OOP health expenditures have a wide variety of social and economic consequences. Since the less advantaged people cannot have the same level of access to health compared to the more advantaged ones, the contribution of the health system to equality is reduced. In addition, if the money paid for health care reduces the disposable income of the household, the household has to choose between health and other important expenditures. Sometimes this situation can even take households into poverty (OECD, 2019).

The impact of OOP health expenditures is not fully understood by examining catastrophic health spending. Many poor households prefer not to receive health care services rather than face impoverishment. The fact that people spend OOP while receiving

health care causes a potential dual effect across the population. The ones who prefer to receive health care and therefore become impoverished and those who prefer not to receive health care. Both cases show that it is important to discuss the usage of general taxes or the method of prepayment, rather than the involvement of individuals in the financing of health systems via OOP payments (Wagstaff, et al., 2019).

Although the first effect of OOP health spending is catastrophic health spending, beyond that, it has a major impact on impoverishment and the growth and development of the country at all (Giovanis & Ozdamar, 2016).

Impoverishment and financial catastrophe are not the only results of OOP health spending of households. There are indirect negativities as well, such as income loss because of being unable to work, early disability, death at an early age. All these problems and impoverishment have negative effects on the country's economic growth and development (Giovanis & Ozdamar, 2017).

2.3.2.2. Catastrophic Health Expenditures

The ability of a person or family to meet their health spending is evaluated according to their total financial resources, concerning their mandatory spending outside health. If the expenditures are too high compared to their ability to pay, this may cause financial catastrophe (Wyszewianski, 1986).

In fact, the existence of catastrophic health spending is not surprising. It is considered that the share of OOP health care expenditures in total health expenditures, which is the opposite of financing health services through public and private health insurance and / or taxes, is the key point for catastrophic health expenditures occurring in different dimensions among countries (Wagstaff, et al., 2019).

There are lots of important determinants of catastrophic health payments beside OOP health payments. Poverty problems, problems regarding accessibility to health care services, and failure to provide financial protection regarding health risks make the catastrophic health expenditure problem more serious (Xu, et al., 2003b).

The main reason of catastrophic health payments seems to be due to the lack of developing effective financial protection systems such as risk pooling about health. These points are as important as increasing the income levels. While it is observed that the health systems and financial protection mechanisms regarding health progress are in harmony with each other in developed countries, it is observed that financial protection systems in developing countries lay behind the rapid improvements in the field of health (Wagstaff, et al., 2019).

According to the WHO's study, in 18 countries in the European Union (EU) and in Turkey, 5.5% of households face catastrophic health expenditure on average. It is observed large differences between countries' catastrophic health expenditure rates. While the rates may be less than two percent in some countries, it increases up to 10 percent in other countries. It is concluded that in all countries across world, catastrophic health expenditures issues are more common in poor households and low-income groups (OECD, 2019).

It is understood that the indicators such as the health expenditures of countries, the share of OOP expenditures in health expenditures, and the share of public health expenditures in Gross Domestic Product (GDP) are insufficient in explaining the incidence of catastrophic health expenditures from the fact that the incidence of catastrophic health expenditures are quite different from each other across countries. Even in countries with the same amount of OOP health expenditures, catastrophic health expenditure amounts can be very different. This point indicates the coverage policy of the health insurance is very important in protecting people from financial difficulties (Thomson, et al., 2019).

The study of Xu, K. et al., (2007) in which data from 116 studies covering 89 countries were used, shows that there is a certain degree of catastrophic health expenditure in almost all countries, including the richest countries. A great number of people all over the world are in financial trouble because of the amount they must pay for health care. Based on the broad scope of these researches, it is thought that the results of the study can be generalized for all countries. The research revealed that financial catastrophe differs significantly between countries from almost 0 percent to more than 10 percent. Financial catastrophic cases are present in all countries regardless of income level. However, the situation is more serious in low-income and middle-income countries compared to high-income countries.

2.3.2.3. Impoverishment

A household's impoverishment due to OOP health expenditures occurs when consumption expenditures without OOP health expenditures are below the poverty line, however, the consumption expenditure including OOP health expenditures, is above the poverty line. The essential point here is that in the event that a household has a serious health problem, it is important how much of the budget it has allocated for non-health issues and whether it falls below the poverty line (Wagstaff, et al., 2017).

It is fundamental to note the important difference between the concepts of poverty and catastrophic health expenditure. Impoverishment is associated with poverty. Catastrophic health expenditure, on the other hand, means that as households have to allocate more than a certain portion of their income or total consumption expenditure on OOP health payments, their standard of living declines regardless of the concept of impoverishment. Poverty and catastrophic spending do not have to be interrelated events. A household may still be far from the poverty line, despite spending a high OOP health expenditure relative to its income or total consumption. On the contrary, even if a household has a small amount of OOP health payments, it can be close to the poverty line (Wagstaff, et al., 2017).

OOP health expenditures also have an impoverishing effect. OOP health expenditure causing poverty brings the socioeconomic aspects of financial protection to the forefront. In its study, WHO evaluated both the households that became impoverished by the OOP health expenditures and the households that are more impoverished. The ratio of impoverished households and households whose poverty goes further due to OOP health expenditures ranged from 0.3% to 6% among the EU countries and in Turkey (OECD, 2019).

2.4. Literature Review

When the literature related to OOP health expenditures is reviewed, it is understood that many researchers studied the effect of sociodemographic characteristics and economic variables in terms of both micro and macro level on OOP health expenditures. In addition to this, catastrophic health expenditures and impoverishment due to OOP health expenditures have been popular issues throughout the world.

In addition to the studies concerning OOP health expenditures and catastrophic health expenditures, there are many studies investigating the sociodemographic and economic characteristics of individuals and households who have become impoverished or put into deeper poverty due to these expenditures and have postponed seeking health care in order not to become impoverished.

Many of the studies involve statistical analysis based on data provided from surveys or researches included questions related OOP health expenditures of individuals and households. Many studies include comparative analyses conducted on a large amount of country data. Some studies analyze the countries separately and present information whereas some of them analyze the countries by grouping them according to income, population structure or geographical region.

Cınaroglu (2018), suggests that there is a distinct relation between sociodemographic characteristics of societies and OOP health expenditures. OOP health expenditures are affected by several sociodemographic features such as size and composition of households, employment, education level, marital status, age, income level, etc.

Diseases, various health problems and the presence of individuals with disabilities appear as a factor that affect health needs and households' OOP health expenses (Giovanis & Ozdamar, 2017).

According to the results of the earlier studies, the amount of OOP health expenditure of households is related to the demographic characteristics of households. Features such as higher education, the number of children under the age of 18, extended family, ownership of the residence, and the number of income earners are associated with high OOP health care expenditure (Acs & Sabelhaus, 1995; Rubin, et al., 1995). According to Acs & Sabelhaus (1995), households with elderly household heads have the highest amount of OOP expenditure whereas households with young household heads have the lowest amount of OOP expenditure. High OOP health expenditures of elderly household heads may show their necessity for health care services.

In her study, Pal (2012) used one-year of data provided from All-India Household Consumer Expenditure Survey and found that catastrophic health expenditure is related to household income. Households with higher income have lower catastrophic health expenditure as it means that households have higher payment capacity for health and do not restrict other consumption expenditures. It was observed that the households with a high number of children and the elderly tend to spend more OOP on health. As the level of education increases, it is determined that people pay more attention to their health and have to spend less OOP.

In the study of Brown et al. (2014), Turkish HBSs data between the years 2003-2008 were used for the empirical analysis for determining the prevalence of catastrophic health expenditures in Turkey and the factors related to these expenditures. According to the results of this study, poor households are less likely to encounter catastrophic health expenditure compared to non-poor households and the presence of health insurance has been found to protect against catastrophic health expenditure. It was found that households with disabled and/or sick people and households with pre-school age children and elderly individuals are more likely to have catastrophic health expenditures. On the other hand, household size has been negatively correlated with catastrophic health expenditures.

According to Hong and Kim (2000), sociodemographic characteristics considerably affect the share allocated by the household from the budget to health expenditures. Since the probability that people with disabilities will need more health care, disability may increase OOP health care expenditures. In addition, as the awareness regarding health problems increased with the level of education, it was observed that highly educated people tend to benefit more from health services, especially preventive health care services. It was also observed that OOP health expenditures is one-third less in households with single parents. As the size of the household and the number of children in the household increases, the need for health care services (dental health, vaccination, regular checks, etc.) and the amount of OOP health care expenditures increase. Compared to a higher education graduate household head, more OOP health expenditures are made when the head of the household is a high school graduate and self-employed person.

In the study of Bremer (2014), Survey of Health, Ageing and Retirement in Europe, which was conducted in 2004, data was used and a representative panel study among private households above the age of 50 years from European countries and Israel was conducted. In conclusion, OOP health expenditure is shown to be an obstacle in seeking health care services and in delays getting necessary treatments especially for some

sociodemographic features such as households with members having chronic diseases and households in low income groups.

In the study of Erus and Aktakke (2012), HBSs from 2003 to 2006 data was used and the study intended to analyze the situation before and after the health reform in Turkey. It concluded that, households with children and elderly members, crowded families and high income level were indicators of having OOP health expenditures. On the other hand, households with higher education level have less OOP health expenditures. The reason behind this finding may show that educated people have good health conditions.

According to the study of Hailemichael et al. (2019), in which non-parametric Kruskal Wallis test and chi-square test were used, households having a member with low disability and depression are associated with both higher OOP and catastrophic payments, and also impoverishment. OOP expenditure occurs even less if depression is not accompanied.

Tokatlioglu, I & Tokatlioglu, Y. (2018) used HBSs data for 2002, 2007, 2010 and 2014 and a logistic regression model to determine the factors affecting catastrophic health expenditure in Turkey. It was concluded that households with married household heads and households having members at age 5 and younger and at age 65 and older and disabled person, the probability of catastrophic health expenditures is higher. On the other hand, the probability of households to have catastrophic health expenditures is lower when the household size is higher than 4, household head's education is high school and above, the household head is male, has health insurance and household's income is in the 2nd, 3rd, 4th and 5th segments of 20% income segments.

In their study, Rubin & Koelln (1993), compared the OOP health expenditures made by married and single household heads, using data from Consumer Expenditure

Surveys. Compared to other household heads, the high income married household heads spend more for health.

According to the study of Xu and others (2007), the population under five is surprisingly not found to be a factor that increases catastrophic health expenditure. On the contrary, the population over 60 has emerged as a factor that increases catastrophic health expenditure in middle-income countries. However, the same result has not been achieved in high-income countries where the elderly population is higher.

In the study of Kang et al. (2018), Korean Health Panel Study, which was applied in 2008 and in 2013, data was used and the study included socio-economic, demographic and health variables. The relation between catastrophic health expenditures and the health related quality of life was investigated. It was found that there is high incidence of catastrophic health expenditures while low levels of health-related quality of life exist in South Korea especially people with chronic diseases.

In the study of Islek and others (2018), a cross sectional study was conducted with patients in psychiatry clinic via a face to face interview and a logistic regression was applied to find the effects of sociodemographic features on OOP health expenditures. According to the results, all patients interviewed have to spend out of their own pocket in order to get health care from outpatient clinics. The amount of spending depends on the diagnosis of the patient and the availability of health insurance. Twenty percent of patients declared that they borrowed to cover spending. Psychiatric patients are in need of long-term treatment, in which they are regularly followed up. OOP spending for these treatments can leave patients with financial difficulties even if they have insurance.

Tur-Sınai and friends' study reached some important relations between sociodemographic characteristics and OOP health expenditures. According to the study, among single household heads, males have higher health expenditures then women, regardless of their age. However, findings show that male household heads of a certain

age spend less on health compared to female ones. In addition, there is a positive relation between income levels and health expenditures for young and adult household heads whereas it is not same for elderly household heads. This result may demonstrate that elderly people's health expenditures cannot explain with income changes since they need more serious and frequent health services (Tur-Sinai, et al., 2018).

Cınaroglu (2018) aimed to investigate in her study the interrelation among demographic variables, welfare state indicators and OOP health expenditures using a path analysis with the 2015 Turkey HBS data. The study revealed that there is a strong interrelationship since demographic characteristics have effects on welfare state; therefore, the welfare state features can contribute to the interaction between demographic characteristics and OOP health expenditures of households.

In another study, Cınaroglu (2017) found that education level, marital status and presence of members over the age of 65 are the factors that affect household OOP expenditures the most. The study of Levie & Xu (2008), used data regarding health financing system and health status of 15 African countries based on World Health Surveys involved socioeconomic characteristics of households. According to the results of regression analysis, in many countries, households borrow money or sell something to cover their health care payments. High-income households face less difficulty than low-income households whereas there is no apparent difference at households with middle income level.

Heijink and others (2010), compared (based on their own calculations) the surveys regarding health spending of Armenia, Jordan, Georgia and Turkey (2003 HBS data is used) with the other research and detected differences in OOP health expenditures as a share of total health spending in the range of 3 percent to 15 percent.

Tokatlioglu, I & Tokatlioglu, Y. (2014) investigated the effects of catastrophic health expenditures on poverty for each year by using HBSs between the years 2002-2011.

In the study, certain ratios of household's payment capacity, total expenditures of households and non-food expenditures are used as threshold values. According to the results, poverty creation capacity of catastrophic health expenditures in Turkey is low whereas the capacity of increasing poverty is high.

According to Giovanis & Ozdamar (2016), public health insurances have a protection effect on households against financial health risks. It was observed that the people in the low-income group who do not have health insurance, spend more OOP and are exposed to catastrophe more often than the green card holders. As a result, it is considered that catastrophic health expenditures in Turkey is low in general.

CHAPTER 3. GENERAL OUTLOOK OF HEALTH EXPENDITURE STATISTICS

Evaluation of health expenditure in terms of not only its total amount but also its share in GDP, how it is distributed among related parts, and the comparison of countries and income groups is important in order to interrelate and interpret the reflection of them on outcomes, health status, equal and accessible health services, financial health risk and further to impoverishment. For this reason, in this chapter, current and government health expenditures' percentage share of GDP, current health expenditure per capita and OOP health expenditures both percentage share of current health expenditure and per capita figures of OECD countries and income groups across the world between 2000 and 2016 are given.

3.1. Determinants of Health Expenditures

There are many factors that affect health expenditures of countries. Economic conditions, demographic features and disease patterns, health system indicators and technological developments are among the most important of them (Xu, et al., 2011). Demographic features and productivity affect health care expenditures in terms of higher costs whereas income, technology, and policy preventions affect in terms of better quality and access (Marino, et al., 2017). Advances in technology are often cited as one of the biggest reasons for increasing health expenditure since it has an impact that broadens the content of diagnosis and treatment, mainly in high-income countries (Smith, et al., 2009).

The structure of health financing systems also affects the amount of health expenditures. As the prepayment method make it easier to reach the health care services, it also brings high health expenditures along (Marino, et al., 2017).

Population growth in a country, health status of the population, demographic characteristics, increase in life expectancy, healthy aging trends and higher quality and

more accessible health care service expectations create pressure on health care and increase health expenditures in countries (Marino & Lorenzoni, 2019). The population structure of a country, especially the old and young population, affects the health care needs of people and thus their health expenditures. In upper middle-income and high-income countries where population aging is rapidly progressing, health expenditures are gradually increasing due to the pressure of health needs of the aging population (Xu, et al., 2011).

3.2. General Statistical Outlook of Health Expenditures

Existence of an effective health care system is measured with the size of total health expenditure. Resources allocated for health care services indicate the progress in countries' economic development and prosperity.

Figure 3.1. Current Health Expenditure (% of GDP) (2000-2016)
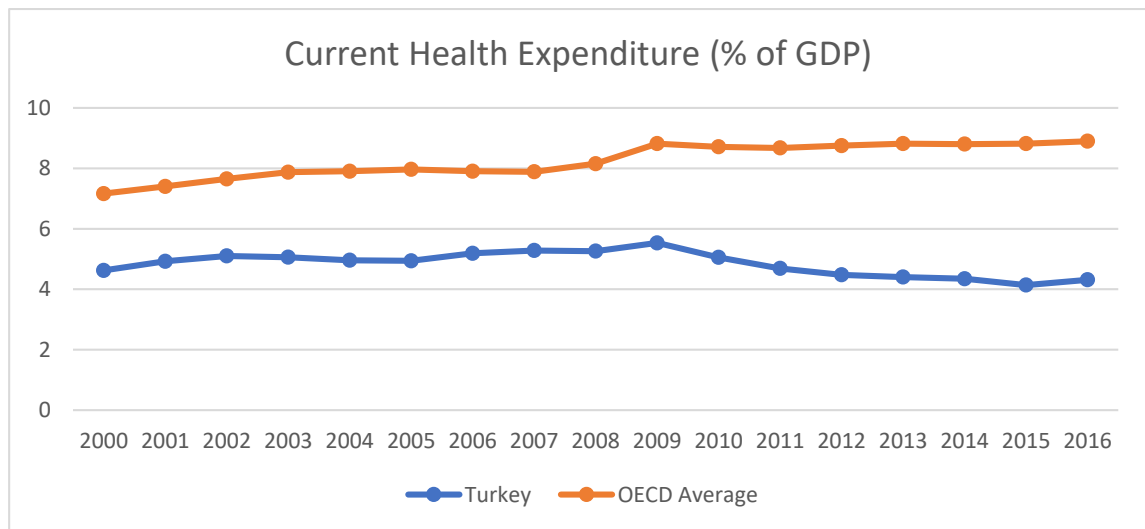
Source: (WB, 2020a)

When we look at the share of total current health expenditures in GDP by years in Figure 3.1., we can see that Organisation for Economic Co-operation and Development

(OECD) countries' average is above Turkey and health expenditures in Turkey have begun to decrease since 2009.

Looking at the last decades, health spending across OECD countries has exceeded economic growth. In fact, in terms of the GDP share, it has been more than doubled since the 1970s (Marino & Lorenzoni, 2019).

Health is not only one of the most significant development indicators of a country but also it is one of the most crucial elements in socioeconomic development and fight against poverty. In this respect, health expenditure per capita determines the structure and quality of the health system of a country. Health expenditures and thereby health expenditure per capita increase all over the world (Ongel, et al., 2014).

