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**An empirical model of access to health care, health care expenditure and  
impoverishment in Kosovo**

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## **Key Words**

Health system performance, utilization, out-of-pocket health payments, concentration index, Kakwani index, catastrophic health expenditure, impoverishment

## **Abstract**

**Background:** By establishing health insurance, the health-financing reform in Kosovo aims for provision of basic quality of care and financial protection. This thesis analyses the health system performance by assessing factors affecting utilization of health services, the progressivity of out-of-pocket health payments (OOP HP,) and their impact on financial catastrophe and impoverishment.

**Methods:** The 2014 Kosovo Household Budget Survey data were used. The Health Behavioral Model was applied to analyze factors associated with utilization of health services among children and adults. OOP HP by area of expenditure, the Lorenz curve for household consumption expenditure, and concentration curve of OOP HP are presented. To measure the OOP HP progressivity, concentration and Kakwani indices were computed. Catastrophic health expenditure headcount and associated factors were analyzed. Finally, the effect of OOP HP on the poverty headcount was examined.

**Results:** The odds of utilizing health services are not associated with household expenditure quintiles. Of that, 80.76 % of the households paid for health, 79.62 % paid for medicines, 14.40 % paid for diagnostic services, and 13.81 % for outpatient services. With an average of €43.58 per capita, the share of OOP HP made 33.32 % of total health spending. The households from the highest expenditure quintiles spent proportionately less on OOP HP as compared to the lowest quintiles (Kakwani index - 0.066) but contributed with a larger share in total OOP HP (concentration index 0.176). In 2014, 13.01 % of the households faced catastrophic health expenditure, and 7.26 % of the population became poor with a poverty gap increase to 10.76 %, due to OOP HP.

**Conclusion:** OOP HPs are slightly regressive and present a relatively high share of total health spending. The current financing system does not protect from financial catastrophe and impoverishment, due to OOP HP. Monitoring of health financing equity is required.

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## **Abbreviations**

BMI – Body Mass Index

COICOP – Classification of Individual Consumption According to Purpose Codes

CPI – Consumer Price Index

EA – Enumeration Area

GDP – Gross Domestic Product

GNI – Gross National Income

HBS – Household Budget Survey

HCE – Household Consumption Expenditure

KAS – Kosovo Agency of Statistics

LFS – Labor Force Survey

LMU – Ludwig-Maximilians-Universität

MPO – Mean Positive Overshot

NIPH – National Institute of Public Health

OECD – Organization for Economic Cooperation and Development

OOP HP – Out-of-pocket health payment

OR – Odds Ratio

UHC – Universal Health Coverage



WB – World Bank

WHO – World Health Organization

# **1 Introduction**

Based on the existing literature, this section gives a brief overview of the history of documenting health inequalities, health system performance and global health policy guidance. Further, the section explains the central notions used in this study such as access to health care, out-of-pocket health payments (OOP HP), OOP HP progressivity, catastrophic health expenditure and impoverishment. Additionally, this section gives a brief research overview on health service utilization models, progressivity of OOP HP, catastrophic health expenditure and impoverishment. Finally, the section presents key Kosovo health sector policy developments, the importance of measuring health system performance, and significance of the study in light of the ethical stance, related to country and international global health context.

## **1.1 Brief history of documenting health inequalities**

The world keeps changing; so do the health threats, diseases, and opportunities to prevent and intervene, but inequalities in health for various reasons reflected in health status remain a challenge throughout human history. Most recently, at the global level, inequalities including those in health are addressed through Universal Health Coverage (UHC) as part of the Sustainable Development Goals (United Nations Population Fund, 2017) and Health 2020 at the European level (World Health Organization, 2017a).

Throughout the text, health inequality and equality are referred to as quantifiable distribution of the health status or health-related determinants between different population groups. At the same time, equity and inequity (unjust inequalities) refer to political concepts rooted in a moral commitment to social justice (Kawachi et al., 2002).

Health inequalities have been observed ever since the seventeenth century when John Graunt registered deaths in England country parishes and observed social variations (Berkman and Kawachi, 2000). In the nineteenth century, Villerme (1840) considered the importance of social class and working conditions as important determinants of health and disease. Sanitary conditions of the working population were studied by Chadwick (1842), whereas Virchow (1848) required “full and unlimited democracy” for fighting the typhus epidemic in upper Slezia (Krieger and Birn, 1997, Macintyre, 1997). At the end of the nineteenth and beginning of the

twentieth century in the U.S., racial and ethnic determinants of health inequalities were considered (Berkman and Kawachi, 2000).

“Report on Inequalities in Health”, known as Black Report (1980), analyzed health inequalities in United Kingdom during the preceding decades until the mid-70s. This report indicated a widening health gap between the lowest and highest occupational groups. This widening health gap was attributed to social class disparities such as incomes, working conditions, unemployment rates, education level, housing conditions, transport facilities, smoking, diet, and alcohol consumption. The report indicated that the health services played a marginal role in causing health inequalities, recommended a set of allowances, benefits, and grants for the most vulnerable, and emphasized the importance of primary health care (Gray, 1982).

In 1989, the Acheson Report “Independent Inquiry into Inequalities in Health” reviewed latest available information in the United Kingdom on health inequalities of health using data from the Office for National Statistics, Department of Health and other sources. This report found that socio-economic status remained a significant factor in health status. The report found that the mortality rate among working men was almost twice higher for the unskilled workers as compared to the professionals and in the beginning of the 1990s this gap widened to almost three times higher. The report stressed the importance of social determinants of health through the human life cycle, and among other recommendations prioritized actions to reduce health inequalities among parents, future mothers, and children. The Acheson report led to subsequent national inequalities targeted in 2001 to reduce inequalities in infant mortality and life expectancy by 2010. The national health inequalities strategy addressed national health inequalities in the following areas: (i) supporting families, mothers and children, (ii) addressing the needs of local communities and socially excluded groups, (iii) preventing illness and providing effective treatment, and (iv) addressing the underlying social determinants of health (coordinate government action at the central and local level) (Department of Health, 2009).

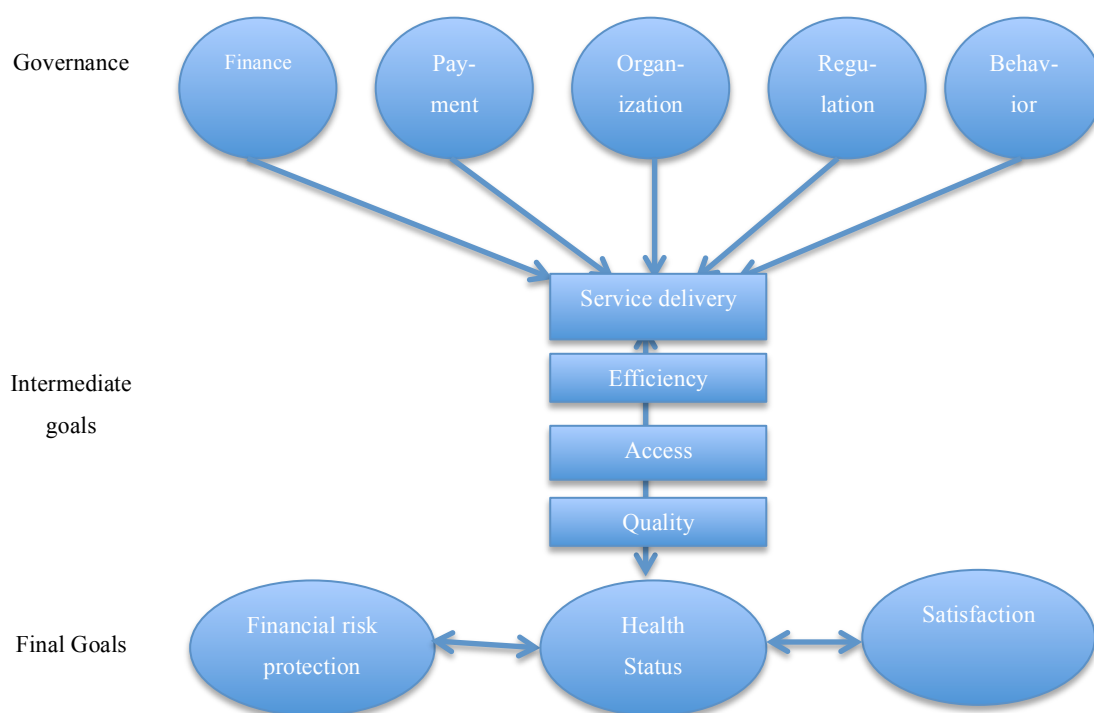
## **1.2 Assessment of health system performance and empirical research**

According to the World Health Organization (WHO) health system is defined as “the people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people’s legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent

is to improve health” (World Health Organization, 2017b). Accordingly, in 2000, the WHO World Health Report “Health’s system improving performance” introduced insights of the health system. According to this report, improving the health status, responding to people’s expectations, and providing financial risk protection due to ill health are considered three main health system goals. In order to achieve these goals, countries are expected to take the stewardship role in strategic directions related to financing and payment, organizational structure, and enforcing regulation, subsequently leading to behavioral change towards efficient, accessible and quality health care service delivery (intermediate goals of health system) (Roberts J. M. et al., 2008).

Measurements of final or intermediate health system goals are used to evaluate the system performance. Once the achievement of the goals is measured, based on these findings the health system functions at the governance level can be tuned (planned and set) to further improve the health system goals. Figure 1.1 presents the full policy cycle. Measuring the health system goals again would mean a new policy cycle.

Figure 1.1 Health system functions and goals



Adapted from “Getting health sector reform right” (Roberts J. M. et al., 2008)

Along these lines, the Global Commission on the Social Determinants of Health in their 2008 report “Closing the gap in a generation: Health equity through action on the social determinants of health” considered social justice as an ethical imperative. This report called for equity through three reasonable principles of action to avoid systematic health differences in different groups by: (i) improving conditions of daily life, (ii) addressing inequitable distribution of power, money, and resources, as well as (iii) developing a workforce aware of the social determinants of health (Marmot M., 2008). Moreover, it was recognized that understanding of the multilevel approaches to social determinants of health requires knowledge of: the way a society functions, the main causes of the diseases of interest, psychological and biological factors, and the way they interact (Berkman and Kawachi, 2000).

In 2010, the World Health Report “Introducing a Path Towards UHC”, discussions at the Ministers of Health level and the resolutions adopted by the World Health Assembly, represent the most important momentums at the global level that have moved UHC at the United Nations General Assembly level. The United Nations resolution on UHC places the UHC as a central element of the international development agenda. The resolution calls countries, civil society, and international organizations to include universal coverage and access to affordable and quality health care services, placing health as a central element of international development. Moreover, heads of the state are urged to coordinate their activities across the relevant ministries, the private sector, and civil society to contribute towards improving health and wellbeing (World Health Organization, 2010, United Nations General Assembly, 2012). The need to monitor health and wellbeing improvements increased the demand for health equity research.

According to the WHO, UHC has been defined as the right of the people and communities to utilize all health services of sufficient quality, to be effective without enduring financial hardship. This definition incorporates three objectives:

1. Everyone who needs services should get them (equity in access/utilization);
2. Quality of services should be sufficient to improve health;
3. Utilization of needed services should not cause financial hardship (financial risk protection).

In particular, these three objectives have played an important role in the growth of health equity research measuring inequality in health outcomes, health care, and health care financing systems (payments). On the other hand, during the 90s, international organizations and donors working in health prioritized the improvement of health outcomes among the poor. Increasing availability of the data at country levels, such as health demographic surveys, living standards measurement studies, and Household Budget Surveys (HBS), as well as introduction of personal computers, and development of analytical methods with understandable health inequality metrics, have also contributed (O'Donnell et al., 2008b) to supply side factors that played an important role in the increase of health equity research.

Considering the above, the 2013 World Health Report advocates for developing the national research capacities in producing and using the data. These capacities are considered a power to answer a wide range of questions that will help to achieve UHC, wellbeing and development (World Health Organization, 2013).

### **1.3 Factors associated with health care services utilization**

The first objective of the UHC indicates that everyone who needs health services should get them, meaning that services should be utilized based on need and not ability to pay. However, in order for the services to be utilized, they have to be available and accessible. In this regard, it is important to examine the factors that affect individuals to access health services.

The concept of access in the literature is defined in various ways; highlighted below are two major concepts:

At policy levels, access to health care is considered more complex and can be defined as ability to secure health services specified by time, scope, quality, inconvenience, and cost, while having certain specific amount of knowledge about it (Oliver and Mossialos, 2004). According to Andersen, access to health care is considered the potential to utilize health care services while utilization of this potential is considered utilization of health care services (Andersen, 1983). Not always is this potential (access) transformed to utilization of the health services.

The most common concept of access used in health research literature refers to whether or not the health services are offered in a certain area. This is related to whether there are adequate

financial, human, and capital resources and whether these resources are distributed in a way so that individuals can gain access to health care services. This is known as physical access that can be measured by the number of health facilities or medical personnel per population number. Another more spontaneous meaning of access is related to effective availability that relates to how easily health services can be used. Sometimes, for example, access to the support of social networks is considered of utmost importance while obtaining health care services. Ineffective access (high cost, long travel and waiting times, the limited scope of services, low quality of services, inability to gain support from the social network while accessing the health services) may keep people away from using health services in facilities that are physically available but not responsive to their expectations. The concept of effective access is difficult to measure, since it requires data on prices, travel and waiting times, access to social support networks while receiving care, and cultural acceptability (Roberts J. M. et al., 2008). In cases when the patient decision (effective access) is ignored, it is always argued that low levels of health service use indicate barriers to utilization of health services, the utilization and effective access can no longer be measured separately. Therefore, because utilization is easier to observe so far in health equity research literature, the term “utilization” is used to approximate the access (Roberts J. M. et al., 2008, Oliver and Mossialos, 2004). Another measure of quantifying the access to health care services are the hospital services or outpatient services utilization per 100.000 inhabitants, reported as lack of access if they are found to be low.

In the literature (Aday, 2014), the following four models have tried to identify the variables and their relationships in order to measure the impact of policies related to utilization of health services (intermediate health system goal):

1. Patient decision-making models, based on sociological theory and research;
2. The health belief model, based on psychological theory;
3. Economic models of the demand for medical care; and
4. The behavioral model of health services utilization.

The behavioral model has been the most frequently used model to assess the utilization of health care services (Babitsch and von Lengerke, 2012)

### **1.3.1 Patient decision-making models**

Schuman's framework offers sociological or structural explanations that influence the decision-making process to seek health care that is related to five stages of illness: (i) experiencing of the symptom, (ii) assumption of the sick role, (iii) medical care contact, (iv) dependent patient role, and (v) recovery and rehabilitation. Schuman explains that individuals belonging to the more traditional groups of society would prolong the two first phases and would not adhere to the medical treatment recommendations as compared to those coming from the science-oriented groups (Aday, 2014).

Kosa and Robertson offer psychological reasoning for seeking health care. Following are the stages of a decision-making process in response to ill health: Disruption of usual functioning that leads to anxiety due to the symptoms experienced; that will require application of knowledge to address the problem; and subsequently enable/ perform therapeutic interventions and/or relieve anxiety, with or without addressing the health problem directly. The model acknowledges also the influence of culture and social groups on those seeking and offering health care (Aday, 2014).

### **1.3.2 The health belief model**

This model considers that engagement (or lack of engagement) in health status-promoting activities or, in other words, in seeking health care, depends on: (i) perception on susceptibility and seriousness of illness, (ii) modifying variables such as perception on reducing susceptibility and seriousness relative to costs (pain, financial), cues to trigger the action (internal symptoms or external interactions), and (iii) other factors (demographic, socio-psychological and structural) (Janz and Becker, 1984, Aday, 2014).

### **1.3.3 Economic models**

In the economic models, health care service is considered as any other economic service in demand. The Grossman model depending on income means (labor incomes) considers that health stock decreases as people age; ageing increases the demand for health care services, so do higher education and income level.