Figure 3.2. Current Health Expenditure Per Capita (Current US$) (2000-2016)
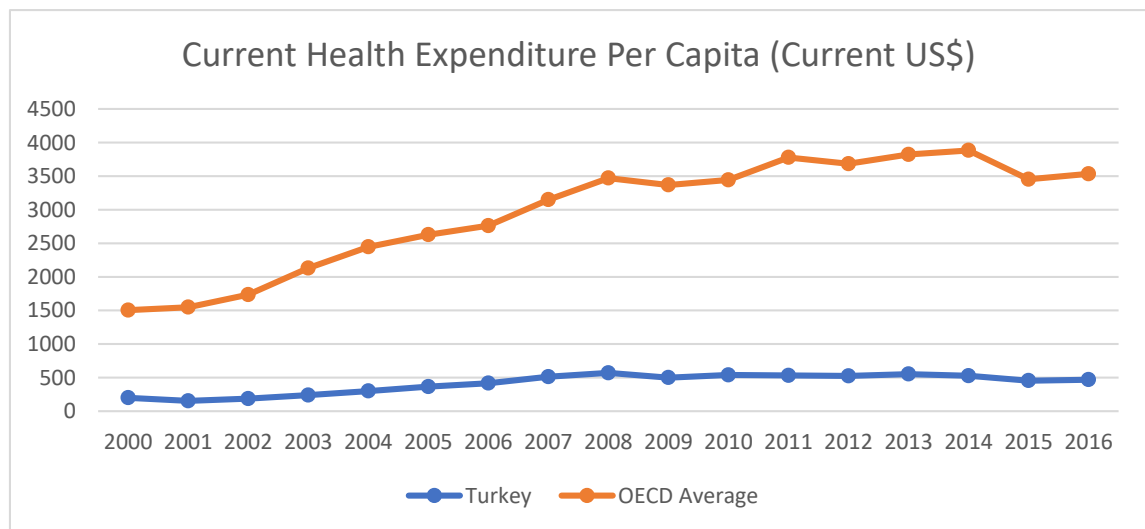
Source: (WB, 2020a)

When looking at the Figure 3.2., health expenditure per capita in OECD countries and Turkey, it is seen that OECD average has been rapidly increasing since 2000s, while health expenditure per capita in Turkey has an upward tendency as well, although it is relatively low compared to OECD average.

The trend of government health expenditures as a percentage of GDP is an essential indicator demonstrating the amount allocated by governments to health care services and the protection efforts for households from financial catastrophy.

In Figure 3.3., it is seen that Turkey's government health expenditures as a share of GDP has followed a fluctuating course from 2000. Although, the share increased after 2005 and made a peak in 2009 in line with the average of OECD countries, it did not capture the same line after this date. There has been a downtrend since 2009 whereas the OECD average has proceed almost at the same level. The reason of the raise can be described due to the positive impact of the health reform in Turkey began 2003.

Figure 3.3. Government Health Expenditure (% of GDP) (2000-2016)
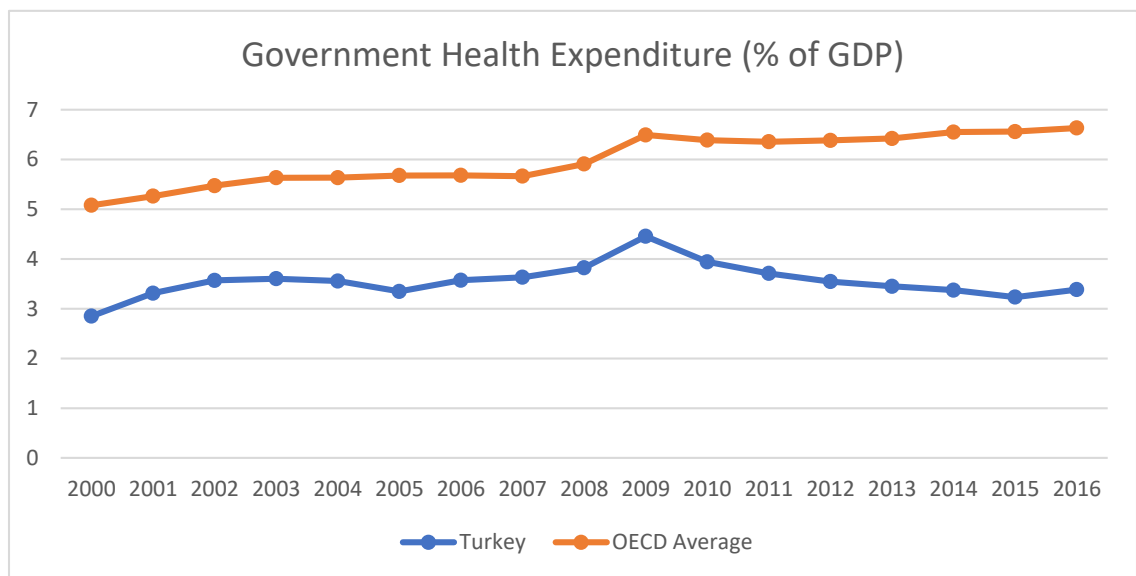
The share of OOP health expenditure in total health expenditure matters in terms of the extent that individuals are protected against financial health risks. Health expenditures are one of the most significant components of consumption expenditures and an increase in individuals' resources for health care raises some difficulties in cases where

people need to meet their other important needs. In these cases, individuals either have to sacrifice their health or other necessities.

OOP health expenditures in total current health expenditures show to what extent the health financing system in a country depends on OOP health expenditures of households (WHO, 2019).

Figure 3.4. OOP Health Expenditure (% of Current Health Expenditure) (2000-2016)
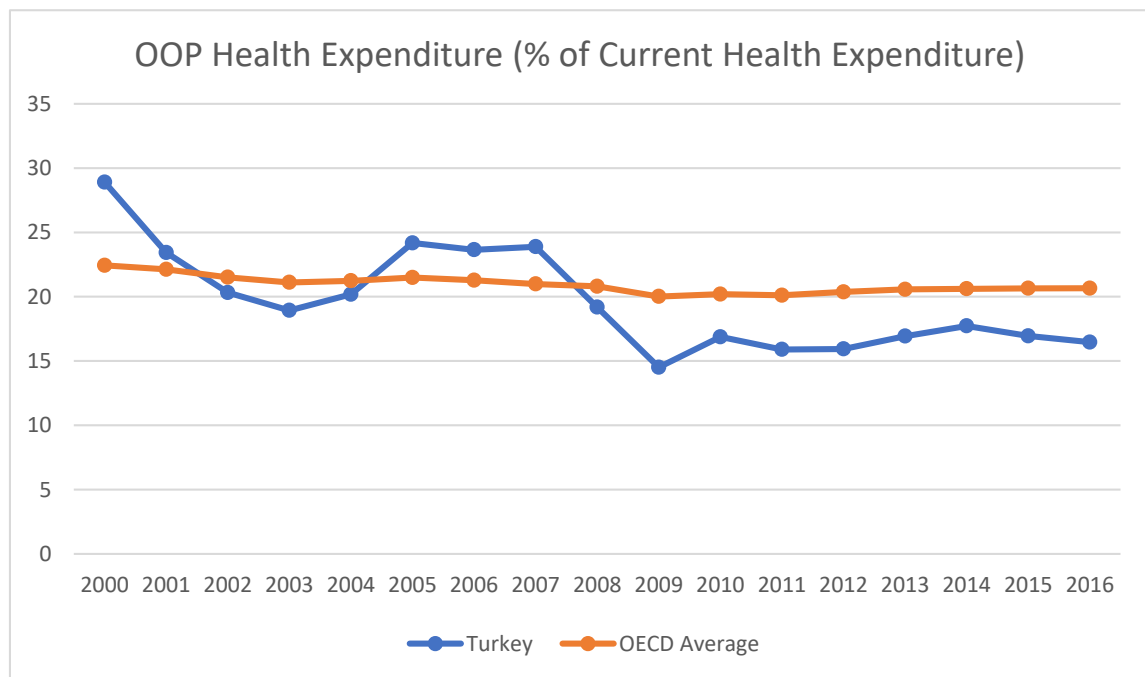
Figure 3.4. shows the comparison of OECD average and Turkey in terms of the share of OOP health expenditures in total health expenditures and it can be said that while OOP health expenditures have a slightly downward tendency in OECD countries, they have been decreasing since 2007 in Turkey although it follows with a fluctuating course. In Turkey, it is observed a flat line and then a sharp decline between 2005 and 2009 by means of health reform. However, there has been an increase after 2009 which may stem from co-payments that started in 2009 and from a growing number of private hospitals,

even so the percentage has remained between 15% and 20% which is still below the OECD average.

In her study, Cinaroglu (2017) presented the clear uptrend of OOP health expenditures from the year 2009 after one year the beginning of new Law concerning universal health insurance. Starting with health reform in 2003, efforts have gained speed on reducing poverty and increasing the access to health for everyone. Therefore, the uptrend in OOP health expenditures may be explained with growing use of health care services.

Erus & Aktakke (2012), also suggest that the reasons behind the increase may be easier access to health care services and therefore higher usage of them and existence of co-payments for pharmaceuticals after the health reform.

Figure 3.5. OOP Health Expenditure Per Capita (Current US$) (2000-2016)
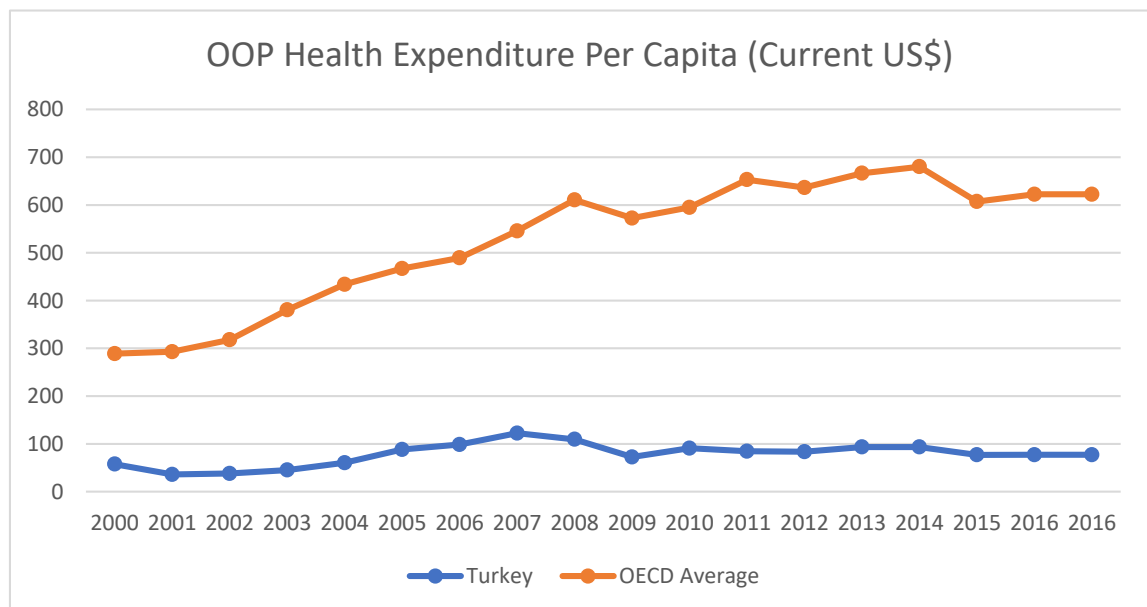
Source: (WB, 2020a)

Total health expenditures and public health expenditures will increase in all countries, although the expected health expenditures vary significantly by country in the future. The study also emphasizes the importance of economic development for health financing. Although economic growth brings along an increase in health expenditures, it is not decisive. It is also seen that health expenditures are very different even in countries that provide the same level of economic development (GBDHFCN, 2017b).

According to examined trends of health expenditures of 184 countries in terms of type and resource of the health care from 1995 to 2014 there are important differences between countries. To the results, in low-income and middle-income countries, health spending increases slightly and is highly dependent on OOP health payments and non-public aid. Moreover, neither years nor economic development guarantee that the health resources provided by the prepayment, which are vital for the development of general health insurance, are enough (GBDHFCN, 2017a).

Figure 3.6. Current Health Expenditure, World, by Income Groups (% of GDP) (2000-2016)
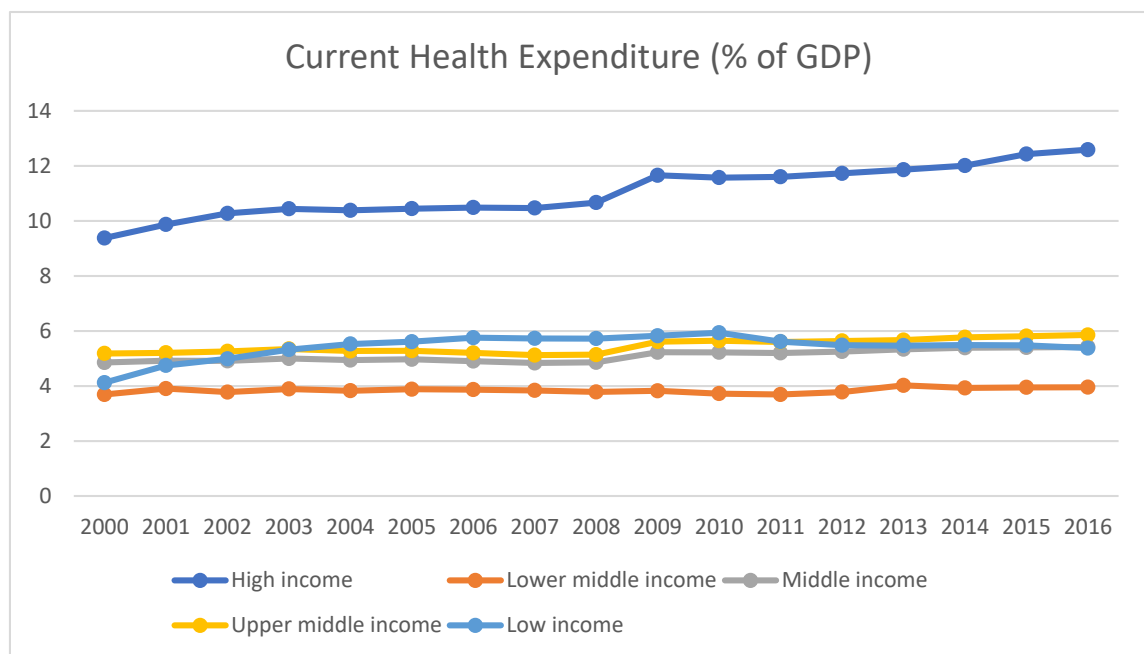
Source: (WB, 2020a)

As can be seen in the Figure 3.6. above, in high-income countries current health expenditure as a percentage of GDP is towering compare to countries in other income groups. In 2000, the percentage was nearly 10% and with an uptrend it was above 12% in 2016. On the other hand, upper-middle income group's current health expenditure's share in GDP went around between 5% and 6% in the same period. It is important to point out that Turkey places in this group and will be discussed more in the next chapter. In low-income, lower-middle income and middle-income countries, the percentages were between nearly 4% and 6%. There is a big gap between high income countries' health expenditures, percentages of GDP, and the other income groups across world.

In Figure 3.7., OOP health expenditure statistics are presented by income groups across the world. Likewise Figure 3.6., a big gap catches the eyes between high-income groups and the other income groups. OOP health expenditures were from nearly 20% to 10% with a downtrend by years in high income countries although it is fluctuating between 60% and 50% in lower middle income countries. In other income groups, it differs from 35% to 50%, which is quite high and directly shows financial catastrophe and impoverishment due to OOP health expenditures. When comparing Figure 3.6. to Figure 3.7., the most important point is that they have the least OOP health expenditures whereas they have the most current health expenditures by percentage of GDP.

Health care spending from the pockets of households for both public and private health care providers at the time of getting health care services, constitutes an important part of total health care spending within many health care systems. OOP health spending takes up between 10 percent and 80 percent of the country's total health spending throughout the countries. OOP expenditures and the distribution of these expenditures have a major impact on the effectiveness of the health systems (WHO, 2008b).

Figure 3.7. OOP Health Expenditure, World, by Income Groups (% of Current Health Expenditure) (2000-2016)

OOP Health Expenditure (% of Current Health Expenditure)

Legend: High income, Lower middle income, Middle income, Upper middle income, Low income
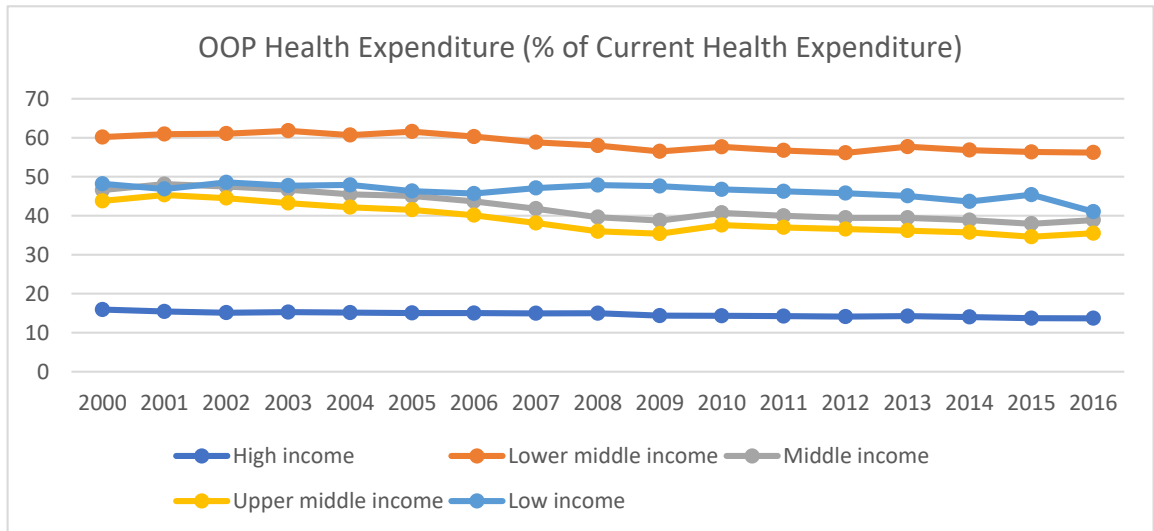
Source: (WB, 2020a)

In a comprehensive study of Wagstaff et al. (2019) related to OOP payments, substantial differences are found in OOP health expenditures per capita among nearly 150 countries. Data was taken from "WB's Health Equity and Financial Protection Indicators" database in 2019. The reason for these differences is largely explained as per capita income. It is stated that in countries with high per capita income, the tendency to spend for health from the pocket is higher than in countries with low per capita income. When comparing by income groups, it is seen that in countries with high-income groups such as Sweden and Switzerland, spending varies between 32 and 1200 international dollars, while in countries with low income group in Nepal and Cambodia it varies between 6 and 100 international dollars. Moreover, this study reveals that OOP health expenditures increase when the share of spending on health in GDP increases.