The best application of the utilization care model is the RAND Health Insurance Experiment (Aday, 2014) that analyzed health care costs, utilization, and outcomes in the U.S. by assigning people randomly to insurance plans, ranging from plans with full to almost no coverage, from 1974 to 1982. The study found a pattern of lower utilization of health services in the higher cost-sharing plans (Aron-Dine et al., 2013). This did not have unfavorable effects on the health of the study participants. However, the same study found that free care reflected improvements in the sickest and poorest patients (with hypertension, dental health needs, impaired vision, and selected serious symptoms) (Robert et al., 2006).

Price elasticity quantifies this change in service utilization due to change in the costs of the service demanded/utilized. Values for price elasticity between 0 and 1 indicate that the change in demand/utilization is inelastic or relatively small (percent change in utilization is less than the percent change in costs). Values of price elasticity equal to 1 indicate that the percent change in demand/utilization is equal to percent change in price. Values greater than 1 indicate that the utilization/demand is perfectly elastic, meaning that demand is affected to a greater degree by changes in price (percent change in utilization/demand is more than the percent change in costs). Most of the times (except for luxury goods) there will be a negative (inverse) relationship between the quantity demanded and price, meaning a positive percentage in price (increase of the price) will cause negative percentage in quantity demanded (decrease in quantity demanded) and the other way around. This is the reason why the price elasticity measure is reported as interpreted in absolute values and causes ambiguity (Web Books Publishing, 2017).

The price and income elasticity (changes in health care demand due to price and income level) estimates used most widely in the literature are derived from the RAND Health Insurance Experiment of the 1970s. Most estimates of price elasticity for general health care demand are reported around -0.17 to -0.22. This means that in every one percent price increase there will be a 0.17 and respectively 0.22 percent decrease in health care utilization, whereas income elasticity of demand for general health care services is estimated by the same study in the range of 0 to 0.2. This means that demand for health care services increases with the increased level of income. The magnitude of elasticity suggests that the demand response is relatively small (Ringel et al., 2002).

#### **1.3.4 Behavioral health care services utilization model**

The behavioral health care service utilization model was developed in 1960. The model initially analyzed health care service use at the household and later at individual level. The original behavioral model of health care service utilization implies that people use health services depending on predisposing and enabling factors, as well as their need for health care. The predisposing factors “include demographic and social structure factors (e.g. employment, social class, occupation, and race) and health beliefs.” Enabling factors reflect whether resources are available to individuals or not, such as income, health insurance coverage, and regular source of care (physicians, outpatient and hospital bed supply); whereas, health care need is based on self-perception or diagnosed conditions or illnesses.

During the 1970s, the model was corrected and included organizational and financial factors in the distribution and delivery of services. They were related to health service measures (such as type, purpose, and time interval of care), and a patient satisfaction variable was added. During the 1980s and 1990s, the model recognized external context (physical, political and economic) and personal health behavior (personal practices and use of services). The model added clinical and self-measures of health and patient satisfaction with health care services. Moreover, the behavior model of health care services also considered the reciprocal influence of health outcomes, which in turn influenced the predisposing factors, perceived need for services, and health behavior (Aday, 2014).

The behavioral model was most widely used in the research literature as a theoretical basis when examining predictors of health care service utilization at the individual level. However, when the studies were implemented they used only a small number of the common variables. There was also wide variability in the way these variables were categorized. The most used predisposing factors were age, marital status, gender, education, and ethnicity; whereas the most used enabling factors were income/financial situation, insurance coverage, and having a usual source of care. Most of the studies used both evaluated and self-reported health status (Babitsch and von Lengerke, 2012).

The behavior model was initially applied in studies that analyzed factors affecting utilization of health services in the U.S. and Canada (Babitsch and von Lengerke, 2012), but continues to be applied also in other developed countries (Heider et al., 2014 , Rutaremwa et al., 2015 , Stein et al., 2000, Seo et al., 2016, Lo et al., 2016) and developing countries (López-Cevallos and Chi, 2010, Fleury et al., 2014, Luginaah et al., 2016), growing to cross-country comparisons

(Blackwell et al., 2009) but also focusing on analyzing for example the relationship of service utilization and health insurance coverage (Yang, 2001).

The Andersen model was applied also in analyzing utilization of health services in different population groups, such as elderly (Heider et al., 2014 ), elderly sub-groups (Bowen and Gonzalez, 2008), sub-groups with certain diseases such as homeless with hepatitis B and C (Stein et al., 2012), women with arthritis (Lo et al., 2016), depression, marginalized sub-groups such as black, female, street-based sex workers (Varga and Surratt, 2014), immigrants (Luca et al., 2013), or women immigrants (Seo et al., 2016).

The behavior model was used also for analyzing affecting variables for different medical service utilizations of general health services (Seo et al., 2016), hospital services and ambulatory outpatient services (Stein et al., 2000), mental health (Fleury et al., 2014), maternal health services (Rutaremwana et al., 2015), preventive and curative services (López-Cevallos and Chi, 2010), antenatal care services (Luginaah et al., 2016), and alternative services such as acupuncture (Lee et al., 2015).

A systematic review study that investigated factors affecting the use of health services indicated that children, women during their reproductive period, and elderly are the most frequent users of health care services. The same study indicated that those with lower income and level of education are in greater need of health care services and use health services more frequently (Mendoza-Sassi and Beria, 2001). Pro-rich bias in the utilization of specialist hospital services and equitable access to primary health care was found in research studies monitoring equity in use of curative services in health systems with universal coverage (Hanratty et al., 2007). Analysis of factors affecting utilization of health services among patients with chronic illness indicate that an uneducated lower income group had a 62 % lower chance of visiting a doctor compared to an uneducated higher income group (Mendoza-Sassi et al., 2003). Also, having a regular source of care increases utilization of health services and improves the underserved population (Mendoza-Sassi et al., 2003, Mendoza-Sassi and Beria, 2003, Mendoza-Sassi and Beria, 2001).

A systematic review study for the period 1946 to 2015 analyzed factors that increased utilization of health care among immigrant Korean women, and concluded that targeted interventions such as cancer screening services increased utilization of health services (Seo et al., 2016).

Another systematic review of studies (1998 – 2011) that have used the behavioral model found substantial variations in the variables used and the way they were grouped. The most commonly used variables to be categorized under predisposing factors were: age, marital status, gender, education, and ethnicity; whereas most commonly used enabling factors were identified by income/financial situation, health insurance, and disposing of a source of regular care (family doctor). Need factors were reflected through self-rated/perceived health or diseases. The study identified a small number of a common set of variables and a huge variation in their categorization, especially related to predisposing and enabling factors. Lack of consistency in the findings is explained with the important role of the study context and characteristics of the study population that strongly influence presence and strength of variables association (Babitsch and von Lengerke, 2012).

#### **1.4 Progressivity of out-of-pocket health payments**

Following the global level health policy agenda on health equity, at the country level, health policy makers are trying to impact health equity by addressing underlying causes of avoidable, unfair, and unjust health differences (inequalities) through their health financing policies at different levels (pooling, allocating, paying). Funds in different countries are pooled through different mechanisms such as tax collection, social insurance contributions, private insurance premiums, community financing and OOP HP. All of these sources (depending on pooling, allocation, and payment methods) distribute the financial burden differently and may affect health status and level of satisfaction among the population. Therefore, measuring who bears the financial burden of health payments is important.

OOP HP are considered payments (formal or informal) made directly from the household budget and are not reimbursed by any insurance. Depending on the ethical viewpoint, one would or would not expect that households pay higher proportions as their ability to pay increases, as represented by income or consumption expenditure.

From the egalitarian liberal perspective on health system performance it is expected that, with the increase of ability to pay, the share of OOP HP also increases. Progressivity measures the extent to which OOP HP are proportional to the ability to pay. They are progressive when OOP HP represents an increasing proportion of the increasing ability to pay, regressive when set as a

decreasing proportion of the ability to pay, and proportional when they remain constant in proportion to the ability to pay.

In the literature, progressivity of the OOP HP as a share of the ability to pay is presented visually through graphs comparing the OOP HP concentration curve and ability to pay Lorenz curve, and in tables by estimating the concentration index and the Kakwani index. The Lorenz curve is a graphic presentation of wealth distribution. Depending on the level of economic development, studies used households income or expenditure to measure wealth and respectively the ability to pay (O'Donnell et al., 2008b). The Lorenz curve of the ability to pay plots a cumulative percentage of the total ability to pay variable in a population, against the cumulative percentage of the population, ranked in increasing order based on their ability to pay. The OOP HP concentration curve plots the cumulative percentage of the total OOP HP paid, against the cumulative percentage of the population. Concentration and Kakwani indices are defined in the methodology section.

Studies assessing progressivity of the OOP HP are used to monitor the impact of introduced health financing measures in general or, in particular, introduction of certain changes in pooling, financing, and/or payment mechanisms. One study assessed the impact of social insurance in progressivity (1993) on the OOP HP in Columbia, using national survey data from 1984 to 1997. Using incomes to estimate the Kakwani index showed a regressive trend, but the trend showed progressive when using consumption expenditures (Castano RA, 2002). In Hungary progressivity of the OOP HP were also measured through Kakwani indices for the period before, during, and after implementation of the health care reforms. These health care reforms presented a rise in co-payments for medicines and establishment of co-payments for utilization of public health services (Baji et al., 2012). Some other studies monitored the impact of health financing reforms on progressivity of OOP HP, by computing the concentration index and presenting OOP HP concentration curves decomposed in OOP concentration curves for drugs, outpatient, inpatient payments and the Lorenz curve (Yardim et al., 2010).

Progressivity measurement of the OOP HP through the concentration and Kakwani indices was used to monitor the impact of coexistence of public and private sectors in Malaysia (Yu et al., 2006). There were also studies that measured the progressivity of health financing by computing the Kakwani index of health financing sources, such as direct and indirect taxes, OOP HP, private insurance contributions, and contributions to the National Hospital Insurance Fund at the

country (Munge and Briggs, 2014) and international level, such as in the Organization for Economic Cooperation and Development (OECD) countries (Wagstaff et al., 1999). Progressivity of OOP HP was measured at the country and regional level. Expressed in the Kakwani index, OOP HP were compared in different parts of Portugal (Quintal and Lopes, 2016). A regional comparative study looked at the progressivity of total financing, decomposed in sources of financing in thirteen countries, covering 55 % of the Asian population (O'Donnell et al., 2008a), while a systematic review study assessed progress towards equity in the health care financing of lower middle-income countries (Asante A, 2016). A review study analyzed consequences of the implementation of out-of-pocket payments as a source of healthcare financing in the progressivity of health spending, including OOP HP. An increment of more than 0.10 in the Kakwani index was considered a significant health policy impact (Kolasa and Kowalczyk, 2016).

In Kosovo, progressivity of OOP HP was measured by the World Bank (WB) in 2009 and 2011 and is barely understood by the health policy decision makers (WB, 2014). In the Balkans region, the only study on progressivity of OOP HP was conducted in Croatia (Mastilica and Bozиков, 1999).

## **1.5 Financial protection in health**

Introduction of the three generic goals of the health system (health status, responsiveness, and financial protection) and its functions (financing, organization, payment, regulation, and behavior change) (World Health Organization, 2000, Roberts J. M. et al., 2008), the UHC discussions at the Ministers of Health level, and resolutions adopted by the World Health Assembly are the most important global momentums that have moved forward the UHC to the United Nations General Assembly level (United Nations General Assembly, 2012, Carrin et al., 2007, Evans et al., 2013, World Health Organization, 2010, Tangcharoensathien et al., 2013). This has urged heads of state to coordinate activities towards establishing affordable and quality-assured health care services (United Nations General Assembly, 2012).

Countries have attempted to measure the impact of their policies on financial risk protection (no financial hardship due to health spending) by quantifying OOP HP, and estimating catastrophic health expenditure and impoverishment headcounts due to OOP HP. These measurements gave rise to estimates at the global level. At this level, it is estimated that 150 million people incur

catastrophic health expenditure and 100 million are pushed under the poverty line due to OOP for health care; of those 90 % live in low-income countries (Xu et al., 2007).

Measurements of inequality in financial risk protection due to OOP HP were measured across the household ability to pay according to quintiles and other stratified population groups, examining the associations with increased incidence/overshot of catastrophic health expenditure. These types of studies are important as they measure the burden of OOP HP and indicate population groups to be targeted through relevant policies. Studies measuring financial risk protection and its variability across population groups have been conducted initially at the country level (Özgen Narci et al., 2015, Tomini et al., 2012, Arsenijevic et al., 2013, Chuma and Maina, 2012), followed by the regional and global level (Leive and Xu, 2008, Bredenkamp et al., 2011, Felicia et al., 2012, Knaul et al., 2011, Xu et al., 2007, Saksena et al., 2014 ).

Studies assessing financial hardship call for different actions, depending on the country-specific context. Depending on their findings, studies call for health system reforms (Chuma and Maina, 2012), revisiting health insurance schemes (Dorjdagva et al., 2016), analyzing financial barriers to care (Li et al., 2012), and setting cost control mechanisms from the provider's side (Li et al., 2014), considering pro-poor schemes within intrinsic health system characteristics but also broader socio-political contexts (Mataria et al., 2010). Recent financial hardship studies due to OOP HP recommend targeting and protecting households with certain diseases (Loganathan et al., 2015, Sun et al., 2015, Jiang et al., 2012).

A study that looked at the headcounts of catastrophic health expenditure and impoverishment due to OOP HP in 98 countries, based on their income economy level (Table 1.1: low, lower middle, upper middle and high income), indicates clearly that for some low-income countries the impoverishment headcount is higher compared to catastrophic health expenditure headcount and vice versa for some other low-developed countries. However, the analyses clearly indicate that high-income countries have both very low both catastrophic health expenditures and impoverishment health payments headcount (Saksena et al., 2014). The same study presents a clear correlation between the poverty headcount and difference in poverty gap due to OOP HP (Saksena et al., 2014). Determinants of catastrophic health expenditure are common, but variation of hardship due to these determinants is different in different countries (Dorjdagva et al., 2016, Li et al., 2012, Li et al., 2014, Mataria et al., 2010, Loganathan et al., 2015).

Documenting, monitoring and analyzing these variations are crucial in particular for developing countries with a more dynamic policy context (Bredenkamp et al., 2011).

Considering the definition, source of data and methodological issues (Lu et al., 2009, Xu et al., 2009), the monitoring and benchmarking of financial hardship indicators are prodigious tasks that require reliability and subsequent standardization of the data. This recommendation becomes more important considering that the UHC is a priority on national policy agendas, including the Kosovo Government.