CHAPTER 4. BRIEF HISTORY AND GENERAL OUTLOOK OF TURKEY'S HEALTH FINANCING SYSTEM

In this chapter of the study, the brief history of Turkey's health financing system, detailed OOP health expenditure implementations within the frame of universal health insurance efforts will be mentioned, since information concerning the health financing system would be crucial during evaluation and discussion of the analyses results. In advance of this part, it would be better to describe the country from the point of social and economic outlook. The WB regards Turkey as an upper-middle income country with its 82.3 million population. Its Gross National Income (GNI) per capita is 10,240 with current US$ with Atlas method and its GDP is 771.35 billion with current US$ (WB, 2020b). On the other hand, according to Human Development Report 2019 by United Nations Development Programme (UNDP), Turkey's Human Development Index (HDI) rank is 59 out of 189 countries. Life expectancy at birth is 77.4 years (UNDP, 2019c). This can be deemed relatively low compared to countries having high human development ranks. One of the main tools to measure income distribution is Gini index.[3] According to the WB data, Gini index was 39.65 in 2006 and 40.2 in 2013 while it was 41.9 in 2018 (WB, 2020c). These figures suggest that Turkey's basic economic and life conditions are relatively low compared to high income countries. Given these circumstances, it can be concluded that Turkey has been experiencing some economic difficulties which leads to income inequalities in the society.

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[3] *"Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality."* (WB, 2020c).

4.1. In General

The structure of the health financing system in Turkey was different, until the not so distant past. The main resource of the heath financing system was a public insurance system, based on prepaid premiums, state contribution, and contribution payments as it is today. People were registered in different social security institutions according to their jobs, and health care services were financed by these institutions.

There were three main different social security schemes i) Social Insurance Institution (SII) for blue collar employees in both private and public sector ii) Social Security Institution for Artisans and the Self-Employed (SSI-ASE) including the workers in agricultural sector iii) Government Retirement Fund (GRF) for retired civil servants. Besides these, health expenditures of active civil servants were covered by the budget of the government institution they worked for and the "green card" implementation in order to supply inpatient health care services for people who lacked the ability to pay (OECD & WB, 2008; Erus & Aktakke, 2012). Health care services provided without paying any additional premium to the family members who the insurers are obliged to take care of (Celik, 2016).

In this health financing system, only registered labor was included in health insurance coverage. People in the informal economy were not benefiting from health insurance coverage since they were not enrolled under any social security fund. In 1992, the Green Card application was launched based on the income test method. Being a social protection device was the main feature of this application and thus the aim was to cover people in terms of health who were vulnerable and lacked payment ability. General revenues were used to finance the costs of this application (Erus, et al., 2015; Giovanis & Ozdamar, 2017).

It can be said that access to health was not easy and equal, including those in the health insurance scheme before the health reform. OOP health payments, especially

informal ones, caused people included in low income groups and groups with higher health needs to be in financial hardship and lack of health (Giovanis & Ozdamar, 2017).

These social security formations' implementations concerning reimbursement policies, health benefit packages, coverage extents and pricing involved different regulations as well (Atasever, 2004). Because of this reason, the scope, price, duration, quality of and accessibility to the health care services provided to people were not equal. To give some example; civil servants, retired civil servants and their dependents had right to access to the Ministry of Health hospitals without restrictions whereas SII members could only go to hospitals and pharmacies run by SII (Erus & Aktakke, 2012).

With minor exceptions, contribution payment rates were largely similar in main health care services between the former and the latter health financing systems. While there were contribution payments for outpatient treatments, there were not for inpatient treatments. For drugs and medical equipment used in outpatient treatment, 10% contribution payment was implemented for retired people and for their dependents, and 20% for working people and their dependents (OECD & WB, 2008). However, having said that, there were different and inequivalent rules among different sickness funds in terms of contribution payment practices. Retired people and their dependents covered by SII and SSI-ASE paid a fix and percentage amount contribution payment respectively every time they went to the hospital whereas retired people covered by GRF did not pay anything as a contribution payment for their outpatient treatments.

In order to eliminate the differences among the different social security institutions, to give the health care services an equal and better quality way and to make them easily accessible, Turkey health financing system has entered into a process of transformation based on years of preparation starting in 2003.

Within the scope of Health Transformation Process many new regulations and innovations have been implemented. In the first place, as the biggest step, three different

social security funds were unified under one umbrella, called Social Security Institution (SSI), with same premium rates, contribution payments, health benefit package content, reimbursement policies and rules.

With the health reform in Turkey, the access of people with Green Cards was increased in the first place. After the start of universal health insurance in all aspects in January 2012, Green Card application continued in a slightly different way with an expanded scope. For people who do not have sufficient income to pay general health insurance premiums, an income test method based on weighted components of household characteristics began to be implemented. In the universal health insurance system in Turkey, mainly based on the premium payment system, people who cannot pay their premiums were deprived of health insurance coverage and they remained under pressure of premium debts to SSI (Erus, et al., 2015).

It unified all public hospitals and removed the restrictions for using certain hospitals and pharmacies. Moreover, private health care providers have been covered by health benefit package via contracts with SSI (Erkoc, 2012; Erus & Aktakke, 2012).

This new universal health insurance system covers almost all the population. Green card holders are being still covered with broadening rights in the new system. Outpatient health care services such as laboratory tests, pharmaceuticals, prosthesis, eyeglasses and dental health services have been taken into reimbursement coverage. In addition to these, children under the age of 18 and the students are under the coverage of universal health insurance regardless of their or their parents' insurance status (Erkoc, 2012).

Primary health care services have become free for all insured people. Besides that, emergency services and intensive care services have become free of charge in both public and private hospitals no matter whether people are insured or not. It has become mandatory for hospitals to provide drugs and medical supplies for inpatients while patients

had to get them by themselves or pay additional amounts before the transformation process (Erkoc, 2012).

In Turkey, the universal health insurance system came into force in 2008 with the Law No. 5510 "Social Insurances and Universal Health Insurance (SIUHI)" (SGK, 2009). Health care services covered and uncovered, definitions, conditions, exceptions of insurance premiums, contribution fees, additional fees and difference payments are expressed in this law in detail.

The health benefit package included reimbursable health care services, pharmaceuticals and medical devices are described with elaborated rules in SSI Health Implementation Communique (HIC). In HIC, the amounts, rates, and exceptions related to contribution payments, additional payments and difference payments are regulated in detail.

Finally, it is considered that it would be helpful to put forward Turkey's important figures related to social security coverage since the beginning date of universal health insurance in the year 2008 and updated with data from the year 2018.

Table 4.1. Social Security Coverage in Turkey

Social security coverage	2008	Social security coverage	2018
Population	71,517,100	**Population**	82,886,000
Insured Persons	15,041,268	**Insured Persons**	22,072,840
Pensioners	16,792,518	**Pensioners**	24,481,082
File	8,045,815	File	11,867,931
Person	8,746,703	Person	12,613,151
Dependents	33,227,265	**Dependents**	35,096,530
Private Funds	328,218	**Private Funds**	413,983
Pensioners with billed payments according to some Laws	1,316,833	**Persons paid health premiums by themselves**	2,322,684
Persons with health card	9,337,850	**Persons paid health premiums by state**	8,262,402

Source: (SSI, 2019; TurkStat, 2020b)

In Table 4.1. the numbers show some substantial contrasts regarding social security coverage in Turkey. This table shows not only people and their dependents whose health insurance premiums are paid by themselves but also people and their dependents whose health insurance premiums are paid by state. The number of people with health cards and benefits from social aids composed almost 15% of the population in 2008 which is the official beginning date of universal health insurance, whereas it was nearly 13% in 2018 after ten years.

4.2. OOP Health Payments in Turkey's Health Financing System

Although some contribution payments were already in effect as was mentioned earlier, these were limited to policlinic examination, drugs prescribed for outpatient treatment and medical equipment. The scope of contribution payment has been broadened with the beginning of universal health insurance implementation. Some health care services such as assisted reproductive treatment, particular health care services, and fees for prescriptions have been included in contribution payments. Moreover, additional payment regulations have been defined with the new Law No. 5510.

Because of the abovementioned points, it can be said that, in Turkey, co-payments have been put into practice in 2009 for many health care services such as pharmaceuticals, medical equipment, hospital visits in both public and private as it stands. There are additional charges for prescriptions. Besides that, additional fees have been raised (Erus, et al., 2015).

The amounts of co-payments differ according to the kind of health care provider and services. These amounts have increased by years. Co-payments for pharmaceutical are applied as a percentage (different percentages for working and retired people and for their dependents) of the price. Also, additional fee limits changed by years. These types of charges have been limited with the Law No. 5510 to twice the prices SSI paid and SSI is authorized to determine this rate within the limits.

Table 4.2. Health Care Services Required OOP Health Expenditures in Turkey [4]

OOP Health Expenditure Type	Health Service and Health Care Provider Type	Amount
Co-payment	Examination including dental health services	Fixed amounts differ according to the type of health care providers
	Pharmaceutical	Percentage of the amount paid by SSI for the relevant service
	Medical equipment	Percentage of the amount paid by SSI for the relevant service
	Prescription	Fixed 3 TL up to three boxes and extra 1 TL for each additional box
	Assisted reproductive treatment	30%, 25%, 20% of the amount paid by SSI for the relevant service for first, second, third treatment respectively
Additional fee	All health care services at private hospitals, medical centers and hospitals of foundation universities	Up to 200% of the amount paid by SSI for the relevant service
	Particular health care services such as robotic surgery, some type dental prosthesis, obesity by-pass at all contracted health care providers	Up to three times of the amount paid by SSI for the relevant service
	Health care services given by professors at university hospitals out of regular working hours	Up to 2 times for policlinic examination and 1 time for other services
	Single and/or double room at all contracted hospitals for both inpatients and day patients	Up to 1.5 times for double and 3 times for single rooms of the amount paid by SSI for the relevant service
Difference fee	Eyeglass corrective lens etc.	Price difference between the amount paid by SSI and requested by the insured person
	Medical equipment and supplies for outpatients	These are generally derived from the exchange difference
	Pharmaceuticals	Price difference between the amount paid by SSI and the price of generic drug requested by the insured person
User charges	Uncovered health care services	Price set by the health care provider
	Health care services given by non-contracted health care providers	Price set by the health care provider

Source: (SSI, 2006; SSI, 2013).

Almost all the population in Turkey are covered by universal health insurance and the content of health benefits package, as previously mentioned, is quite extensive.

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[4] For detailed information, please see 68th and 73rd Articles of SIUHI Law No. 5510 (SSI, 2006).

However, people have to spend money from their pocket in various ways while using health care services. These situations are summarized in the table above.

Table 4.3. shows the percentages of OOP health expenditures of households by health care service type between the years 2004 and 2017. When the table is examined, it is seen that households mostly made payments for pharmaceutical products, dental health care treatments, medical services (physicians), and hospital services. Apart from these, households have expenditures on medical analysis laboratories', x-ray centers', and medical assistants' services. Moreover, they have expenditures on therapeutic appliances and equipment such as corrective eyeglasses and contact lenses and hearing aids, and other non-hospital services. Since HBS code list are different as of 2015, Table 4.3. has unified the codes in order to show the period as a whole. HBS codes of health care service types are explained in "data" section in detail.

Table 4.3. Percentage Share of OOP Health Expenditure by Type and Year

HBS Code	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
6111	25	0	2	30	30	32	25	26	23	24	19	20	22	23
6121	1	1	2	1	2	2	2	2	3	3	3	2	3	3
6131	5	22	7	6	7	6	9	8	7	7	9	7	8	9
6211	20	0	25	24	24	23	26	20	20	23	20	20	20	18
6221	31	1	12	15	12	14	13	19	19	17	20	20	20	16
6231	8	0	9	7	8	6	9	7	6	7	6	7	6	7
6232	1	1	1	1	2	2	2	3	2	2	2	0	0	0
6233	7	64	4	3	2	2	2	2	2	2	2	5	5	4
6311	3	10	10	14	14	12	12	13	17	15	19	19	16	19
Total	100	100	10	100	100	100	100	100	100	100	100	100	100	100

Source: Author's own calculation by using raw data provided form TurkStat.

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4.2.1. People and Health Care Services Exempted from Co-Payments

As it was briefly stated, some people and some health care services are exempted from co-payments due to different features of conditions, vulnerability, and necessity; health care services provided in case of occupational diseases, work accidents, chronic diseases, disaster and war; health care services given during military exercises and maneuvers; health services for control examination, protective health care services; health care services given by public primary health care services and family physicians, given in emergency services, pharmaceuticals used in laboratory tests, analysis, diagnostic tests, and inpatient treatment; pharmaceuticals for some specific diseases; health care services related organ, tissue and stem cell transfers; people described in specific Laws, such as disabled veterans and their dependents, victims of terrorism attacks, honorary people and their spouses, persons disabled on active duty are exempted from co-payments (SSI, 2013).

Furthermore, in the event that some general health insurers in the sensitive group demand contribution payments, the amount they paid is reimbursed by social assistance and solidarity foundations (SSI, 2013).

4.2.2. People and Health Care Services Exempted from Additional Fee

As it was briefly stated, some people and some health care services are exempted from additional fee due to different features of conditions, vulnerability, and necessity; health care services given in emergency services, health care services for intensive care services, burn injury treatments, cancer treatments (radiotherapy, chemotherapy, radio isotope treatments), newborn care services, organ, tissue and stem cell transplants services, surgical operations for congenital anomalies, hemodialysis treatments, cardiovascular surgical operations, cochlear implant operations and from some specific persons and their dependents described in specific Laws such as honorary people and their spouses (SSI, 2013).

4.3. Health Expenditures in Turkey

After the brief descriptions of the implementation of health financing system and OOP health expenditures in Turkey, it will be useful to present general information about health expenditure statistics in Turkey. Table 4.4. shows the numbers from 2007 to 2018. While the percentage share of total health expenditure in GDP was 6% in 2007, it has been decreasing by each year and it was 4.4% in 2018. On the other hand, government health expenditures share in the total health expenditures has been raised from 67.8% to 77.5%. When the trend of OOP health expenditures is examined, there was a sharp decline from 2007 to 2010, probably due to abovementioned new regulations as part of health reform. However, it did not continue in the following years. In 2018, unfortunately, OOP health expenditure as a share of total health expenditure reached the same 2008 numbers. The percentage of OOP health expenditure was lowest in 2010, 14.1%, and then, it increased to 16.3%, 16,6%, 17.1% and 17.3% respectively in 2010, 2015, 2017 and 2018.

Table 4.4. Health Expenditures in Turkey (2007-2018)

Total Health Expenditure	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Million Turkish Lira (TL)	50,904	57,740	57,911	61,678	68,607	74,189	84,390	94,750	104,568	119,756	140,647	165,234
Million US Dollars ($)	38,864	44,364	37,493	41,067	40,919	41,173	44,317	43,325	38,537	39,608	38,551	35,006
Health Expenditure Per Capita												
Million Turkish Lira (TL)	725	812	804	845	928	987	1,110	1,232	1,345	1,511	1,751	2,030
Million US Dollars ($)	553	624	521	563	553	548	583	563	496	500	480	430
Total Health Expenditure (% of GDP)	6.0	6.1	6.1	5.6	5.3	5.2	5.4	5.4	5.4	4.6	4.5	4.4
Government Health Expenditure (% of Total Health Expenditure)	67.8	73.0	81.0	78.6	79.6	79.2	78.5	77.4	78.5	78.5	78.0	77.5
OOP Health Expenditure (% of Total Health Expenditure)	21.8	17.4	14.1	16.3	15.4	15.8	16.8	17.8	16.6	16.3	17.1	17.3

Source: (TurkStat, 2020b)

CHAPTER 5. DATA SOURCE AND METHODOLOGY

This chapter will describe at first the data sources of analyses carried out in order to study the effects of households' sociodemographic and economic characteristics on OOP health expenditures, catastrophic health expenditures, the calculations of impoverished households, and examining of sociodemographic characteristics of them for the 2004-2017 period. After the data source, methodology of analyses of OOP and catastrophic health expenditures, and the calculation technique of the number of households with catastrophic health expenditures and impoverished households will be explained according to the WHO method with the help of consumption expenditure data within the HBSs. Then, descriptive statistics of the analyses, and limitations of the research will be given in details under the following titles.

5.1. Data

In the analysis part of this study, for both logistic regression analyses carried out in order to study the effects of households' sociodemographic and economic characteristics on OOP health expenses and catastrophic health expenses and the calculation steps for impoverished households due to OOP health expenditures, HBSs were used as data resource which were conducted by TurkStat. It was chosen between the years of 2004-2017 because of two main reasons. The first reason was that the same variables were available in these surveys. The second reason was that this period ensured an opportunity to observe a long time interval which had notable importance. It starts just after the beginning of health reform and includes universal health insurance term with numerous new reorganizations, regulations, and implementation procedure of new legislations. 2018 HBS data was not included in the analyses. It was not provided by TurkStat at the beginning of the study since it was not available at that time.

HBSs, in general, aims to compile data with regards to consumption habits (types and diversity of expenditures on goods and services), income levels (both total income of

household and incomes of household members), employment status of household members; socioeconomic and demographic features (age, marital status, educational background, etc.) of household members and living conditions of households both at nationwide and at the regional, rural and urban level (Turkstat, 2019).

HBSs are conducted with sample households that change every month in one year between January, 1 and December, 31 for each year. Consumption expenditure, income distribution and poverty indicators are obtained for Turkey, in general, via these surveys.

HBSs have been carried out regularly every year since 2002, after it was last conducted in 1994 under the name of "Household Income and Consumption Expenditures Survey". Through the surveys to 2014, consumption expenditure and income distribution indicators were obtained across the country in the separation of urban and rural areas. However, the sample design and framework of the HBSs were changed based on the new administrative division which has been in effect since 2014. Due to the transition of the villages in the cities with metropolitan municipality to the city, a significant difference has emerged in the distribution of the city and the countryside. Therefore, it has been announced that consumer expenditure indicators will be given only as the sum of Turkey instead of at the urban and rural level until new definitions of urban and rural studies will be completed.