## **1.6 Kosovo health care system and key health policy developments**

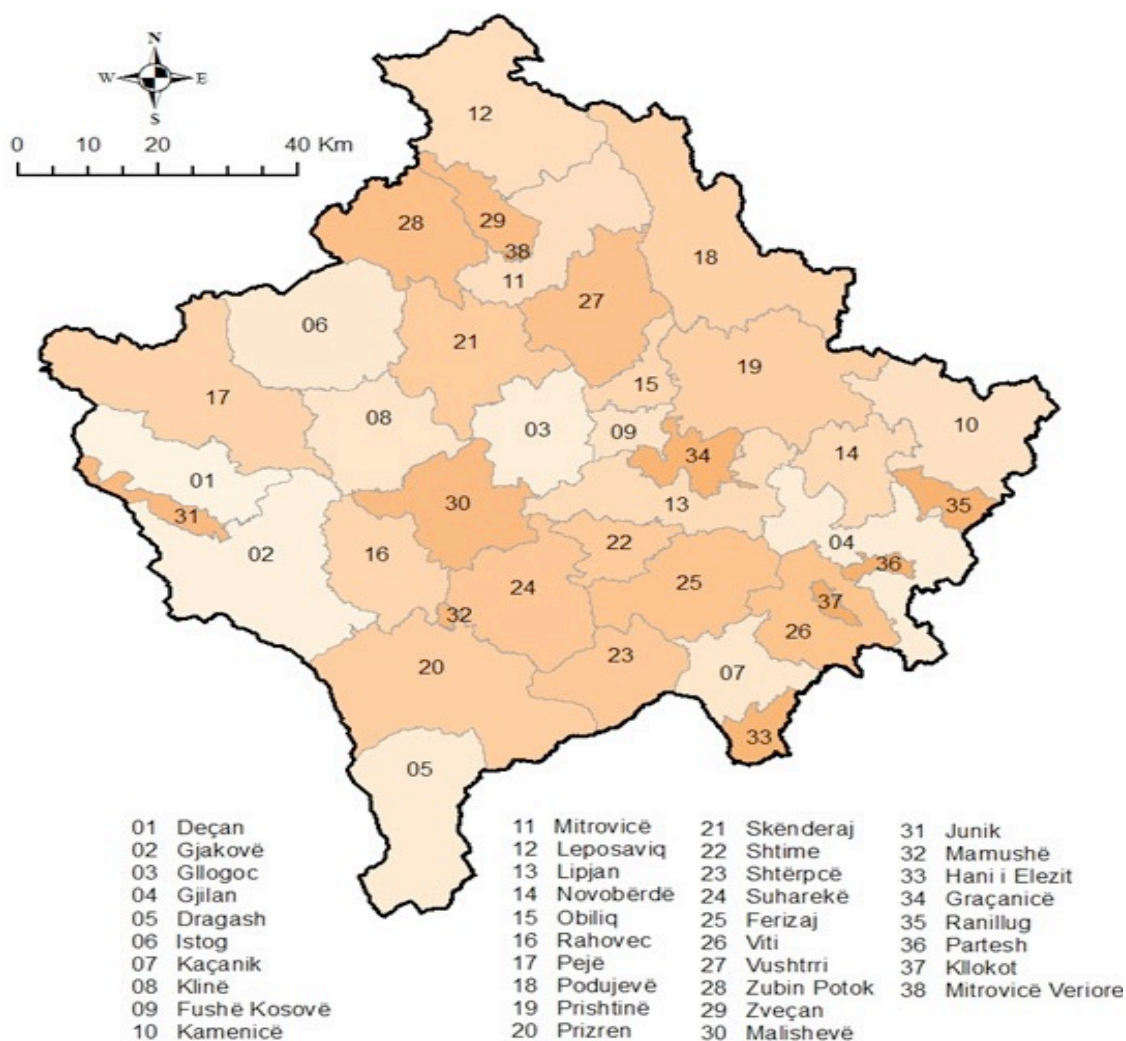
Kosovo is located in south-eastern Europe, bordering Albania in the south-west, Montenegro in the north-west, Serbia to the north-east and Macedonia to the south. The Republic of Kosovo borders an area of 10,908 km<sup>2</sup> with 1,78 million inhabitants, estimated according to the latest census conducted in 2011 (Kosovo Agency of Statistics, 2015a).

By constantly withdrawing administrative capacities from June 1999 to February 2008, the United Nations Interim Administration Mission in Kosovo administered Kosovo. The process of addressing final status was dependent on the fulfillment of certain democratic standards assessed by the UN Security Council in 2005 (United Nations Security Council, 2005), which led to the process of Comprehensive Proposal for Status Settlement for Kosovo. This document committed Kosovo to be multi-ethnic and democratic contributing to the regional stability (European Stability Initiative, 2007). This paper also supported the political process of status settlement that led to the Kosovo Assembly independence declaration on February 17, 2008.

The Republic of Kosovo has a parliamentary democratic system with an established Central Government and 38 Local Governments (Figure 1.2). The political system in Kosovo is based on three main pillars: legislative, executive and judicial.



Figure 1.2 Map of the administrative division of Kosovo



Source: (Kosovo Agency of Statistics, 2015a)

The Constitution of the Republic of Kosovo was enacted in April 2008; it grants a National Assembly with 120 seats. The Assembly elects the President of Kosovo. Judicial authority is exercised by judges and prosecutors appointed by the President. The Government of Kosovo, the executive pillar, is represented by the Prime Minister as head of the Government, with the Cabinet of Ministers. The main functions of the Kosovo Government involve proposing and implementing relevant national and sectorial policies, proposing legislation, budget, national programs, and implementing laws passed by the National Assembly (Arënlju Q. and Koçinaj B., 2010).

Of the 193 member states of the United Nations, 114 have recognized Kosovo as an independent and sovereign state (Republic of Kosovo Ministry of Foreign Affairs, 2017). In 2009, Kosovo

became a member of the International Monetary Fund and the WB. Kosovo also joined the European Bank for Reconstruction and Development (2012) and the Council of Europe's Development Bank (2013). Kosovo is not a member of the United Nations (United States Department of State, 2016).

In all sectors, including health, the Government of Kosovo is in the process of comprehensive reforms that aim implementation of the obligations deriving from the Stabilization and Association Agreement from 2015. The Stabilization and Association Agreement defines relations between the Kosovo and European Union (EU) Member States and EU institutions, for implementing certain policies towards its full EU membership (Republic of Kosovo Ministry of European Integration, 2016)

Health policies that affect utilization of the health care services and OOP HP are interdependent on available resources (human, financial and capital). Their rational use becomes a challenge in a weak regulatory system prevailing in Kosovo. The public health system in Kosovo provides most of the health services, mainly funded by general taxation. There are limited numbers of drugs and consumables from the essential list provided to patients. However, there is no defined list of health services. Primary Health Care Facilities are implementing the concept of family medicine financed by a health specific grant, allocated through the Municipal Government by the Ministry of Finance. Citizens are in the process of registering with Family Medicine Doctors who deliver primary health care and are expected to act as gatekeepers to the secondary and tertiary levels of care. The secondary and tertiary levels of care are provided by the Kosovo Hospital University Clinical Services, respectively by the Regional Hospitals and University Clinical Services in Prishtina. They provide inpatient services and outpatient ambulatory services. In general, there is no functional referral system in place that would sanction patients for bypassing the primary health care services.

The health system in Kosovo throughout its history and as reflected in the Health Law continues to share the values of equity and solidarity. The first principle of health care delivery in the Kosovo Health Law refers to equal access to essential health care services through equitable distribution of public resources for health, regardless of socio-economic or any other differences. Achieving equal access in the country requires a clear picture of the current state of equal access to essential health care services in Kosovo.

The private sector in Kosovo is unique, being developed as an alternative to the Serbian lead public health services during the 1990s, with more rapid expansion after 1999, but at this time as an alternative to the weak public health services being re-established after the latest war in Kosovo. There is a large private sector providing outpatient specialist services, as well as inpatient services, mainly for those insured and who choose to pay related fees. Private hospitals also offer services that are not contained in the public sector and are commissioned by the Ministry of Health through standardized procedures. The principal advantages of the private as compared to the public sector are shorter waiting times, and hospital amenities (Republic of Kosovo Ministry of Health, 2016).

Based on their Gross National Income (GNI) per capita, the WB classifies countries according to their levels of income economy as presented in Table 1.1 (WB, 2016). Kosovo with a GNI \$ of 3,970 in 2015 (WB, 2017) is classified as a lower middle-income economy. In 2014 in Kosovo, public spending covered 67.45 % of the total health expenditure.

Table 1.1 Classification of countries based on income economy level

Countries income economy level	GNI per capita 2015 (US\$)
Low	1,025 or less
Lower middle	1,026 - 4,035
Upper middle	4,036 - 12,475
High	12,476 or more

Source: (World Bank, 2016)

According to the WB, governments in high-income countries cover a higher share of the total health spending (62.3 %) as compared to middle-and low-income country economies (52.1 % and respectively 42.4 %) (World Bank, 2017c).

Although the total health expenditure since 2002 in Kosovo showed a steady increase in absolute terms, total spending as a share of the Gross Domestic Product (GDP) decreased from 4.7 % in 2002 (World Bank, 2008a) to 4.19 % in 2014, as presented and benchmarked with other countries in Table 1.2 from (World Bank, 2017c).