Three main groups of variables are basically obtained from the HBSs:
1. Household socioeconomic status variables (type of residence, ownership status, heating system, facilities of residence, possessions and transportation vehicles etc.)
2. Consumption expenditure variables (value of all types of consumer goods and services such as food, health, tobacco, vacation, transportation, education etc.)
3. Individual's variables (age, gender, educational background, profession, economic activity, situation at work, operating and non-operating income, including the month of the survey and the last year etc.).

In order to be explanatory, it would be appropriate to give definitions of some expressions in the questionnaires of HBSs such as household, household head, household member, child, adult, disposable household income, household consumption expenditure and equivalence value as given in surveys methodologies. According to TurkStat, (2019):

Household is defined as a group consisting of one or more people who live in the same house or part of the same house, regardless of whether they have kinship ties or not, and who participate in household service and management.

Household head is the person who is responsible for the earnings and expenses of the household, briefly managing the household. The measure here is not only to generate income, but to make legal, social and economic savings for the household.

Household member defines each member that makes up the household. However, some members are not accounted as household members such as young adults going to the military service, students staying at the dormitory etc.

Household disposable income refers to the income of household members, income from capital and property (wages, profits, interest, rent) and pensions, widow-orphan pensions, free scholarships, etc. Household disposable income has been obtained from the sum of the personal annual usable income of everyone in the household.

Household consumption expenditure is defined in brief as expenditures on food, alcoholic beverages, clothing and shoes, housing, health, communication, entertainment and culture, restaurants etc., it covers also the items consumed by households from their own production.

Equivalence scale is based on the assumption that the consumption of individuals in the household is different due to age and gender differences. The additional spending of each additional household member to the family is not as much as the previous ones. It

reveals each household size equals to how many adults. Thus, it becomes possible to compare households with different sizes and compositions (by the number of adults and children).[5]

HBSs uses the "Classification of Individual Consumption by Purpose (COICOP)" classification method to classify consumption expenditures (Turkstat, 2019). COICOP classification system used by TurkStat categorizes consumption expenditure on the basis of individuals and also categorizes actual individual consumption. The COICOP classification system is among the functionally used classification systems. It provides a classification for expenses of households, governments, and non-profit institutions (European Commision , 2008). COICOP indicates households' consumption expenses on items such as food, housing, and health. All of them are accounted substantial items of national wealth (UN, 2000).

COICOP classification method involves 14 essential parts. The first 12 of them show households consumption expenditures whereas the rest of them show consumptions made by general government and non-profit institutions These 14 parts are:

"*1) Food and non-alcoholic beverages, 2) Alcoholic beverages, tobacco and narcotics, 3) Clothing and footwear, 4) Housing, water, electricity, gas and other fuels, 5) Furnishings, household equipment and routine household maintenance, 6) Health, 7) Transport, 8) Communication, 9) Recreation and culture, 10) Education, 11) Restaurants and hotels, 12) Miscellaneous goods and services, 13) Individual consumption*

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[5] Each individual added to the household increases the needs of the household. However, this increase is not proportional due to the nature of the consumption phenomenon. Consumption expenditure of a three-person household, such as electricity and water use, is not equal to three times of a one-person household's consumption expenditures. Equivalence scales can be described as tools to help calculate the equivalent size of the household. Among variety of these scales, one of the favorites is the "OECD equivalence scale", called also "Oxford scale" or "old OECD scale". In OECD Equivalent Scale, the first member of the household is valued with 1 point, additional adult individuals are rated with 0.7 points, and the children with 0.5 points. It was created by OECD for countries without their own equivalent scales (OECD, 2013) .

expenditure of NPISHs, 14) Individual consumption expenditure of general government." (European Communities, 2003).

The sixth main part of the COICOP is "health". When looking at the breakdown by division, it seems that health part has three main subgroups which are

"*i) medical products, appliances and equipment (pharmaceutical products, other medical products, therapeutic appliances and equipment) ii) outpatient services (medical services, dental services, paramedical services) and iii) hospital services*" (UN, 2000).

Definitions of subgroups included, and excluded health care services are specified in detail in the sub-classification table (UN, 2000).

Table 5.1 COICOP Item Code List for Subgroups of Health Expenditures of Household Budget Surveys (2004-2014) in Turkey

HBS Code	Title
6111	Pharmaceuticals products
6121	Other medical products
6131	Therapeutic appliances and equipment
6211	Medical services (Physicians)
6221	Dental services
6231	Medical analysis laboratories' services and x-ray centers' services
6232	Medical assistants' services
6233	Other non-hospital services
6311	Hospital services

Source: (Turkstat, 2019).

In HBSs, there are two different lists for health expenditure subgroups. One of them is the list used until the year 2015 and had nine categories which located in the sixth main group of consumption expenditures. The other one is the list has been used since 2014 and has divided into 14 categories. Tables 5.1. and 5.2. show these health expenditure categories.

Table 5.2 COICOP Item Code List for Subgroups of Health Expenditures of Household Budget Surveys (2015-…) in Turkey

HBS Code	Title
6110	Pharmaceuticals products
6121	Pregnancy tests and contraceptive mechanical devices
6129	Other medical products not classified elsewhere
6131	Corrective eyeglasses and contact lenses
6132	Hearing aids,
6133	Repairment of therapeutic appliances and equipment
6139	Other therapeutic appliances and equipment
6211	General practice services
6212	Specialist services
6220	Dental care services
6231	Medical analysis laboratories' services and x-ray centres' services
6232	Thermal springs, corrective gymnastics treatment, ambulance services and rental services of therapeutic equipment
6239	Other paramedical services
6300	Hospital services

Source: (Turkstat, 2019).

5.2. Methodology

Descriptive statistics are given as frequency (N) and percentage (%) for categorical data. For continuous data, household annual disposable income and OOP health expenditure are presented in terms of average, median, minimum value, and highest value. In addition to this information, quartile values are given for annual disposable income. Furthermore, household annual disposable income values were updated by means of Consumer Price Index published by TurkStat in order to reach to inflation-adjusted numbers.

Logistic regression analyses were made to examine the impacts of sociodemographic and economic variables on OOP health expenditures and the catastrophic health expenditures of households.

Two different models were created. One of them is for analyzing the effects of determined sociodemographic and economic variables on OOP health expenditures and

the other one is on catastrophic health expenditures. In both models, the independent variables are described as gender, age range, health insurance status, educational status, and marital status of household heads, household type, ownership status on the residence, annual disposable income, household size, number of people eligible for widow and orphan pension, number of people eligible for veteran salary, number of working people, number of children aged 5-, number of people aged 65+, number of disabled people regarding daily activities, number of disabled people regarding working. In the first model, the independent variable is chosen as OOP health expenditures whereas in the second model the independent variable is chosen as catastrophic health expenditures.

Household heads' and households' sociodemographic and economic characteristics which are determined as independent variables for logistic regression analyses in this study can be categorized based on "*The Behavioral Model of Health Care*" of Andersen. As mentioned in the second chapter in detail, according to this theory, health care demand stems from three main factors which are predisposing factors, enabling factors, and need factors. If the independent variables of analyses are categorized under these three factors, health care needs and demands of households according to their sociodemographic and economic characteristics can be more illustrative. In this direction; number of children aged 5-, number of people aged 65+, household head's gender and age; household head's educational status and marital status, household type; household size refer to *"biological imperatives", "social factors", and "contextual factors"* respectively under **"predisposing factors"**. In addition to these, household head's health insurance status, household's annual disposable income, number of people eligible for widow and orphan pension, number of people eligible for veteran salary, ownership status on the residence, number of working people refer to *"financing factors"* under **"enabling factors"**. Finally, number of disabled people regarding daily activities, number of disabled people regarding working refer to *"individual level"* or in other words *"population health indices"* under **"need factors"**.

Before interpreting the results of the logistic regression analysis, the compliance of the data with the models was evaluated via Hosmer-Lemeshow test and the significance of the models were revealed by comparison of the situations not including the independent variables and including dependent variables.

Analyses were made via SPPS Statistics 22.0 package program. The results of analyses were evaluated at $\alpha=0.05$ significance level and 95% confidence level.

In the analysis of the factors affecting catastrophic health expenditures four thresholds were established which were 40%, 30%, 25%, and 20% respectively. These percentages represent the share of capacity to pay of households; how it was calculated will be explained. Separate logistic regression models were applied for each different threshold. Akaike Information Criteria (AIC) and Bayesian Information Criteria (BIC) were calculated for these four different models. According to the results, the model with 40% threshold was chosen as the most suitable model with the lowest information criterion.

The methodology for calculating catastrophic health expenditures and impoverishment that emerged due to OOP expenditures are explained below.

It is crucial to calculate catastrophic health expenditures of households in the right way in order to identify the households having catastrophic health payments and lacking financial protection for getting the health care services they need.

The first piece of data that the capacity to pay calculation needs is households' OOP health expenditures (oop). This data is provided from HBSs. In the HBSs, it is determined clearly via questions which health expenditures are included in OOP health expenses. Transportation expenses directly associated with getting health services, and premiums for private and public health insurances are not included in these kinds of expenditures.

The second piece of data to calculate the capacity to pay is the households' consumption expenditures (exp) which are classified in twelve sections in HBSs mentioned before in "Data" section.

The third piece of data to compute the capacity to pay is households' food expenditure which is one of the main parts of households' consumption expenditures (food). Households' food expenditures do not include expenditures on tobacco, alcohol, and eating outside.

Households' subsistence expenses (se) are necessary to reach households' catastrophic health expenditures. Subsistence expenses can be defined as household's minimum expenditures in order to continue their life.

Before calculating the subsistence spending of households, it is essential to identify the poverty line (pl). Although there are lots of ways to define poverty line, in this method the poverty line is defined based on food share. It describes food expenses part in total household expenditures which are at the 45th and 55th percentile across the whole sample.

Another important point is using the equivalence scale (*eqsizeh*) instead of real household size (*hhsizeh*). Xu (2004) offers in his methodology using the household equivalence scale (*eqsizeh=hhsizeh$_\beta$*) in which β=0.56. The value of β based on his estimations from former studies including data for 59 countries from household surveys. In this study, we used OECD equivalence scale which has already provided by TurkStat in HBSs in Turkey.

The path to reach subsistence expenditures of households is indicated below step by step:

1- In order to constitute food expenditure share of households (*foodexp_h*); we divide the household expenditure on food by total consumption expenditure of household

$$foodexp_h = food_h / exp_h \qquad [5.1.]$$

2- In the second step, we have equivalent household size (*eqsize_h*) instead of the equivalence *eqsizeh=hhsizeh_β* for equivalent household size.

3- Then, we divide household food expenses by the equivalent household size to get the new food expenses adapted to equivalent household size.

$$efoodh = foodh / eqsizeh \qquad [5.2.]$$

4- Creating two new variables as *food45* and *food55* in order to determine households whose food expenditure share are between 45th and 55th percentile in total sample.

5- Then, we calculate food expenditures' weighted average which are in between 45th and 55th percentile to reach the poverty line and at the same time subsistence expenditures.

$$pl = total\ wh * efoodh / total\ wh \qquad [5.3.]$$
$$\rightarrow where\ food45<foodexph<food55$$

6- Finally, we calculate subsistence expenditures according to the formula below.

$$she = pl * eqsizeh \qquad [5.4.]$$

In the light of the calculations above, we can see if a household is poor or not by looking at the assumptions below. When a household's subsistence expenditure is bigger than its total consumption expenditure, we say that this household is poor.

$$poorh =1 \qquad if\ exph < seh \qquad [5.5]$$
$$poorh =0 \qquad if\ exph \geq seh$$

7- In the way of reaching to household's catastrophic health expenditures, we need to know capacity of the household to pay (*ctp_h*). The term "capacity to pay" is defined as the household's non-subsistence effective income. The formula of capacity to pay is below.

$$Ctph = exph\text{ -}seh \qquad if\ seh\ \leq foodh \qquad\qquad [5.6.]$$
$$Ctph = exph\text{ - }foodh \quad if\ seh\ > foodh$$

8- After that we need to calculate OOP health expenditures share within the household's capacity to pay (*oopctp_h*).

$$oopctph = ooph\ /\ ctph \qquad\qquad [5.7.]$$

9- Finally, we have all parts in order to see households with catastrophic health expenditures (*catah*). When a household's OOP health expenditure is equal to or exceeds 40% of household's capacity to pay, there is a catastrophic health expenditure.

$$catah = 1 \qquad if\ ooph\ /\ ctph \geq 0.4 \qquad\qquad [5.8.]$$
$$catah = 0 \qquad if\ ooph\ /\ ctph < 0.4$$

10- After having the data regarding catastrophic health expenditures, we can generate the number of impoverished households (*impoorh*) because of having OOP health expenditures. When a household becomes poor due to health payments from its own pocket, it can be said that this household is impoverished. It can be seen the equivalence below.

$$Impoorh = 1 \quad if\ exph \geq seh\ and\ exph - ooph < seh \qquad [5.9.]$$
$$Impoorh = 0 \quad if\ exph \geq seh\ and\ exph - ooph \geq seh$$

5.3. Limitations

It is thought that it would be beneficial to mention the limitations of the study in order to understand and evaluate better the content of this thesis study, the statistical analyses within the scope of the study and the results that arise. It should be noted that the limitations do not prevent the study from reaching its purpose nor change the results significantly. However, without these limitations, a richer outcome and evaluation chart would be possible.

The limitations of the study are detailed below.

(i) Information concerning the region where the household resides, the distance of the household to the health care providers, the presence of a member with chronic disease or who needs regular treatment within the household, and the existence of a private health insurance policy were wanted to be included in the analyses as an independent variable. However, these variables were not available in all HBSs organized between 2004 and 2017. Therefore, these variables could not be used in the analyses.

(ii) In the questionnaires of the surveys between 2004 and 2014, health expenditures were defined under nine subtitles. Since 2015, items under the heading of health have been expanded and health expenditures have been defined under fourteen subtitles. As Heijink and others (2010) mentioned, changes on the survey design, the differentiation of the title or content of the questions, differences in classification, different use of words, changes of terminology over survey years create difficulty for comparisons in terms of time and surveys.

(iii) In Turkey, as in many countries, information regarding OOP health expenditures of households can be achieved only through the HBSs. This fact eliminates the possibility of making a comparison or verification related to the amount of OOP health expenditures in the country. For this reason, only the numbers from HBSs were used in the analyses in terms of OOP health expenditures of households.

(iv) When the questionnaire design is examined, it is seen that there are no explanatory notes or definitions regarding the content of the questions in the section related to health expenditures. It is thought that individuals may have difficulty in understanding the contents of the health item titles. For example, it is clear that it is not easy for respondents to understand exactly what services the "other non-hospital services" or "other paramedical services" items under the heading of "health expenditures" covers. Vagueness of the content of the questions may lead respondents to give inadequate or excessive answers.

According to the study of Wagstaff and others (2017a), which examined nearly one hundred household surveys across the world, many household budget surveys are deficient in terms of defining the OOP health expenditures.

(v) Another limitation related to the analyses is that only households whose health expenditure is greater than zero can be included in both the OOP and catastrophic health expenditure analyses. It does not take into account households who need health care services but cannot afford them. Moreover, it is not possible to find out from household surveys why households do not have OOP health expenditures.

As Brown and others (2014) stated, some poor households postpone their health needs as they cannot afford OOP expenses. It will not be possible to calculate catastrophic health expenditures for these households whose health expenditures seem to be zero. The standard approachment does not consider the behavior of households not receiving health care because of the financial difficulties.

(vi) Finally, it can be counted as a limitation that there is no question regarding the informal payments made for health in HBSs questionnaire. This means that informal health expenditures, which may have been made by households, are not included in the survey and therefore cannot be involved in the calculations.

Household budget surveys do not provide a definition of informal health payments and information on the amount of informal health payments, although informal health payments are an OOP health care expenditure that should be taken seriously. Informal payments have implications that reduce the performance of health systems and cause failure in inequalities among patients in terms of using the health service (Thomson, et al., 2019).

5.4. Descriptive Statistics

As mentioned before in "Data" section, HBSs carried out by TurkStat between 2004 and 2017 were used in logistic regression analyses for both OOP health expenditures and catastrophic health expenditures. The same independent variables were used in both analyses, although the dependent variables were different for them. For this reason, the same descriptive information is given for both analyses except for the dependent variables.

For logistic regression analysis regarding OOP health expenditures, "having OOP health expenditures" was defined as the dependent variable. Beside this, for logistic regression analysis regarding catastrophic health payments, "having catastrophic health expenditures" was defined as the dependent variable.

Total household number included in HBSs conducted between 2004 and 2017 is 138,694. Household numbers change between 8,544 and 12,155 even though these fourteen HBSs' designation are similar in terms of questionnaires and sample design. Since different sample sizes may cause probable biases, weighting factors were used in order to standardize the household numbers by years. Table 5.3. shows the standardized household numbers by survey years and in total.

Table 5.3. Descriptive Statistics of Household Number by Years and in Total

HBS Years	Frequency (Unweighted)	Percent (%) (Unweighted)	Frequency (Weighted)	Percent (%) (Weighted)
2004	8,544	6.2	9,907	7.1
2005	8,559	6.2	9,907	7.1
2006	8,558	6.2	9,907	7.1
2007	8,548	6.2	9,907	7.1
2008	8,549	6.2	9,907	7.1
2009	10,046	7.2	9,907	7.1
2010	10,082	7.3	9,907	7.1
2011	9,916	7.1	9,907	7.1
2012	9,987	7.2	9,907	7.1
2013	10,060	7.3	9,907	7.1
2014	10,122	7.3	9,907	7.1
2015	11,481	8.3	9,907	7.1
2016	12,087	8.7	9,907	7.1
2017	12,155	8.8	9,907	7.1
Total	**138,694**	**100.0**	**138,694**	**100.0**

As can be seen in Table 5.4., 121,174 of the 138,694 household heads included in the HBSs are male whereas 17,520 are female.

When the distribution of the age range of household heads is examined, it can be seen that the number of household heads in 15-35 age range is 24,401; 35-44 age range is 35,714; 45-54 is 33,632; 55-64 is 23,518. The number of household heads whose age is 65 or more is 21,429.