Table 1.2 Health expenditure in selected countries, 2014

Country	Health expenditure, total (% of GDP)	Health expenditure, public (% of GDP)	Health expenditure, public (% of government expenditure)
Indonesia	2.85	1.08	5.73
Kosovo *	4.19	2.83	10.35
India	4.69	1.41	5.05
Turkey	5.41	4.19	10.50
Albania	5.88	2.94	9.37
Mexico	6.30	3.26	11.58
Macedonia FYROM	6.48	4.10	12.89
Greece	8.08	4.99	9.98
United Kingdom	9.12	7.58	16.52
Slovenia	9.23	6.62	12.83
Italy	9.25	6.99	13.65
Bosnia and Herzegovina	9.57	6.81	14.11
Serbia	10.37	6.42	13.86
Canada	10.45	7.41	18.77
Germany	11.30	8.70	19.65
France	11.54	9.02	15.69
United States	17.14	8.28	21.29
Global average**	9.84	5.97	15.91
OECD member state average**	12.08	7.59	17.25
Lower middle income average**	4.25	1.50	6.77

Data Source: World Bank Open Data (World Bank, 2017c)

\*Estimated by author

\*\*Data expenditure from 2011

At the global level in 2014, countries on average spent 9.84 % of their GDP on health (total health expenditures). In 2014, Kosovo spent 4.19 %, which is more than two times lower than the global average and three times less than the OECD member states (12.08 % of GDP allocated to health). In 2014, spending on health as percent of GDP in Kosovo was comparable to the average of the lower-middle income economies (4.25 % of GDP allocated to health) (World Bank, 2017c).

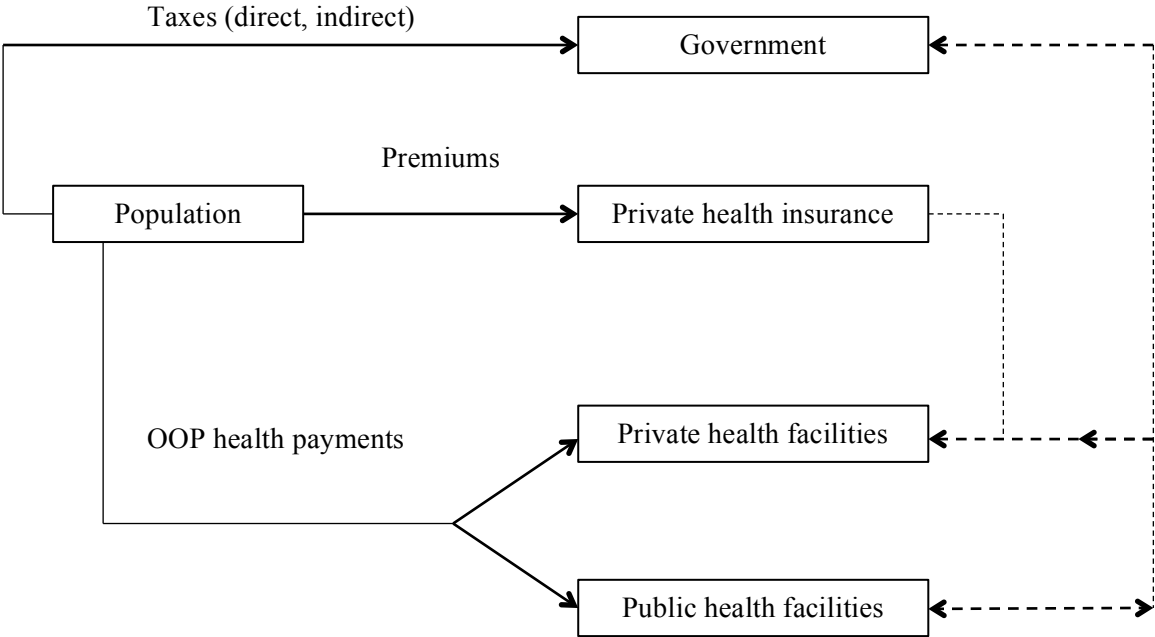
In 2014, governments at the global level spent 5.97 % of their GDP for health. The Kosovo government allocated (public health spending) approximately two times less as compared to the global average and OECD members (7.59 % of GDP spend on public health expenditures). However, this share was higher compared to average health spending by lower-middle income

countries (health spending, public covered 1.50 % GDP for health) and was comparable to that of middle-income countries (health spending, public covered 3.0 % of GDP for health) (World Bank, 2017c).

In 2014 at the global level, countries on average spent 15.91 % of their total government spending on health; whereas the OECD members and lower-middle-income countries allocated 17.25 % and respectively 6.77 %. Kosovo paid higher than the average of the lower-middle-income countries but lower than the average of OECD member states.

Estimated public health expenditure for 2014 in Kosovo is based on WB definition of public health expenditures “of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds (World Bank, 2017a). Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation” (World Bank, 2017b).

Figure 1.3 Household financial contributions in health care system in Kosovo



In Kosovo there are five main sources of funding: (i) direct taxes, (ii) indirect taxes, (iii) OOP HP, (iv) donor contributions through grants and loans and (v) private insurance premiums. The sources are allocated/paid directly or indirectly to either public or private health facilities that complement health services in Kosovo (Figure 1.3).

For the period 2002 to 2006, according to WB figures, the average share of the public health expenditure was 63.78 %, while the average OOP HP was 59.70 %. In 2014 the absolute public amounts allocated to health had doubled since 2004 (World Bank, 2008a). The public share became the dominant source of total health spending and the OOP HP share fell to 32.34 % (Table 1.3).

Table 1.3 Public and out-of-pocket health expenditure, 2014

Country	Health expenditure, public (% of total health expenditure)	Out-of-pocket health expenditure (% of total health expenditure)
United Kingdom	83.14	9.73
France	78.21	6.34
Turkey	77.45	17.75
Germany	76.99	13.20
Italy	75.61	21.19
Slovenia	71.73	12.07
Bosnia and Herzegovina	71.18	27.93
Canada	70.93	13.60
Kosovo *	67.45	32.34
Macedonia FYROM	63.33	36.67
Serbia	61.88	36.59
Greece	61.66	34.86
Mexico	51.77	44.00
Albania	49.91	49.93
United States	48.30	11.05
Indonesia	37.78	46.87
India	30.04	62.42
Global average	60.68	18.05
OECD member state average	62.76	13.92
Lower middle income average	35.41	56.53

Data Source: World Bank Open Data (World Bank, 2017c)

\*Estimated by author

\*\*Data expenditure

In Kosovo public health services are provided almost free. Patients except for those in exempted categories are charged nominally meaning at fixed prices that are set considerably lower than the real value, and pay OOP for certain additional services. While utilizing private services under the program for treatment of patients outside of public facilities, patients receive free services or pay partially for services that are not provided in the public sector, while those treated outside of this program without private insurance pay full price for services in the private sector. Those who can afford to pay use the private health services. In Kosovo, there are no studies available on perception of the quality of health services in the public and private sectors. Most of the doctors working in the public sector provide the same services at private hospitals, which are known for shorter waiting times, and a higher level of individual care and attention in modern hospital facilities.

Continuous increase of public finance sources for health indicates the government's commitment to pursue equity, whereas still relatively high percentage of OOP HP comparable to the neighboring countries indicates inequalities in health care financing. In 2011 the WB estimated that 29.7 % of the population in Kosovo lived below the PL of € 1.72 per day per adult equivalent and 10.2 % lived below the extreme PL, € 1.2 (World Bank, 2014).

### **1.7 Demographic structure and health status in Kosovo**

The population structure according to age is presented in Table 1.4 structure. Albanians represent 92.9 % of the total population, the Serbian ethnic minority 1.5 % and other ethnicities 5.6 % represented by Roma, Ashkali and Egyptians, Bosnians, Turkish and Gorani (Kosovo Agency of Statistics, 2015a). Most of them live in rural areas (67.1 %) as compared to those living in urban areas (38.3 %). The average age in Kosovo is 30.2 years. The average life expectancy was estimated 76.7 years, for males 74.1 and for females 79.4 years (Republic of Kosovo Ministry of Health, 2016).

Table 1.4 Population in Kosovo according to age groups

Age groups	Population (%)
0-14 years old	28 %
15-64 years old	65 %
65 years and older	7 %
Age groups	Population (%)

Source: (Kosovo Agency of Statistics, 2015a)

With 24,594 live births reported in 2014, Kosovo has an annual natural growth of 9.3 per 1,000 inhabitants, with an infant mortality rate of 9.7 per 1,000 live births (Kosovo Agency of Statistics, 2015a). Compared to European countries Kosovo has a low mortality rate: 813 deaths per 100,000 inhabitants. Main causes of death reported by Kosovo Agency of Statistics (KAS) are diseases of the circulatory system, malignant diseases, certain conditions related to the perinatal period and respiratory system diseases (Republic of Kosovo Ministry of Health, 2016).

According to the Ministry of Health statistics, the morbidity rate is 422 cases per 100,000, which is lower compared to EU, with 633 cases per 100,000. The most common cases of diseases reported in Kosovo during 2012 were respiratory system diseases, followed by external factors that affect health status (traffic accidents, accidents), followed by diseases of the digestive system, diseases of the circulatory system, and diseases of the musculoskeletal system and connective tissues (Republic of Kosovo Ministry of Health, 2016).

### **1.8 The perspective from the ethical theories**

Health system performance, by measuring its outcomes, may be judged differently depending on the ethical theories used as a foundation. Throughout the centuries philosophers have come up with theories indicating what is right and what is wrong, trying to use ethics as a guide in human life, including the physician-patient relationship (Coleman et al., 2008).. Public health-ethics goes beyond health care (Coleman et al., 2008); it is concerned with actions to promote and protect population health, and their underlying moral foundations and justifications. Different ethical dilemmas are raised for different reasons, e.g. limited resources, and balancing between the collective benefits and individual rights (The Stanford Encyclopedia of Philosophy, 2015).

Three major ethical perspectives (utilitarianism, liberalism, and communitarianism) that lay the ground for judging the health sector performance were analyzed by Roberts and colleagues (Roberts J. M. et al., 2008). When it comes to health system performance, utilitarianism focuses on the consequences of actions. According to utilitarianism, the permissible action is the one that produces the greatest utility. Individuals themselves can measure this by judging their utility (subjective utilitarian). Based on this theory, health is not considered a special good, and individuals may or may not decide to buy this good depending on what makes them happy (maximizes utility). To the question, “what if the people make bad choices?”: An objective utilitarian argues that the decision on individual well-being should be defined objectively by a



group of experts representing well-being indices. The ethical theory of liberalism, in general, focuses more on rights of the individual and the role of the state. Libertarians oppose to paying taxes so that the less well-off can benefit. They approve minimal state services such as defense and police, while the egalitarian liberals support redistributive taxes and claim they are the best source of financing health services for the less well-off categories of society. Making right decisions based on the ethical theory of communitarianism involves the impact of such decisions in developing a good character in individuals so that they represent a good community. The universal communitarians consider that there is a single model for good individuals and communities (e.g. religious groups), while the relativist communitarians believe that the community should decide its norms (e.g. female genital mutilation) and these should be respected as they are embedded in traditions that should not be brought in a universal context and judged (Roberts J. M. et al., 2008).

Considering that public health related decisions might stem from more than one moral philosophical theory, and crucial moral dilemmas in health policy and practice are usually related to resource allocation and clear cut individual responsibilities and rights, seven mid-level principles for such decision making were proposed: non-maleficence, beneficence, health maximization, efficiency, respect for autonomy, justice, and proportionality (Schröder-Bäck et al., 2014).

Based on the above, the core of health policies in Kosovo relates to egalitarian commitments that aim to ensure opportunities for health care for the less well-off of the population.

## 2 Rationale and Objectives

Based on global guidance, considering the complexity of the health system definition, health system performance should not be evaluated only by how well the system improves health status but also by how well the system responds to the population's needs, and how the system protects people from the risks of catastrophic health expenditure and becoming poor due to OOP HP. After the recent war, emergency and development phases, Kosovo now has favorable supply and demand side factors that play and will play a significant role in establishing and sustaining a national health equity research mechanism.

The National Institute of Public Health (NIPH) reports the health status of Kosovo. Primary reports consist of reporting cases of communicable and non-communicable diseases. The KAS reports on mortality data. There are no analyses of health inequalities across expenditure quintiles.

Regarding how well the system responds to the needs of the population, there are studies conducted on patients' satisfaction with health services provided at the NIPH (Ramadani et al., 2016), and also with health services in Kosovo, including the perception of corruption (United Nations Population Fund, 2013).

There is no annual mechanism to report on health spending, except for periodic analyses conducted by WB experts. There are no data regarding progressivity of the health financing system in Kosovo. Data on financial risk protection, from a published study analyzing data from the 2000 Living Standard Measurement Studies, indicated that catastrophic health expenditure and impoverishing effects of the OOP HP were particularly severe in Kosovo and Albania, as compared to Bosnia and Herzegovina, Montenegro and Serbia. Moreover, the same study called for repeated analyses on catastrophic health expenditure and impoverishment effects of the OOP HP, due to very dynamic policy contexts (Bredenkamp et al., 2011).

The WB analysis from 2009 and 2011 indicated equality of the OOP HP. However, the same study suggests that the positive concentration and Kakwani indices reported for 2009 and 2011 may have been due to foregone care. Based on analysis of financial risk protection measures, the same analysis indicates: Kosovo health system does not protect its citizens well from facing catastrophe and impoverishment due to the OOP HP (World Bank, 2014). On the other hand,

there is a common perception that fair financing goal in Kosovo is threatened by the fast growing and well-managed private health sector, as opposed to the increasingly invested but poorly managed public sector. The results of this study will add evidence for informed decision making towards an appropriate mix and fair competition of both publicly and privately financed health institutions.

The health financing reform planned for January 2016 is postponed to July 2017. This reform through mandatory health insurance premium collection, aims to ensure additional finance sources for the health sector that will be used to improve quality and accessibility of care, and increase availability of the drugs, especially for the poor (World Bank, 2014). Since the reforms are planned and about to be implemented, setting and maintaining this equity research mechanism through this and other studies by the NIPH is critical. This mechanism will monitor and provide evidence for corrective actions through five health system core functions the “control knobs” (payment, financing, organization, regulation, and behavior) for influencing/maintaining the health system’s performance, resulting in fair financing that will otherwise again become not understood and undetected.

To the best of our current knowledge, there are no research studies published to inform the global community on performance of the health system in Kosovo, related to utilization of health services and progressivity of the OOP HP.

All studies consider equity as one of the seven most important principles of the health system in Kosovo, as defined in the Health Law. Therefore, the underlying hypotheses of the studies are the following:

1. Socio-economic factors do not affect utilization of health services.
2. There is a fair distribution of OOP HP (progressive or at least proportional).
3. The current health financing system protects people from catastrophic health expenditure and impoverishment due to OOP HP.

Considering the absence of published studies evaluating of the performance of the health system in Kosovo, the present study focuses on the following objectives:

1. Analyze factors affecting utilization of health care services in Kosovo in: (i) outpatient among 15-year-olds and younger, (ii) outpatient among 16-year-olds and older, (iii) hospital services among 15-year-olds and younger, and (iv) hospital services among 16-year-olds and older.
2. Assess who pays for the OOP HP and evaluate distribution of the OOP HP: whether the OOP HP accounts for an increasing proportion (progressivity), unchanged proportion (proportionality) or decreasing proportion (regressivity) of the increasing Household Consumption Expenditure (HCE).
3. Evaluate financial health protection by estimating: (i) the burden of OOP health expenditure in Kosovo, (ii) the incidence of catastrophic health expenditure, and (iii) the effect of health spending on national poverty estimates; and further analyze (iv) how demographic, socio-economic and other factors are associated with catastrophic health expenditure in Kosovo.

## **3 Methods**

### **3.1 Objectives and uses of Household Budget Survey**

The empirical analyses were based on a data set drawn from a sample of the 2014 HBS of 2375 Kosovar households conducted by KAS. The HBS is the only comprehensive data set available on household expenditures in Kosovo. The aim of the HBS in Kosovo is to update the Consumer Price Index (CPI) annually, and measure private household consumption in the national accounts as well as poverty and welfare (Kosovo Agency of Statistics, 2015b). Since 2002, on a yearly basis the HBS aims to provide basic data for policy making in different sectors.