Table 5.4. also presents the numbers related to the health insurance status of household heads. According to the table, 111,364 household heads have universal health insurance and 14,152 household heads have green card whereas 13,178 household heads do not have health insurance.

Table 5.4. Descriptive Statistics of Household Heads' Main Features

	Frequency	**Percent (%)**
Gender		
Male	121,174	87.4
Female	17,520	12.6
Total	**138,694**	**100.0**
Age range		
15-35	24,401	17.6
35-44	35,714	25.8
45-54	33,632	24.2
55-64	23,518	17.0
65+	21,429	15.5
Total	**138,694**	**100.0**
Health Insurance Status		
Yes (Universal Health Insurance)	111,364	80.3
Yes (Green Card)	14,152	10.2
No	13,178	9.5
Total	**138,694**	**100.0**
Educational Status		
Illiterate	17,620	12.7
Primary School	64,516	46.5
Secondary School	15,415	11.1
High School	23,502	16.9
Higher Education	17,641	12.7
Total	**138,694**	**100.0**
Marital Status		
Unmarried	3,562	2.6
Married/Partner	119,879	86.4
Widowed/Divorced/Separated	15,253	11.0
Total	**138,694**	**100.0**

As it can be seen in Table 5.4. the number of illiterate household heads is 17,620; primary school is 64,516; secondary school is 15,415; high school is 23,502 while household heads with higher education number is 17,641.

Marital status of household heads is examined in three categories. First category is unmarried, second is married/partner, and the third one is widowed/divorced/separated. It can be seen from the Table 5.4. that 3,562 household heads are unmarried. 119,879 of total household heads are married or live with a partner. Lastly, 15,253 household heads are alone because of some reasons such as divorce, death or separation.

Table 5.5. Descriptive Statistics of Household's Main Features

	Frequency	Percent (%)
Household Type		
Nuclear Family w/one child	25,679	18.5
Nuclear Family w/two children	29,393	21.2
Nuclear Family w/three or more children	21,367	15.4
Nuclear Family w/o child	22,005	15.9
Extended Family	23,127	16.7
Family w/one adult	15,137	10.9
People living together	1,987	1.4
Total	**138,694**	**100.0**
Ownership Status on the Residence		
Tenant	30,789	22.2
Homeowner	89,148	64.3
Other	18,757	13.5
Total	**138,694**	**100.0**
Household Size		
Household Size (1)	8,544	6.2
Household Size (2)	27,404	19.8
Household Size (3)	30,469	22.0
Household Size (4)	34,303	24.7
Household Size (5+)	37,974	27.4
Total	**138,694**	**100.0**

According to the data related household type in Table 5.5., it can be seen that 76,439 households are nuclear family with at least one child. 25,679 of households are nuclear family with one child; 29,393 households are nuclear family with two children whereas 21,367 households consist of three or more children. Moreover, there are 22,005 households compose of couples with no child. Besides that, 23,127 households are defined

as extended family (parents, children, grandparents etc.). 15,137 family consist of a single parent whereas 1,987 households are individuals who are living together.

In terms of ownership status of households' property type of residence, there are three classes which can be seen in the Table 5.5. Tenants, homeowners and the other category which includes households living in their relative's house or lodgement etc. From 138,694 households, 30,789 households live in a rental house, 89,148 households live in their own house and 18,757 households live in their parents' or relatives' house or in a lodgement.

When the variable of household size which means the number of people living in this household was inserted in the analysis, this variable separated into five categories. As to these categories, which is presented in Table 5.5., number of people living in the household size one is 8,544, two is 27,404, three is 30,469, and four is 34,303. The number of household size is five and above is 37,974.

Table 5.6. provides information about the number of household members who are getting widows and orphans pensions. The number of households which consist of one member who is getting widows and orphans pension is 11,088 whereas the number falls to 1,601 when two or more members is getting this pension. Besides that, in 126,005 households there are no members who has this kind of pension.

According to the data in Table 5.6., there is one member who is getting veteran salary in 2,483 households. Besides that, 217 households include two or more members who are getting veteran pension. Besides that, in 135,995 households there is no member getting veteran salary.

Table 5.6. Descriptive Statistics of Household Member's Main Features

	Frequency	Percent (%)
Number of People Eligible for Widow and Orphan Pension		
No	126,005	90.9
Yes (1)	11,088	8.0
Yes (2+)	1,601	1.2
Total	**138,694**	**100.0**
Number of People Eligible for Veteran Salary		
No	135,995	98.1
Yes (1)	2,483	1.8
Yes (2+)	217	0.2
Total	**138,694**	**100.0**
Number of Working People		
No	27,717	20.0
Yes (1)	62,224	44.9
Yes (2)	35,252	25.4
Yes (3)	9,031	6.5
Yes (4)	3,159	2.3
Yes (5+)	1,311	0.9
Total	**138,694**	**100.0**
Number of Children Aged 5-		
No	100,720	72.6
Yes (1)	28,163	20.3
Yes (2+)	9,811	7.1
Total	**138,694**	**100.0**
Number of People Aged 65+		
No	108,517	78.2
Yes (1)	20,840	15.0
Yes (2+)	9,338	6.7
Total	**138,694**	**100.0**
Number of Disabled People Regarding Daily Activities		
No	124,326	89.6
Yes (1)	11,720	8.5
Yes (2+)	2,648	1.9
Total	**138,694**	**100.0**
Number of Disabled People Regarding Working		
No	120,073	86.6
Yes (1)	14,845	10.7
Yes (2+)	3,776	2.7
Total	**138,694**	**100.0**

When the employment status of household members is examined, it can be seen that there is no one in work life in 27,717 households. The number of households which consists of one member in work life is 62,224, two people is 35,252, three people is 9,031, and four members is 3,159. The number of households which include five or more members in work life is 1,311.

According to the Table 5.6. while 100,720 out of 138,694 households do not have children under the age of five, it is observed that there is one child in 28,163 households, and two or more children under the age of five in 9,811 households.

It can be seen from the Table 5.6., 108,517 households out of the total households do not have anyone at the age of 65 or older. While in 20,840 households there is one member age 65 or older, it is seen that there are 9,811 households which include two or more members at the age of 65 and older.

According to the Table 5.6. among 138,694 households, 124,326 households do not contain members with a disability related to doing his/her daily activities. However, in 11,720 households there are one disabled member whereas in 2,648 households there two or more disabled members.

While in 120,073 households out of 138,694 no one has a work disability, it is observed that in 14,845 households there is one member with work disabilities. Furthermore, the number of households is 3,776 which contain two or more members with work disabilities.

Regarding annual disposable income of the households in Table 5.7., it is separated in terms of twenty percent slices and divided into five groups and included in the analysis as such. According to this way, the number of households with the lowest share of income to the households with the highest share of income are as follows respectively; 30,152; 28,818; 27,668; 26,605, and 25,541.

Table 5.7. Descriptive Statistics of Household's Annual Disposable Income

Household's Annual Disposable Income	Frequency	Percent (%)
First 20th Quantile	30,152	21.7
Second 20th Quantile	28,818	20.8
Third 20th Quantile	27,668	19.9
Fourth 20th Quantile	26,605	19.2
Fifth 20th Quantile	25,541	18.4
Total	**138,694**	**100.0**

Although households' annual disposable income was taken in logistic regression analyses as categorical data grouped among themselves, raw data from HBSs were defined as a continuous variable. Descriptive statistics of households' annual disposable income as a continuous variable are shown in the Table 5.8. below.

Table 5.8. Descriptive Statistics of Household's Annual Disposable Income as a Continuous Variable

N	Valid	138,694
Mean		43,043.2245
Std. Deviation		41,256.85487
Maximum		2,341,283.00
	20	19,405.7381
	25	21,596.1373
	40	28,500.5261
Percentiles	50	33,724.3207
	60	39,815.9609
	75	52,303.0600
	80	58,066.0882

Within the scope of this analysis, 138,694 households are divided into two main parts in terms of having OOP health expenditures. One of them is having OOP health expenditures and the other one is not having OOP health expenditures. It can be seen from the Table 5.9. that the number of households which made OOP health expenditures is 81,840 and the other one is 56,854.

Table 5.9. Descriptive Statistics of Having OOP Health Expenditures of Households

Having OOP Health Expenditures	Frequency	Percent
No	56,854	41.0
Yes	81,840	59.0
Total	**138,694**	**100.0**

Table 5.10. Descriptive Statistics of Having OOP Health Expenditures of Households as a Continuous Variable

N	Valid	**82,599**
Mean		70.7377
Std. Deviation		190.56953
Maximum		10,067.09
	25	7.9500
Percentiles	50	21.4378
	75	64.0000

Although having OOP health expenditures of households was taken in logistic regression analyses as categorical data grouped among themselves, raw data from HBSs were defined as a continuous variable. Descriptive statistics of having OOP health expenditures as a continuous variable are shown in the Table 5.10. above.

CHAPTER 6. RESULTS

In this chapter of the study, findings of the analyses are presented in three different sections. The first section is about logistic regression analysis results related to OOP health expenditures and the second section is about logistic regression analysis results related to catastrophic health expenditures. This second section are divided into two parts. One of them presents the findings of the logistic regression analysis of catastrophic health expenditures by threshold 40% and the other one presents briefly the results of the logistic regression analysis of catastrophic health expenditures by threshold 30%, 25%, 20% and other results of calculations of household numbers related to catastrophic health expenditures. The third section has two parts related to impoverishment. First part examines impoverished household heads' sociodemographic characteristics and the second part examines impoverished households' sociodemographic and economic characteristics. Since the number of impoverished households was not enough for a logistic regression analysis, sociodemographic and economic characteristics of impoverished households were examined from the raw data on an individually basis.

6.1. Logistic Regression Results for OOP Health Expenditures

In order to measure the significance of the model; chi-square values were calculated to compare the model in which independent variables were not included and the situation in which independent variables were included in the model. As a result of chi-square test ($\chi^2 = 5147.122$; p<0.05), the model in which independent variables were included was found statistically significant in comparison to the model in the first stage as it can be seen below Table 6.1.

Table 6.1. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Step	5147.122	46	0.000
Step 1	Block	5147.122	46	0.000
	Model	5147.122	46	0.000

According to the result of Hosmer-Lemeshow Test ($\chi^2 = 8.299$; p>0.05) for data compatibility with the model, data compatibility is found to be statistically significant.

Table 6.2. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.299	8	0.405

Table 6.3. is prepared in order to describe the reference categories used in logistic regression analyses to determine the effects of some sociodemographic and economic variables on households' OOP health expenditures and catastrophic health expenditures. It shows indicators of independent variables of logistic regression equations as well.

Table 6.3. Reference Categories and Indicators of Independent Variables

Variable	Reference Category	Variable Indicator
Household Head's Sociodemographic Features		
Gender	-	X_1
Age Range	15-34	X_2
Health Insurance Status	No	X_3
Educational Status	Higher education	X_4
Marital Status	Unmarried	X_5
Household's Sociodemographic and Economic Features		
Household Type	Nuclear family w/one child	X_6
Ownership Status on the Residence	Tenant	X_7
Household Size	One person	X_8
Number of People Eligible for Widow and Orphan Pension	No	X_9
Number of People Eligible for Veteran Salary	No	X_{10}
Number of Working People	No	X_{11}
Number of Children Aged 5-	No	X_{12}
Number of People Aged 65+	No	X_{13}
Number of Disabled People Regarding Daily Activities	No	X_{14}
Number of Disabled People Regarding Working	No	X_{15}
Annual Disposable Income	First 20th Quantile	X_{16}

Y indicates OOP health expenditures of the household which is a dependent variable. Independent variables are shown in Table 6.3. as variable indicators. The equation of logistic regression is given below.

$$\textit{Odds of Having OOP Health Expenditures} = 0.309 + 1.168X_1 + 1.251X_{3.1} +$$
$$1.171X_{3.2} + 0.937X_{4.1} + 0.952X_{4.3} + 0.940X_{4.4} + 1.710X_{5.1} + 1.364X_{5.2} + 1.135X_{6.3} +$$
$$0.917X_{6.5} + 0.951X_{7.1} + 1.056X_{7.2} + 1.084X_{8.1} + 1.164X_{8.2} + 1.188X_{8.3} + 1.181X_{8.4} + \quad [6.1.]$$
$$1.196X_{9.1} + 1.165X_{9.2} + 0.957X_{11.1} + 0.951X_{11.2} + 1.286X_{12.1} + 1.366X_{12.2} +$$
$$1.223X_{13.1} + 1.350X_{13.2} + 1.122X_{14.1} + 1.433X_{15.1} + 1.629X_{15.2} + 1.338X_{16.1} +$$
$$1.579X_{16.2} + 1.835X_{16.3} + 2.254X_{16.4}$$

Table 6.4. Logistic Regression Results of OOP Health Expenditures

	B	S.E.	P Value	Odds Ratio	95% CI for Odds Ratio Lower Bound	95% CI for Odds Ratio Upper Bound
Household Head's Sociodemographic Features						
Gender (X_1)	0.155	0.028	0.000*	1.168	1.106	1.233
Age Range						
Age Range (15-34) (X_2)						
Age Range (35-44) ($X_{2.1}$)	-0.011	0.019	0.582	0.990	0.953	1.027
Age Range (45-54) ($X_{2.2}$)	-0.039	0.021	0.063	0.962	0.923	1.002
Age Range (55-64) ($X_{2.3}$)	0.040	0.023	0.088	1.041	0.994	1.089
Age Range (65+) ($X_{2.4}$)	0.027	0.038	0.469	1.028	0.954	1.107
Health Insurance Status						
No (X_3)						
Yes (Universal Health Insurance) ($X_{3.1}$)	0.224	0.020	0.000*	1.251	1.202	1.301
Yes (Green Card) ($X_{3.2}$)	0.158	0.025	0.000*	1.171	1.115	1.231
Educational Status						
Higher Education (X_4)						
Illiterate ($X_{4.1}$)	-0.065	0.028	0.019*	0.937	0.887	0.990
Primary School ($X_{4.2}$)	-0.005	0.020	0.816	0.995	0.956	1.036
Secondary School ($X_{4.3}$)	-0.049	0.024	0.042*	0.952	0.908	0.998
High School ($X_{4.4}$)	-0.062	0.022	0.004*	0.940	0.901	0.980
Marital Status						
Unmarried (X_5)						
Married/Partner ($X_{5.1}$)	0.536	0.046	0.000*	1.710	1.563	1.871
Widowed/Divorced/Separated ($X_{5.2}$)	0.311	0.045	0.000*	1.364	1.250	1.489
Household's Sociodemographic and Economic Features						
Household Type						
Nuclear Family w/one child (X_6)						

Table 6.4. (continued) Logistic Regression Results of OOP Health Expenditures

Nuclear Family w/two children($X_{6.1}$)	0.011	0.038	0.777	1.011	0.938	1.090
Nuclear Family w/three or more children($X_{6.2}$)	-0.035	0.039	0.372	0.966	0.894	1.043
Nuclear Family w/o child($X_{6.3}$)	0.127	0.043	0.003*	1.135	1.044	1.235
Extended Family($X_{6.4}$)	0.063	0.037	0.086	1.065	0.991	1.144
Family w/one adult($X_{6.5}$)	-0.087	0.041	0.036*	0.917	0.845	0.994
People living together($X_{6.6}$)	-0.053	0.060	0.375	0.948	0.843	1.067
Ownership Status on the Residence						
Tenant (X_7)						
Homeowner ($X_{7.1}$)	-0.050	0.015	0.001*	0.951	0.924	0.979
Other ($X_{7.2}$)	0.054	0.019	0.005*	1.056	1.017	1.097
Household Size						
Household Size (1) (X_8)						
Household Size (2) ($X_{8.1}$)	0.080	0.040	0.043*	1.084	1.003	1.171
Household Size (3) ($X_{8.2}$)	0.152	0.043	0.000*	1.164	1.071	1.266
Household Size (4) ($X_{8.3}$)	0.173	0.048	0.000*	1.188	1.081	1.306
Household Size (5+) ($X_{8.4}$)	0.166	0.050	0.001*	1.181	1.071	1.302
Number of People Eligible for Widow and Orphan Pension						
No (X_9)						
Yes (1) ($X_{9.1}$)	0.179	0.026	0.000*	1.196	1.136	1.260
Yes (2+) ($X_{9.2}$)	0.153	0.057	0.008*	1.165	1.041	1.304
Number of People Eligible for Veteran Salary						
No (X_{10})						
Yes (1) ($X_{10.1}$)	-0.002	0.045	0.961	0.998	0.914	1.090
Yes (2+) ($X_{10.2}$)	-0.054	0.150	0.718	0.947	0.706	1.271
Number of Working People						
No (X_{11})						
Yes (1) ($X_{11.1}$)	-0.044	0.018	0.013*	0.957	0.924	0.991
Yes (2) ($X_{11.2}$)	-0.050	0.020	0.011*	0.951	0.915	0.989
Yes (3) ($X_{11.3}$)	-0.049	0.028	0.083	0.952	0.900	1.006
Yes (4) ($X_{11.4}$)	-0.016	0.042	0.711	0.984	0.906	1.072
Yes (5+) ($X_{11.5}$)	-0.070	0.062	0.262	0.933	0.826	1.054
Number of Children Aged 5-						
No (X_{12})						
Yes (1) ($X_{12.1}$)	0.251	0.017	0.000*	1.286	1.243	1.329
Yes (2+) ($X_{12.2}$)	0.312	0.026	0.000*	1.366	1.299	1.436
Number of People Aged 65+						
No (X_{13})						

Table 6.4. (continued) Logistic Regression Results of OOP Health Expenditures

Yes (1) ($X_{13.1}$)	0.201	0.029	0.000*	1.223	1.155	1.296
Yes (2+) ($X_{13.2}$)	0.300	0.040	0.000*	1.350	1.249	1.460
Number of Disabled People Regarding Daily Activities						
No (X_{14})						
Yes (1) ($X_{14.1}$)	0.115	0.031	0.000*	1.122	1.056	1.193
Yes (2+) ($X_{14.2}$)	0.095	0.061	0.120	1.099	0.976	1.239
Number of Disabled People Regarding Working						
No (X_{15})						
Yes (1) ($X_{15.1}$)	0.360	0.028	0.000*	1.433	1.356	1.515
Yes (2+) ($X_{15.2}$)	0.488	0.053	0.000*	1.629	1.468	1.807
Annual Disposable Income						
First 20th Quantile (X_{16})						
Second 20th Quantile ($X_{16.1}$)	0.291	0.017	0.000*	1.338	1.293	1.385
Third 20th Quantile ($X_{16.2}$)	0.457	0.018	0.000*	1.579	1.524	1.637
Fourth 20th Quantile ($X_{16.3}$)	0.607	0.019	0.000*	1.835	1.767	1.906
Fifth 20th Quantile ($X_{16.4}$)	0.813	0.021	0.000*	2.254	2.161	2.351
Constant	-1.176	0.068	0.000*	0.309		

*$p<0.05$

According to the results of the logistic regression analysis, all the independent variables included in the model have a statistically significant effect on households' OOP health spending except for age and number of people eligible for veteran salary variables.

The effect of the household head's age range variable ($p>0.05$) on households' OOP health spending is not found to be statistically significant.

The effect of household head's gender variable on households' OOP health spending is found to be statistically significant. Considering the gender variable ($p<0.05$), for the female household heads, the odds of having OOP health expenditure are 1.168 times higher than the households whose household heads are male (B=0.155; OR=1.168).

The effect of health insurance status variable ($p<0.05$) on households' OOP health spending is found to be statistically significant. For the household heads having universal

health insurance, the probability of having OOP health expenditures is higher by a factor of 1.251 compared to household heads without universal health insurance (B=0.224; OR=1.251). In addition, for the household heads who are green card holders, the probability of having OOP health payments is higher by a factor of 1.171 compared to household heads without universal health insurance (B=0.158; OR=1.171).

The educational status of household head variable's (p<0.05) effect on households' OOP health spending is found to be statistically significant. For the households with illiterate household heads, the likelihood of having OOP health expenditures is lower by a factor of 0.937 compared to households with higher education household heads (B=-0.065; OR=0.937). For households with primary school graduate household heads, the likelihood of having OOP health payment is lower by a factor of 0.995 compared to households with higher education graduate household heads and it is not found to be statistically significant (B=-0.005; OR=0.995). Additionally, for households with secondary school graduate household heads, the likelihood of having OOP health payment is lower by a factor of 0.952 compared to households with higher education graduate household heads (B=-0.049; OR=0.952). Finally, for households with high school graduate household heads, the likelihood of having OOP health payment is lower by a factor of 0.940 compared to households with higher education graduate household heads (B=-0.062; OR=0.940).

The effect of marital status of household head variable on households' OOP health spending (p<0.05) is found to be statistically significant. For households in which marital status of the household head is married or living with a partner, the odds of having OOP health expenditure are higher by a factor of 1.710 comparing to households with unmarried household heads (B=0.536; OR=1.710). Besides that, if the household head is a widow or lives separately, for these households, the odds of having OOP payments on health are higher by a factor of 1.364 (B=0.311; OR=1.364).

The effect of some sub-groups (p<0.05) of the variable of household type is found to be statistically significant. For households without children, the tendency of having OOP health expenditures is higher by a factor 1.135 compared to households with one child (B=0.127; OR=1.135). In addition, for households with one adult, the tendency of having OOP health payments is lower by a factor 0.917 compared to households with one child (B=-0.087; OR=0.917). However, the effects of the other sub-groups of the same variables (p>0.05), which are households with two children (B=0.011; OR=1.011), households with three or more children (B=-0.035; OR=0.966), extended families (B=0.063; OR=1.065), households which are composed of persons living together (B=-0.053; OR=0.948) is not found to be statistically significant.

The effect of ownership status on the residence where the household live (p<0.05) is found to be statistically significant. For the households living in their own house, the odds of making OOP health payments are lower by a factor of 0,951 compared to households living in a rental house (B=-0.050; OR=0.951). However, for the households living in their parents' or relatives' houses, it means that they pay little or no money for the house, the odds of making OOP health payments are higher by a factor of 1.056 (B=0.054; OR=1.056).

The household size variable's (p<0.05) effect on households' OOP health spending is found to be statistically significant. For the households with two members, the probability of having OOP health expenditures is higher by a factor of 1,084 compared to households with one member (B=0.080; OR=1.084). In addition, for the households with three members, the probability of making OOP health payments is higher by a factor of 1,164 comparing to households with one member (B=0.152; OR=1.164). Moreover, for households with four members, the probability of OOP health expenditures is higher by a factor 1.188 compared to households with one member (B=0.173; OR=1.188). When households consisting of five or more members are examined, the probability of having

OOP health payments is higher by a factor 1.181 compared to households with one member (B=0.166; OR=1.181).

The effect of having a widow or orphan pension in the household on household's health spending from their pocket ($p<0.05$) is found to be statistically significant. For the households including one person who is getting a widow or orphan pension, the likelihood of having OOP health payments is higher by a factor 1.196 compared to households without a member getting this kind of pension (B=0.179; OR=1.196). In addition to this finding, for the households including two or more members getting widow or orphan pensions, the likelihood of having the same payment is higher by a factor 1.165 compared to households without a member getting this kind of pension (B=0.153; OR=1.165).

The effect of the variable having a member who receives veteran's salary in the household ($p>0.05$) on households' OOP health spending is not found to be statistically significant.

The effect of some sub-groups ($p<0.05$) of the variable of the number of members in the work life is found to be statistically significant. For households having one member in working life, the tendency of having OOP health expenditures is lower by a factor 0.957 compared to households without a member in work life (B=-0.044; OR=0.957). Similarly, for households including two household members in working life, the tendency of having OOP health payments is lower by a factor 0.951 compared to households without a member in the work life (B=-0.50; OR=0.951). However, the effects of the other sub-groups of the same variables ($p>0.05$), which are households consisting of three persons who are working (B=-0.049; OR=0.952), households with four persons who are working (B=-0.016; OR=0.984), households having five or more members who are working (B=-0.070; OR=0.933) is not found to be statistically significant.

The effect of the number of children aged five and/or under variable ($p<0.05$) on household OOP health expenditure is found to be statistically significant. In the case of a

child at the age of five or under in household, the risk of making OOP health payments is 1.286 times higher than the households without five and/or under five years old children (B=0.251; OR=1.286). Furthermore, for households including two or more members who are five and/or under five years old, the risk of making health expenditures from pocket is higher by a factor 1.366 compared to households without five and/or under five years old children (B=0.312; OR=1.366).

The effect of the number of persons aged 65 and/or above variable (p<0.05) on households' OOP health payments is found to be statistically significant. For the households including one member aged 65 and/or above, the odds of having health expenditures from the pocket are higher by a factor 1.223 compared to households without a member aged 65 and/or above (B=0.201; OR=1.223). Considering households consisting of two or more members aged 65 and/or above, the odds of making OOP health payments is 1.350 times higher than the households without aged 65 and/or above members (B=0.300; OR=1.350).

The effect of the number of disabled person (relating daily activities) on health expenditure of households from their pockets in the household (p<0.05) is found to be statistically significant. In the case of one disabled person, for these households, the probability of having OOP health payments is higher by a factor 1.122 compared to households without a disabled person (B=0.115; OR=1.122). However, the effect of having two or more disabled person is not found to be statistically significant compared to households without a disabled person (B=0.095; OR=1.099).

The effect of the number of disabled person (relating work) in the household (p<0.05) on households' OOP health payments is found to be statistically significant. For households having one member with a work disability, the likelihood of having OOP health expenditures is higher by a factor 1.433 compared to households without a member with work disability (B=0.360; OR=1.433). Besides that, for households with two or more persons with work disability, the likelihood of having OOP health expenditures is higher

by a factor 1.629 compared to households without a member with work disability (B=0.488; OR=1.629).

The households' annual disposable income ($p<0.05$) effect on households' OOP health expenditures is found to be statistically significant. For households whose annual total disposable income are placed in the second 20th quantile, the risk of making OOP health payments is higher by a factor 1.338 compared to households which are in the first 20th quantile (B=0.291; OR=1.338). In addition to this, for household located in the third 20th quantile, the risk of making OOP health payments is higher by a factor 1.579 compared to households which are in the first 20th quantile (B=0.457; OR=1.579). Considering households whose annual disposable income is in the fourth 20th quantile, the risk of health payments from the pocket is higher by a factor 1.835 compared to reference variable (B=0.607; OR=1.835). Finally, for households whose annual total disposable income are placed in the fifth 20th quantile, the risk of making OOP health payments is higher by a factor 2.254 compared to households which are in the first 20th quantile (B=0.813; OR=2.254).

6.2. Results for Catastrophic Health Expenditures

This catastrophic health expenditure analysis study was designed with four different scenarios in terms of threshold values. 40%, 30%, 25% and 20% of capacity to pay were taken as threshold values. As it is expressed in "Methodology" part, 40% threshold value is a widely accepted value created by WHO using data from 59 countries.

6.2.1. Logistic Regression Results for Catastrophic Health Expenditures

In this part, logistic regression results are given only for the first scenario including the threshold value of 40%. Nevertheless, the striking parts of the results of other scenarios are given as well at the end of this part.

In order to measure the significance of the model; chi-square values were calculated to compare the model in which independent variables were not included and the situation in which independent variables were included in the model. As a result of chi-square test (χ^2 = 506.668; p<0.05), the model in which independent variables were included is found to be statistically significant in comparison to the model in the first stage as it can be seen below Table 6.5.

Table 6.5. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Step	506.668	46	0.000
Step 1	Block	506.668	46	0.000
	Model	506.668	46	0.000

According to the result of Hosmer-Lemeshow Test (χ^2 = 9.827; p>0.05) for data compatibility with the model, data compatibility is found to be statistically significant.

Table 6.6. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9,827	8	0.277

Y indicates catastrophic health expenditure of household which is a dependent variable. Independent variables are shown in Table 6.3. as variable indicators. The equation of logistic regression is given below.

__Odds of Having Catastrophic Health Expenditures (Y)__ = 0.014 + 0.421X$_{3.1}$ + 0.429X$_{3.2}$ + 1.832X$_{4.1}$ + 1.639X$_{4.2}$ + 2.930X$_{6.6}$ + 0.363X$_{8.3}$ + 0.447X$_{8.4}$ + 1.738X$_{14.2}$ [6.2.] *+ 1.649X$_{15.1}$ + 0.554X$_{16.1}$ + 0.453X$_{16.2}$ + 0.408X$_{16.3}$ + 0.384X$_{16.4}$*

Table 6.7. Logistic Regression of Catastrophic Health Expenditures 40% Threshold

	B	S.E.	P Value	Odds Ratio	95% CI for Odds Ratio Lower Bound	95% CI for Odds Ratio Upper Bound
Household Head's Sociodemographic Features						
Gender (X_1)	-0.071	0.193	0.714	0.932	0.638	1.360
Age Range						
Age Range (15-34) (X_2)						
Age Range (35-44) $(X_{2.1})$	-0.239	0.164	0.144	0.788	0.571	1.085
Age Range (45-54) $(X_{2.2})$	-0.256	0.175	0.144	0.774	0.549	1.092
Age Range (55-64) $(X_{2.3})$	-0.068	0.183	0.711	0.934	0.653	1.337
Age Range (65+) $(X_{2.4})$	0.132	0.257	0.607	1.141	0.689	1.890
Health Insurance Status						
No (X_3)						
Yes (Universal Health Insurance) $(X_{3.1})$	-0.866	0.122	0.000*	0.421	0.331	0.535
Yes (Green Card) $(X_{3.2})$	-0.846	0.155	0.000*	0.429	0.317	0.581
Educational Status						
Higher Education (X_4)						
Illiterate $(X_{4.1})$	0.606	0.241	0.012*	1.832	1.142	2.939
Primary School $(X_{4.2})$	0.494	0.215	0.022*	1.639	1.075	2.498
Secondary School $(X_{4.3})$	0.383	0.246	0.120	1.466	0.905	2.376
High School $(X_{4.4})$	0.424	0.230	0.065	1.528	0.974	2.398
Marital Status						
Unmarried (X_5)						
Married/Partner $(X_{5.1})$	0.258	0.371	0.487	1.294	0.626	2.676
Widowed/Divorced/Separated $(X_{5.2})$	0.276	0.363	0.447	1.318	0.647	2.685
Household's Sociodemographic and Economic Features						
Household Type						
Nuclear Family w/one child (X_6)						
Nuclear Family w/two children $(X_{6.1})$	0.422	0.312	0.176	1.525	0.828	2.808
Nuclear Family w/three or more children $(X_{6.2})$	0.512	0.290	0.077	1.668	0.946	2.943
Nuclear Family w/o child $(X_{6.3})$	0.575	0.306	0.060	1.777	0.975	3.239
Extended Family $(X_{6.4})$	0.377	0.256	0.141	1.458	0.883	2.409
Family w/one adult $(X_{6.5})$	0.081	0.321	0.800	1.085	0.578	2.037
People living together $(X_{6.6})$	1.075	0.371	0.004*	2.930	1.415	6.063

Table 6.7. (continued) Logistic Regression of Catastrophic Health Expenditures 40% Threshold

Ownership Status on the Residence						
Tenant (X_7)						
Homeowner ($X_{7.1}$)	0.238	0.127	0.060	1.269	0.990	1.627
Other ($X_{7.2}$)	0.090	0.163	0.582	1.094	0.795	1.506
Household Size						
Household Size (1) (X_8)						
Household Size (2) ($X_{8.1}$)	-0.299	0.277	0.280	0.752	0.431	1.276
Household Size (3) ($X_{8.2}$)	-0.417	0.318	0.189	0.659	0.354	1.229
Household Size (4) ($X_{8.3}$)	-1.013	0.382	0.008*	0.363	0.172	0.768
Household Size (5+) ($X_{8.4}$)	-0.805	0.378	0,033*	0.447	0.213	0.937
Number of People Eligible for Widow and Orphan Pension						
No (X_9)						
Yes (1) ($X_{9.1}$)	0.006	0.178	0.974	1.006	0.709	1.427
Yes (2+) ($X_{9.2}$)	0.066	0.386	0.864	1.069	0.501	2.279
Number of People Eligible for Veteran Salary						
No (X_{10})						
Yes (1) ($X_{10.1}$)	0.312	0.220	0.156	1.366	0.888	2.100
Yes (2+) ($X_{10.2}$)	-0.345	0.945	0.715	0.708	0.111	4.511
Number of Working People						
No (X_{11})						
Yes (1) ($X_{11.1}$)	-0.062	0.119	0.600	0.940	0.745	1.185
Yes (2) ($X_{11.2}$)	-0.099	0.139	0.475	0.906	0.690	1.189
Yes (3) ($X_{11.3}$)	-0.097	0.223	0.664	0.908	0.586	1.406
Yes (4) ($X_{11.4}$)	-0.663	0.410	0.106	0.515	0.231	1.152
Yes (5+) ($X_{11.5}$)	0.424	0.354	0.231	1.529	0.764	3.060
Number of Children Aged 5-						
No (X_{12})						
Yes (1) ($X_{12.1}$)	0.052	0.145	0.720	1.054	0.792	1.401
Yes (2+) ($X_{12.2}$)	0.081	0.199	0.682	1.085	0.735	1.601
Number of People Aged 65+						
No (X_{13})						
Yes (1) ($X_{13.1}$)	-0.061	0.203	0.765	0.941	0.632	1.401
Yes (2+) ($X_{13.2}$)	0.283	0.246	0.250	1.326	0.819	2.147
Number of Disabled People Regarding Daily Activities						
No (X_{14})						
Yes (1) ($X_{14.1}$)	0.293	0.161	0.070	1.340	0.977	1.838

Table 6.7. (continued) Logistic Regression of Catastrophic Health Expenditures 40% Threshold

Yes (2+) ($X_{14.2}$)	0.553	0.267	0.039*	1.738	1.030	2.935
Number of Disabled People Regarding Working						
No (X_{15})						
Yes (1) ($X_{15.1}$)	0.500	0.155	0.001*	1.649	1.218	2.233
Yes (2+) ($X_{15.2}$)	0.216	0.246	0.380	1.241	0.766	2.010
Annual Disposable Income						
First 20th Quantile (X_{16})						
Second 20th Quantile ($X_{16.1}$)	-0.591	0.116	0.000*	0.554	0.441	0.695
Third 20th Quantile ($X_{16.2}$)	-0.793	0.131	0.000*	0.453	0.350	0.585
Fourth 20th Quantile ($X_{16.3}$)	-0.896	0.148	0.000*	0.408	0.305	0.545
Fifth 20th Quantile ($X_{16.4}$)	-0.958	0.172	0.000*	0.384	0.274	0.537
Constant	-4.269	0.553	0.000*	0.014		

*$p<0.05$

In reference to the results of logistic regression applied for catastrophic health expenditures of households, most of the independent variables included in the model (health insurance and educational status of household heads, household type, household size, number of disabled people regarding working, and households' annual disposable income) have statistically significant effects on households' catastrophic health expenditures.

Firstly, the effect of health insurance status of household heads ($p<0.05$) on catastrophic health expenditures is found to be statistically significant. For the household heads with universal health insurance, the probability of having catastrophic health expenditures is lower by a factor of 0.421 comparing to household heads without universal health insurance (B=-0.866; OR=0.421). Likewise, for the household heads with green card, the probability of having catastrophic health payments is lower by a factor of 0.429 comparing to household heads without universal health insurance (B=-0.846; OR=0.429).

The effect of some sub-groups ($p<0.05$) of the variable of educational status of household heads is found to be statistically significant. For the households with illiterate household heads, the likelihood of having catastrophic health expenditures is higher by a

factor of 1.832 comparing to households with higher education graduate household heads (B=0.606; OR=1.832). For households with primary school graduate household heads, the likelihood of catastrophic health payment is higher by a factor of 1.639 comparing to households with higher education graduate household heads (B=0.494; OR=1.639). However, the effects of the other sub-groups of the same variables (p>0.05), which are households with secondary school household heads (B=0.383; OR=1.466) and households with high school household heads (B=0.424; OR=1.528) is not found to be statistically significant.

The effect of one sub-group (p<0.05) of the variable of household type is found to be statistically significant for households which are composed of persons living together. For them, the odds of having catastrophic health expenditures are 2.930 times higher than households with one child and it is found to be statistically significant (B=1.075; OR=2.930). The effect of other subgroups of household type variable is not found to be statistically significant on catastrophic health expenditure. These are; households with two children (B=0.422; OR=1.525), households with three or more children (B=0.512; OR=1.668), households without children (B=0.575; OR=1.777), extended families (B=0.377; OR=1.458), households with one adult (B=0.081; OR=1.085).

The household size variable's (p<0.05) effect on households' catastrophic health spending is partly found to be statistically significant. For households with four members, the tendency of having catastrophic health expenditures is lower by a factor 0.363 compared to households with one member (B=-1.013; OR=0.363). When households consisting of five or more members are examined, the tendency of having catastrophic health payments is lower by a factor 0.447 (B=-0.805; OR=0.447) compared with one member households. Households with two (B=-0.299; OR=0.752) or three members (B=-0.417; OR=0.659) have no effect on having catastrophic health expenditures compared to households with one member.

The effect of having disabled people regarding work in the household ($p<0.05$) on households' catastrophic health payments is found to be statistically significant. For households having one disabled member regarding work, the likelihood of having catastrophic health expenditures is higher by a factor 1.649 compared to households without a disabled member regarding work (B=0.500; OR=1.649). However, for households consisting of two or more disabled members regarding work, the effect is not found to be statistically significant (B=0.216; OR=1.241).

The households' annual disposable income ($p<0.05$) effect is found to be statistically significant on households' catastrophic health expenditures. For households whose annual total disposable income are placed in the second 20th quantile, the risk of having catastrophic health payments is lower by a factor 0.554 compared to households which are in the first 20th quantile (B=-0.591; OR=0.554). In addition to this, for household locating in the third 20th quantile, the risk of having catastrophic health payments is lower by a factor 0.453 compared to households which are in the first 20th quantile (B=-0.793; OR=0.453). Considering households whose annual disposable income is in the fourth 20th quantile, the risk of having health payments from the pocket is lower by a factor 0.408 compared to reference variable (B=-0.896; OR=0.408). Finally, for households whose annual total disposable income are placed in the fifth 20th quantile, the risk of making catastrophic health payments is higher by a factor 0.384 compared to households which are in the first 20th quantile (B=-0.958; OR=0.384).

It is crucial to state that although P values of the rest of independent variables (gender, age range, marital status, ownership status on the residence, number of people eligible for widow and orphan pension, number of people eligible for veteran salary, number of working people, number of children aged 5-, number of people aged 65+, number of disabled people regarding daily activities) are bigger than 0.05, it can be said that these values are not big enough from 0.05 P value to indicate there is no relation between catastrophic health expenditures and the variables.

6.2.2. Other Results of Catastrophic Health Expenditure Analyses

As mentioned in the "Methodology" part of the study, the method of Xu (2004) is used in order to determine households having catastrophic health expenditures. He was suggesting in his report to use 40% threshold of household's capacity to pay in the process of calculation. However, he also noted that this threshold may differ from country to country according to countries' socioeconomic conditions. From this point of view, in this study, three more thresholds have been determined in addition to 40% in order to compare the households experiencing catastrophic health expenditure according to different thresholds. It has been taken into consideration not moving far away from the main threshold and therefore 30%, 25%, 20% were decided to be the other thresholds.

The number of households having catastrophic health expenditures are presented in terms of different thresholds in Figure 6.1. below. According to this figure, between the years of 2004-2017 it is observed that 572 households were in financial catastrophe by the threshold of 40%. Households numbers having catastrophic health expenditure are increasing when the thresholds are decreased. 1259 households have catastrophic health expenditures by 30% threshold and 1967 households by 25% threshold. When the threshold of 20% is used, the household number rises to 3028. When it is considered that the number of households having OOP health expenditure is 82,606; many households were exposed to financial catastrophe in respect to health expenditure regardless of which threshold is taken. Nonetheless, it can be seen clearly that the number is rapidly increasing as the threshold goes down.

Figure 6.1. Households with Catastrophic Health Expenditure by Different Thresholds (2004-2017)

Households with Catastrophic Health Expenditure by Threshold (2004-2017)
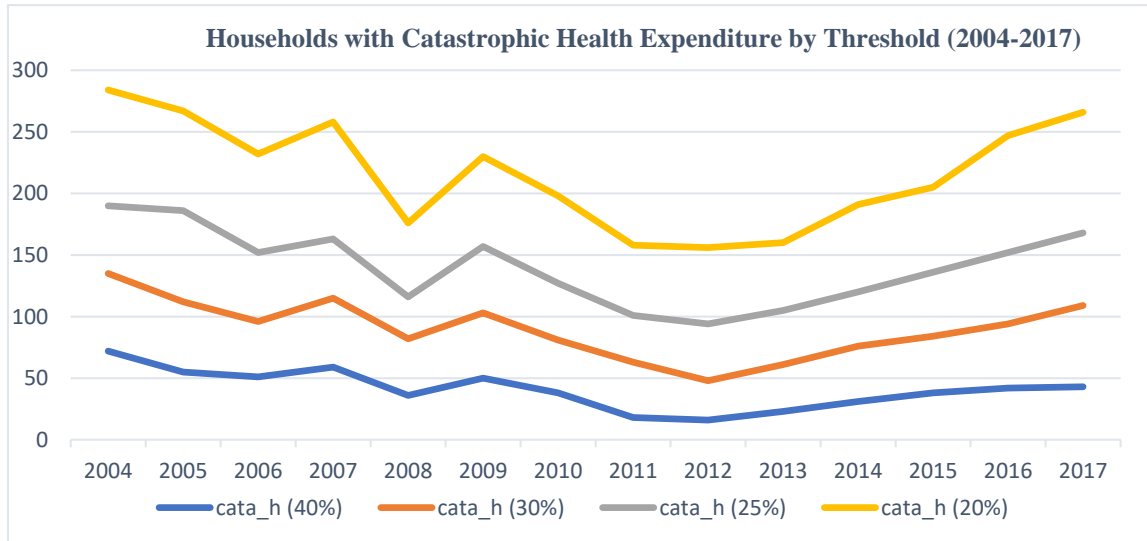
Source: Author's own calculation by using raw data provided form TurkStat.

(*) cata_h (40%), cata_h (30%), cata_h (25%), and cata_h (20%) are represent that the numbers of households having catastrophic health expenditures by 40%, 30%, 25%, and 20% thresholds.

Table 6.8. Households' Catastrophic Health Expenditure by Different Thresholds as Per Thousand (2014-2017)

	(40%)	(30%)	(25%)	(20%)
2004	18.5	34.6	48.7	72.9
2005	12.7	25.8	42.9	61.6
2006	11.3	21.3	33.8	51.5
2007	13.5	26.3	37.3	59.0
2008	7.8	17.7	25.1	38.1
2009	8.4	17.3	26.4	38.6
2010	5.9	12.6	19.8	30.8
2011	2.8	9.9	15.9	24.8
2012	2.5	7.5	14.8	24.5
2013	3.2	8.6	14.8	22.5
2014	4.6	11.3	17.9	28.5
2015	5.6	12.4	20.0	30.2
2016	5.9	13.1	21.2	34.5
2017	5.4	13.6	21.0	33.3

Source: Author's own calculation by using raw data provided form TurkStat.

Table 6.8. presents the per thousand of households having catastrophic health expenditure in terms of different threshold between the years of 2004-2017. In 2004, the per thousand of households are very high in every threshold. From 2004 to 2012 it is

observed a notable decline trend in four of thresholds. These years are important since health system of Turkey had been undergoing a series of changes. In the beginning of 2012, almost the whole population has been covered by universal health insurance system. Nevertheless, as of 2012, the rate of households experienced financial health catastrophe has an ever-growing trend in every threshold. The per thousand rates of households in 2017 are 5.4, 13.6, 21, 33.3 for the 40%, 30%, 25%, 20% thresholds respectively.

6.3. Impoverishment

In the last century, the average per capita income in the world, in constant prices, has increased almost twelve times (Bolt & van Zanden, 2013). At the same time, the world output has increased considerably. On the other hand, as of 2013, nearly 10.7% of the world population still earns less than $1.90 a day with 2011 purchasing power parity. This means that, in 2013, almost 800 million people lived on less than $1.90 a day (WB, 2016). In addition to this, there are still deaths and diseases due to hunger and starvation at today's space age, and there is still extreme poverty.

Generally, poverty is described as incapability of ensuring minimum living standards and/or basic consumption needs (World Bank Institute, 2005). As it is mentioned earlier, poverty includes lack of well-being on several counts; health, education, income, clean water, etc. It can be summarized by the access to humane living standards.

Poverty is a complex and multidimensional phenomenon and it is substantial considering every reason behind the impoverishment of individuals and households in order to change the balances and to make people live in better conditions. From this point of view, it has been examined whether there are households in Turkey impoverished due to OOP health expenditures.

6.3.1. Impoverished Household Head's Sociodemographic Features

When data of HBSs in Turkey are examined, it is found that 265 households have been impoverished due to OOP health expenditures of households. The sociodemographic and economic characteristics of these impoverished households are presented in Figures 6.2. and 6.3. to understand which kind of households are more under the pressure of financial risks during the process of getting needed health care services.

In Figure 6.2. it is observed that households with male household heads are more affected from OOP health expenditures. When considered from the age range, it is seen that most of the household heads are 65+ which means that the risk is increasing with age. Additionally, there is information about health insurance status of household heads which is one of the most important indicators of financial health protection as mentioned before. It is seen that the least affected group is households without health insurance; and households with UHI and whose premiums are paid by state are follow this group. It can be interpreted that lack of health insurance may limit using health care services and the existence of health insurance is not enough to protect people from financial health risks. Besides that, the education level of most of household heads who experience impoverishing is illiterate or primary school. Furthermore, it is observed that households who are married and/or live with a partner are under more risk of impoverishment rather than household heads who are unmarried or divorced/widowed/separate. Probably married household heads' have a more crowded house including children and elderly member who may need more health care. This result matches with results of impoverished households' size in the Figure 6.3. which shows that when household size is getting bigger, the risk of impoverishing due to OOP health expenditures is getting bigger. Actually, this figure expresses the reality of a vicious circle. Households with low social and economic opportunities cannot benefit from health care services adequately or become poor when they access to them.

**Figure 6.2. Impoverished Households' Head's Sociodemographic Features**
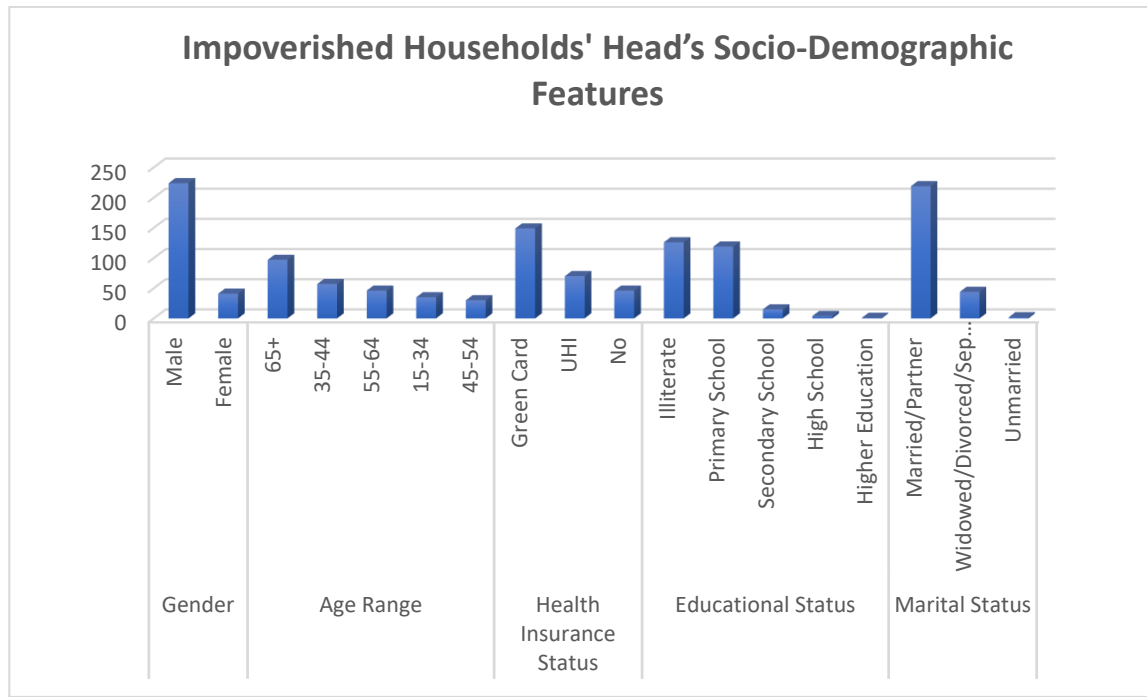
Impoverished Households' Head's Socio-Demographic Features

6.3.2. Impoverished Households' Sociodemographic Features

Impoverished households' sociodemographic characteristics are demonstrated in Figure 6.3. below. Extended families, families with three or more children, and families with one adult are more prominent features rather than families with one child and people living together. Households' size comes to the forefront as a distinctive feature of impoverished households. It can be seen from this Figure, there is a notable difference between the households with the size of five and/or more and households with the size of under five. The number of working members in households is also an important indicator. It can be seen that in most households there is no one working. In some of them one member or two members are working. It can be seen that impoverished households number is decreasing when the number of working people is increasing in households. Other points to consider are households with disabled members related both daily activities and working, children aged 5-, elderly members aged 65+. In many households

there is at least one disabled or elderly member who may have more health care needs rather than other people.

Figure 6.3. Impoverished Households' Sociodemographic Features
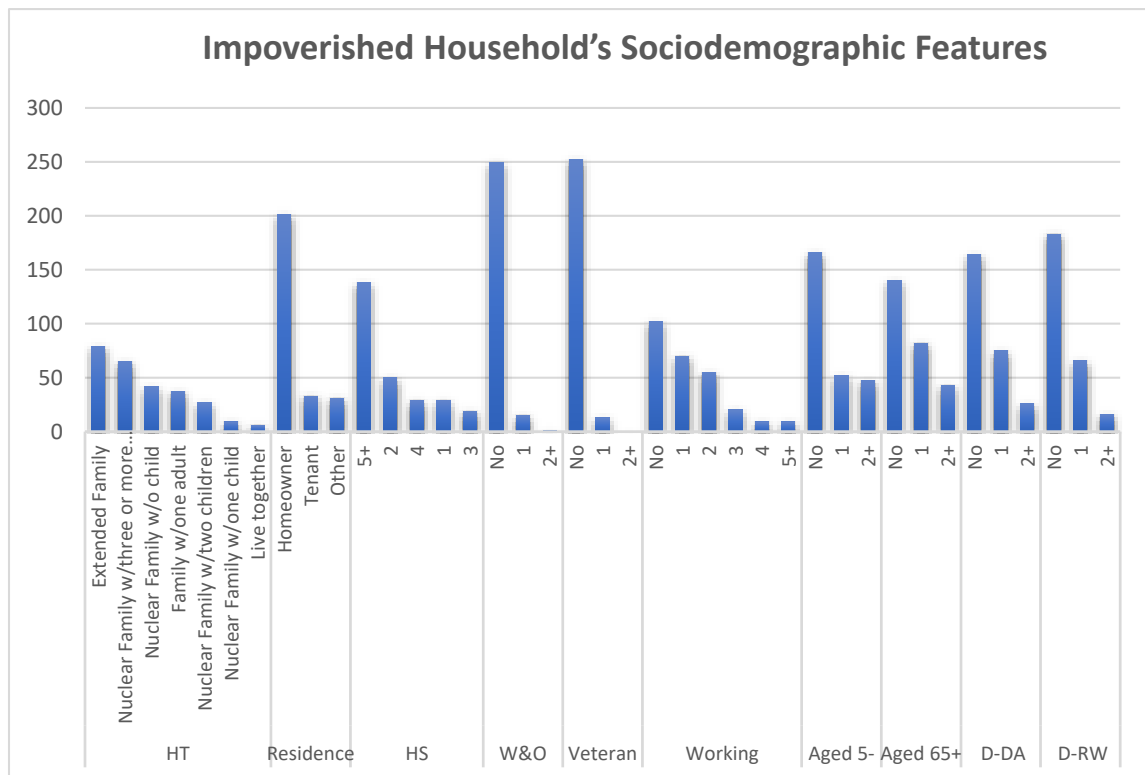
Source: Author's own calculation by using raw data provided form TurkStat.

(*) HT: Household Type, Residence: Ownership Status on the Residence, HS: Household Size, W&O: Number of People Eligible for Widow and Orphan Pension, Veteran: Number of People Eligible for Veteran Salary, Working: Number of Working People, Aged 5-: Number of Children Aged 5-, Aged 65+: Number of People Aged 65, D-DA: Number of Disabled People Regarding Daily Activities, D-RW: Number of Disabled People Regarding Working

CHAPTER 7. DISCUSSION AND CONCLUSION

The literature review shows that health requirements of individuals and households differ depending on sociodemographic features, geographical, cultural, and economic status of countries and etc. It is considered that since health expenditures are mainly taken from health needs, they are directly associated with sociodemographic and economic features. Diseases, various health problems and sociodemographic characteristics like the presence of children, the elderly and individuals with disabilities in households appear as factors affecting health needs and OOP health expenditures of households as well. Furthermore, the health care demand theories, "*The Behavioral Model of Health Care*" and *"Human Capital Model"* also indicate that heath care demands stem from health needs. As mentioned before, The Behavioral Model puts forward the main factors which affect health care demands. According to this theory, demographic, social and cultural features have an important effect of health care demands. Education level, occupation, health insurance status, waiting times for getting health care are essential determinants for health care demands. This theory also states that these determinants have importance to measure the equal accessing to health services. Additionally, Human Capital Model suggests that health care demand derives from the desire of staying healthy in order to maintain the life without difficulty in terms of both financial and physically.

The findings of this study correspond to the literature and the perspective of both "*The Behavioral Model of Health Care*" and *"Human Capital Model"*. When the determinant factors of these health care demand theories and the findings of this study are considered together, it can be stated that there is a distinct interrelationship between sociodemographic and economic characteristics, health needs, health care demand and OOP health expenditures and therefore, the financial consequences of these expenditures on households.

In conclusion, social, demographic, and economic structures of households are considered that directly influence households' health needs and health behaviors in terms

of preferring to apply to health care providers whenever they need to or postpone the health needs because of OOP health expenditures they may face to. Starting from this point of view, it can be concluded that sociodemographic and economic characteristics have an effect on equal access to health care services.

Measuring the financial protection from the consequences of OOP health expenditures ensures information on how households react to sudden and unexpected health problems and how OOP payments will affect the future of households (Leive & Xu, 2008). This statement supports the content of the analyses in this study as well.

The purpose of this study is to explore how social, economic, and demographic characteristics such as age, gender, size of household, education level, employment, income level, etc. have an impact on OOP health expenditures, catastrophic health expenditures and impoverishment due to OOP health expenditures in Turkey.

In order to examine these abovementioned issues, two logistic regression analyses were made by using HBSs data from the years of 2004 to 2017. Additionally, as mentioned in the chapter of "Data Source and Methodology", HBSs are conducted by TurkStat and includes data concerning households' health payments, sociodemographic characteristics, and living conditions. Using these data, the relationship between sociodemographic and economic features of households and OOP health expenditures were studied. In this thesis study, the time period between the years of 2004 and 2017 is kept as a whole. It is researched how sociodemographic and economic characteristics effect on OOP health expenditures throughout this significant term. Since this time period involve both "Health Transformation Program" and "Universal Health Insurance" processes in Turkey, it would provide a different perspective and it would be possible to make comparisons if this term will be examined year by year by in further studies.

According to the results of the logistic regression analysis of OOP health expenditures, almost all independent variables included in the model have a statistically significant effect on households' OOP health expenditures except for the variables of age range of household head and number of people getting a veteran salary in the household. The results mainly correspond to the literature review.

The effect of having at least one member who receives a veteran's salary is not found to be statistically significant on households' OOP health expenditure. This result is compatible. When this finding is considered together with the exceptional implementations related to veteran individuals in Turkey, it is an anticipated result that veteran people have less OOP health expenditures. There has been a positive discrimination for veteran people in terms of both health care services and some medical equipment which are required OOP health payments.

On the other hand, for households including at least one person getting a widow or orphan pension, OOP health payment is higher compare to households without a member getting this kind of pension. It means that probably the breadwinner of the household has gone and there remains at least one adult or one child or both of them. Although, they continue benefiting from health insurance of their parents or husbands and wives, there is not a single exemption related to OOP health expenditures for these group. These households can be considered as vulnerable by describing some criteria such as the number of children and elderly members in household, the income of the household or the number of working people in it. Hence, some OOP exemptions can be designed and implemented for this group in order to protect them from financial hardship.

Households with female household heads have higher OOP health expenditures compare to households with male household heads. Households with unmarried household heads have less OOP health expenditures when compared to households with married/live together household heads and households with widow/living separately household heads. In households with unmarried household heads probably have fewer

household members such as children, elderly and/or disabled individuals who needs more health care. Tur-Sınai et al. (2018) argued that single male household heads have higher health expenditures then single women regardless of their age. Nevertheless, male household heads of a certain age spend less on health compared to female ones.

It is found that when household heads have health insurance, the probability of having OOP health expenditures is higher than household heads without health insurance. Similarly, when household heads have a green card, the probability of having OOP health expenditure is also higher than household heads without health insurance. This finding may show that households without health insurance may postpone or forgo required health care services in order to not encounter any OOP payments because of the probable danger of financial catastrophe or impoverishment. If they have already been poor, they may fear falling into a deeper impoverishment. Furthermore, this finding shows that health insurance increases not only the utilization of health care services but also OOP health expenditures.

From the point of education level, households with higher education graduate household heads have higher OOP health expenditures rather than illiterate, primary school, secondary school, and high school level household heads. This finding can be expressed with the perspective which higher education ensures people good jobs and high income. Also, more educated people are more aware of the importance of well-being. Therefore, it makes sense that households with higher education household heads allocate more on health payments. Rubin & Koelln (1993), found that in comparison to other household heads, the high income married household heads spend more for health.

As Todaro & Smith (2015) emphasizes, education and health have a close relationship and there is a two-sided effect of health, health expenditures and educational system. The significance of the investments on health and education is that they are for the same person. Bigger health capital may probably bring investments in education in terms of school attendance, success at school, longer life terms etc. Likewise, bigger

education capital may probably bring investments in health in terms of health literacy and attitudes which improves health (Todaro & Smith, 2015). From this point of view, it can be stated that higher level of education is a factor that increases the awareness of health and therefore health expenditures, but it can be expected that it will reduce health expenditures as the society reaches a healthier structure over time.

Household type affects OOP health expenditures in some conditions. Households without children and households with one adult have higher OOP health expenditures by comparison with households with one child. Considering that households without children are generally composed of highly educated young couples and /or elderly people having more health care needs. The former tends to care about their health and have enough income to spend on health whereas the latter has to spend on health because of the requirements. There is not a meaningful result showing that OOP health expenditures of households with more than one child and extended families are higher than households with one child.

It is also explored that the bigger household size represents the bigger OOP health expenditures. This means that increasing the number of members may have increased the probability of seeking health care. However, we should take into consideration that when household size grows, living costs also inevitably grow. From this fact, an obstacle may emerge for using health care services in order to avoid from potential OOP expenditures.

It is found that households with children aged five and/or under have more OOP health expenditure in comparison to households without them. When the number of children increases, the probability of having OOP expenditure also increases. Likewise, households consisting of persons aged 65 and/or above have a higher possibility rather than households without a member of them. In addition, when the number of these abovementioned members increases, the probability of having higher OOP health expenditures is growing. These findings are consistent with literature. Cınaroglu (2017a) pointed out that presence of members over the age of 65 is one of the main factors that

affect household OOP expenditures the most. Moreover, Brown et al. (2014) found that households with pre-school age children and elderly individuals are more likely to have catastrophic health expenditures.

Little children and elderly people require more health care in general because of their sensitive health status. In addition, people generally suffer more from chronic diseases such as hypertension, diabetes, heart problems requiring examinations and prescribed drugs at regular intervals. Even though, there are some kind of exemptions for drugs used for chronic diseases, exemptions do not cover other health care services for children and elderly people. It can be suggested to draw a monthly or annual boundary for the amount of OOP health expenditures for people who need to use health services frequently and regularly. This kind of measures can supply an opportunity to these households to meet their health needs without having financial hardship.

Beyond these examples, the findings of the study of Islek and others (2018) may be an important indicator for people who needs regular treatment. The study was about the effects of OOP health expenses on patients in psychiatry clinic in a university hospital in Turkey. The results showed that all patients needed long-term treatment, in which they regularly had followed-up appointments, thus they have to spend out of their own pocket in order to get health care from outpatient clinics. The amount of spending depends on the diagnosis of the patient and the availability of health insurance. Twenty percent of patients declared that they borrowed to cover OOP health spending. It is an essential sign that OOP spending for regular treatments can leave patients with financial difficulties even if they have health insurance. A policy recommendation can be suggested similar with the recommendation for children and elderly people. It can be determined a monthly or annual boundary for the amount of OOP health expenditures for these kinds of patients who need to get health care services with regular intervals. The boundaries coverage may be restricted with some certain physician appointments and/or medical devices.

It is important to note the information that national surveys of countries related to budget and health, provide the information that households' OOP health expenditures are generally for outpatient health services and outpatient medical devices like hearing aids, contracted lenses, chairs and dental health services (OECD, 2019).

The effect of having at least one disabled member both relating daily activities and working in the household has an important impact on the households' OOP expenditures. Furthermore, the effect of these demographic features on OOP health expenditures is increasing when the number of disabled members is increasing. There are many studies put forward with similar findings concerning the effects of disabled household members on OOP health expenditures. For example, according to Hong & Kim (2000), since the probability that people with disabilities will need more health care, disability may increase OOP health care expenditures. Brown et al. (2014), found that households with disabled and/or sick people are more likely to have catastrophic health expenditures.

Disability not only requires continuous treatment and nursing at home and relatively expensive medical equipment but also causes additional costs like income loss of household member who looks after the disabled member. Disabled people face the difference fee when they purchase medical equipment such as disposable underpad, wheelchair etc. Health insurance cannot afford to protect them from the risk of financial difficulty and impoverishment. These abovementioned health requirements and additional costs on households with disabled members are clear expression that it is necessary to make some reorganizations such as different payments charts in order to decrease the effects of OOP health expenditures on them. While reorganizing the OOP health payments of disabled people it can be considered the type and level of their disability, their frequency of going to the health care providers, and their income level.

When the effect of household income in terms of quantiles of 20th on OOP health expenditure are explored, it is found that the higher income group of households the higher OOP health expenditures. Households allocate more to be and stay healthy when they

have higher income. In the study of Pal (2012) it is found that households with higher income has lower catastrophic health expenditure as it means that households have higher payment capacity for health. Bremer (2014) pointed out that OOP health expenditure is defined as an obstacle to seeking health care services and delays getting necessity treatments households in low income groups. The study of Levie & Xu (2008) found that in many countries, households borrow money and/or sell some assets in order to cover their health care payments. High-income households face less difficulty than low-income households whereas there is no apparent difference at households with middle income level.

According to the results of the logistic regression analysis of catastrophic health expenditures, some of the independent variables included in the model (health insurance and educational status of household heads, household type, households' ownership status on the residence, household size, number of disabled people regarding working, and households' annual disposable income) have statistically significant effects on households' catastrophic health expenditures.

The results can be interpreted similarly with the results of logistic regression of OOP health expenditures. However, it is important to keep in mind that if there is a low amount of catastrophic payment, but a considerable OOP health expenditure compared to household income or consumption, this may mean that people receive the health care they need and are financially protected. However, a low catastrophic payment can also mean that individuals do not receive the health care they need and do not pay for health from their pocket (Wagstaff, et al., 2017a).

On the other hand, the rest of the analyses of catastrophic health expenditures have given important findings as follows. When the number of households having catastrophic health expenditures between the years of 2004-2017 are investigated, it is seen that 572 households were in financial catastrophe by the threshold of 40%. Households numbers having catastrophic health expenditure are increasing when the thresholds are decreased.

1259 households have catastrophic health expenditures by 30% threshold, 1967 households by 25% threshold. When it is taken the threshold of 20%, the household number rises to 3028. When it is considered that the number of households having OOP health expenditure is 82,606 in 138,694; many households were exposed to catastrophe in respect to health expenditure regardless of which threshold is taken. Nonetheless, it can be seen clearly that the number is rapidly increasing as the threshold goes down.

In 2004, the per thousand of households having catastrophic health expenditures are high in every threshold. From 2004 to 2012 it is observed a notable decline trend in four of thresholds. These years are important since health system of Turkey had been undergoing a series of change. In the beginning of 2012, almost the whole population has been covered by universal health insurance system. Nevertheless, as of 2012, the rate of households experiencing financial health catastrophe have had ever-growing trend in every threshold. The per thousand rates of households in 2017 are 5.4, 13.6, 21, 33.3 by 40%, 30%, 25%, 20% thresholds respectively. It can be said that, these numbers are compatible with the findings of the study by Cinaroglu (2017b) in which she observed between the years of 2003 and 2015, the rate of the households were exposed to financial catastrophe and impoverishment was high in 2003-2007 compared to other years. This rate had a decreasing trend between 2009 and 2012 whereas it started to increase as of 2013. Furthermore, the findings which Kilic presented in the workshop about catastrophic health expenditure organized by Health Economics and Policy Association (SEDP) (SEPD, 2017) show that the rates of households with catastrophic health expenditures for different thresholds (2.5%, 5%, 10%, 15%, 20%) followed a declining trend between 2009 and 2012 while an increasing trend between 2013 and 2015.

Wagstaff et al. (2017a) estimated the annual change of catastrophic expenditures for 94 countries and it is seen that the catastrophic expenditures are in an increasing direction whichever measurement method is used. In 2010, 808 million people were exposed to catastrophic health expenditures throughout the world, for the 94 countries

examined. It seems that the inclusion of people in health insurances or public health systems is a weak indicator for financial protection.

The third part of the analyses of this study explores the number of impoverished households due to OOP health expenditures and sociodemographic and economic characteristics of these households. A calculation was made in order to reach to the numbers of impoverished household by using the method of WHO. This method accepts the consumption approach while calculating the number of households impoverished due to OOP health expenditures and/or having catastrophic health expenditures. It is observed that households with male household heads are more affected by OOP health expenditures. When considering the age range, it is seen that most of the household heads are 65+ which means the risk is increasing with age. Additionally, there is information about health insurance status of household heads which is one of the most important indicator of financial health protection as mentioned before. It is seen that the least affected group is households without health insurance and households with UHI and whose premiums are paid by state fall into this group. It can be interpreted that the lack of health insurance may limit using health care services and the existence of health insurance is not enough to protect people from financial health risks. Besides that, education level of most of household heads who experience impoverishing is illiterate or primary school. Actually, these findings express the reality of a vicious circle. Households with low social and economic opportunities cannot benefit from health care services adequately or become poor when they access them. According to Cinaroglu (2017b), when sociodemographic characteristics of impoverished household heads are examined, it can be observed that the number of households with male, 65 years and older, nongraduate, without health insurance, non-worker, and different from this thesis study unmarried household heads are higher.

When impoverished households' sociodemographic characteristics are studied, it is seen that extended families, families with three or more children, and families with one

adult are more prominent features rather than families with one child and people living together. Households size comes to the forefront as a distinctive feature of impoverished households. The number of working members in households is also an important indicator. It can be seen that in most households there is no one working. In some of them one member or two members are working. Other points to consider are households with disabled members related both daily activities and working, children aged 5-, elderly members aged 65+. In many households there is at least one disabled or elderly members who may have more health care needs than other people. The sociodemographic features of impoverished households are compatible with the study of Cinaroglu (2017b). She found that extended households, and households which are in the lowest income bracket are more vulnerable to OOP health expenditures.

The literature supports these findings. For example; when the amount of OOP health expenditures for the required health care services is high, many people give up receiving health care services. Some people spend out of their pocket, but consequently face financial difficulties. Both situations seem more likely to occur in low-income households. Low-income people are generally in a weaker health and need more health care, which increases the negative impact of OOP health expenditures (OECD, 2019). Likewise, Murray et al. (2003) points out that:

> "*OOP payments for health services were concentrated in the upper income groups because the lower income groups chose not to use the services even though they needed them. The lack of available health services for the poor because of inadequate resources or because of a lack of financial protection mechanisms are important determinants of non-use and access to health services. It is important to identify non-users and the reasons for non-use.*" (Murray, et al., 2003)

In one of the other studies of Wagstaff et al. (2017b), it is aimed to relate the impoverishment of a country due to OOP health expenditures and various macroeconomic

indicators and health system features. Even in countries where the entire population is covered by universal health insurance, impoverishment has been observed due to OOP health spending. In cases where total health expenditures are directed by social insurance funds, the relationship becomes negative. In all countries, OOP health spending can be both catastrophic and impoverishing at all income levels.

Contribution payments and additional payments do not encourage individuals and households to consume health services more effectively. Conversely, they may force them to choose restricting health care services regardless of their importance (OECD, 2019).

Another essential point is that implementing contribution payments and additional fees based on percentage of health service's prices may have serious financial effects on households. Having to pay a part of the price of health service means that people who need more frequent and/or expensive treatments, drugs and medical equipment, pay more out of their pocket. In the case of not having information of health service prices, it is not easy to know, people do not to know what amount they will face at the end of the treatment. In can be suggest to policy makers to implement fixed amounts or low and flat rates in contribution payments and additional fees for some certain sociodemographic groups whose health needs are greater and more frequent than others.

In conclusion, as mentioned before, health expenditures have been an increasing trend worldwide due to several reasons and managing the increasing health expenditures with limited financial resources has been an essential part of health policies in countries for a long time. In this point, health financing methods come to the front since they shape how much money will be collected from which source and how this collected money will be transferred into health care services. OOP health expenditures which have been among the most common health financing methods throughout the world, have a wide variety of social and economic consequences. Financial health catastrophe and impoverishment are the most important ones. Furthermore, besides financial catastrophe and impoverishment, postponed health needs due to financial difficulties result in the deterioration of health

status of individuals sooner or later. This fact will inevitably lead to much higher health costs for both individuals and health systems.

Even though, different OOP payment implementations are offered for specific sociodemographic groups within this study, it is crucial to state that applying these suggestions without precautions regarding increasing health expenditures seems not to be easy applicable. Taking into consideration new reimbursement trends for health care service at issue across the world may help to achieve these suggestions.

In recent years, alternative reimbursement methods in health care services have been discussed in many countries. These payment methods are about different agreement types among paying agents and producers/manufacturers/service providers. These kinds of agreements are designated "performance-based risk-sharing arrangements and they generally include two main factors. One of them is "pay-for-performance" and the other one is "risk-sharing". The importance of these payments methods derives from their contents which show the performance of goods and services is followed for a specific population and a specific time frame. By this way, reimbursement policies can be reshaped and controlled at regular intervals based on outcomes in terms of both economic and health (Garrison, et al., 2013).

These alternative payment methods are focused on value based perspective such as patient satisfaction, clinical and economical effectiveness. These methods allow to follow and evaluate the outputs and therefore guiding policy makers in the direction of outputs. By this means, the increasing budget burden on payment agents and governments can be reduced. The less financial pressure means that more flexibility of specific payment implementations for disadvantageous patient groups in terms of exceptional OOP payment regulations.

Turkey has been implementing a mixed health financing system based on predominantly public health insurance. Universal health insurance system has entirely

been in force since 2008 and covers almost all the population in Turkey. Although, the content of the health benefits package is quite extensive, people have to spend money from their pocket in various ways while using health care services. Co-payments, additional fees, difference fees, and user charges are implemented as OOP health expenditures for different type of health care services and health care providers.

When the trend of OOP health expenditures in Turkey is examined, a sharp decline is observed from 2007 to 2010, probably due to new regulations as part of health reform. However, it did not continue in the following years. In 2018, unfortunately, OOP health expenditure as a share of total health expenditure matched 2008 numbers. The percentage of OOP health expenditure was lowest in 2010, 14.1%, and then, it had been increasing to 16.3%, 16.6%, 17.1% and 17.3% respectively in 2010, 2015, 2017 and 2018.

When the health policies regarding health expenditures are constructed, governments and decision makers should take into consideration the effects of sociodemographic and economic characteristics of households on health needs, health care demands and OOP health expenditures in order to prevent inequalities in accessing to health care services, catastrophic health expenditures, and impoverishment. Hence, the findings of this study concerning these elements show us that OOP health expenditures can have possible financial and social destructions on households.

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