### **3.2 Sample design**

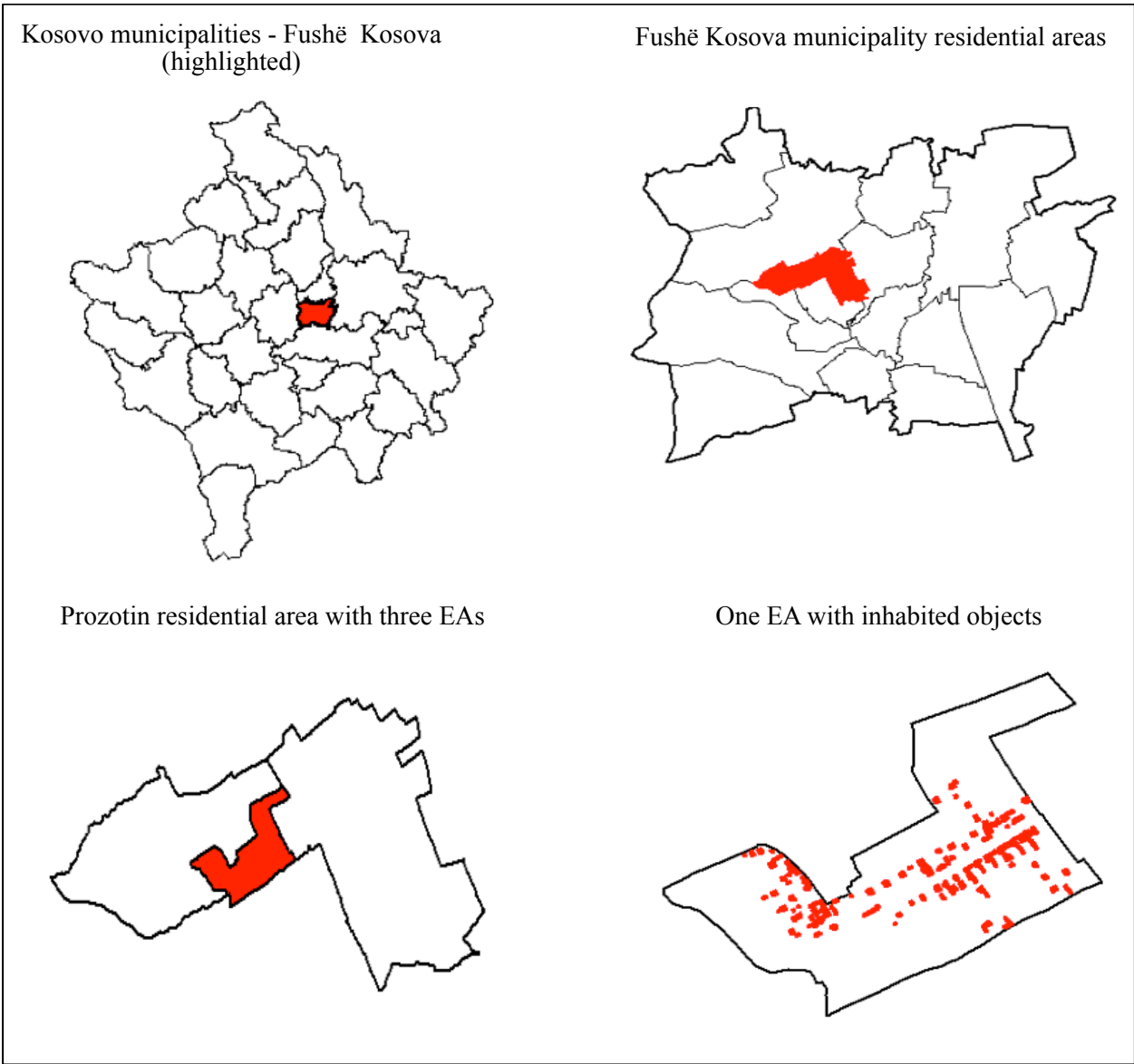
KAS designed the sample. The primary sample unit was Enumeration Area (EA) a habitat with a certain number of households. Depending on density of the buildings and dwellings and their scattering in a settlement, EAs were divided into three categories: urban, rural, and hilly or highland. Urban EA was considered a dense habitat which included 80 - 120 households; Rural EA was found to be a medium habitat and included 40 - 60 households, while hilly or mountain EA was considered a scattered habitat that included up to 40 households (Kosovo Agency of Statistics, 2011). The whole territory of Kosovo is divided into 38 municipalities, and stratified into seven regions, urban and rural areas. Schematic municipal administrative division of Kosovo into municipalities and further division into residential areas, with EAs also reflected in the hierarchy of the HBS database, are presented in Figure 3.1.

The KAS conducts the Labor Force Survey (LFS) and the HBS annually. The 2014 HBS sampling frame consisted of 4,626 EAs (2011 census sampling frame). Initially, for the purpose of the LFS, a total of 600 sample EAs in Kosovo were selected with the probability of selection proportional to the number of occupied households, stratified by region, urban/rural, of which 300 EAs were further chosen as sub-samples for the HBS. Then a sample of the first 12 households was taken from the list within each EA, with equal probability of selection. The first eight households were taken from the 300 EAs' targeted sample of 2,400 households, whereas the last four households (representing an extra 33 % sample), specially selected for this purpose, were selected randomly in case of a household's non-response within the same EA. The 2014

HBS reported 397 substituted households (Kosovo Agency of Statistics, 2015b). The substitution was applied in cases when co-operation was impossible due to refusal, temporary absence, or being unable to contact members of the household.

At the first stage the LFS and HBS samples were coordinated, since the same first stage units were used for both surveys. In the second stage the households were negatively coordinated; one household could be selected either for the LFS or HBS, but not both.

Figure 3.1 Hierarchy of the Household Budget Survey Database



Source: Kosovo Agency of Statistics, 2014

### 3.2.1 Calculation of basic design weights

The 300 sample EAs for the HBS were selected as a sub-sample of the 600 LFS sample EAs. Within each stratum (region, urban and rural) the sample EA for the HBS were chosen from the LFS sample EAs with equal probability. Therefore the first and second phase probabilities for the HBS were the same as those for the LFS. Based on the KAS sampling plan, the overall probability of selection for the HBS households in each sample EA can be expressed as follows:

$$P_{\text{HBS}hi} = \frac{n_{\text{MSh}}}{N_h} \times \frac{n_{\text{LFS}h} \times M_{hi}}{\sum_{i=1}^{n_h} M_{hi}} \times \frac{n_{\text{HBS}h}}{n_{\text{LFS}h}} \times \frac{m_{\text{HBS}hi}}{M_{hi}} = \frac{n_{\text{MSh}}}{N_h} \times \frac{n_{\text{HBS}h} \times M_{hi}}{\sum_{i=1}^{n_h} M_{hi}} \times \frac{m_{\text{HBS}hi}}{M_{hi}}$$

Where:

$P_{\text{HBS}hi}$  – The overall probability of selection for the sample households selected for the HBS in the  $i$ th sample EA in stratum  $h$  (region, urban/rural)

$n_{\text{MSh}}$  – Number of master sample EAs selected in stratum  $h$

$N_h$  – Total number of EAs in the frame for stratum  $h$

$M_{hi}$  – Number of the occupied dwelling units listed in the  $i$ th frame EA in stratum  $h$

$n_{\text{LFS}h}$  – Number of LFS sample EAs selected in stratum  $h$  from the master sample EAs

$n_{\text{HBS}h}$  – Number of HBS sample EAs selected in stratum  $h$  from the LFS sample EAs

$m_{\text{HBS}hi}$  – Number of sample households selected for the HBS in the  $i$ th sample EA in stratum  $h$

The basic weight for the HBS sample households in each EA was calculated as the inverse of this overall probability of selection, expressed as follows:

$$W_{\text{HBS}hi} = \frac{1}{P_{\text{HBS}hi}}$$

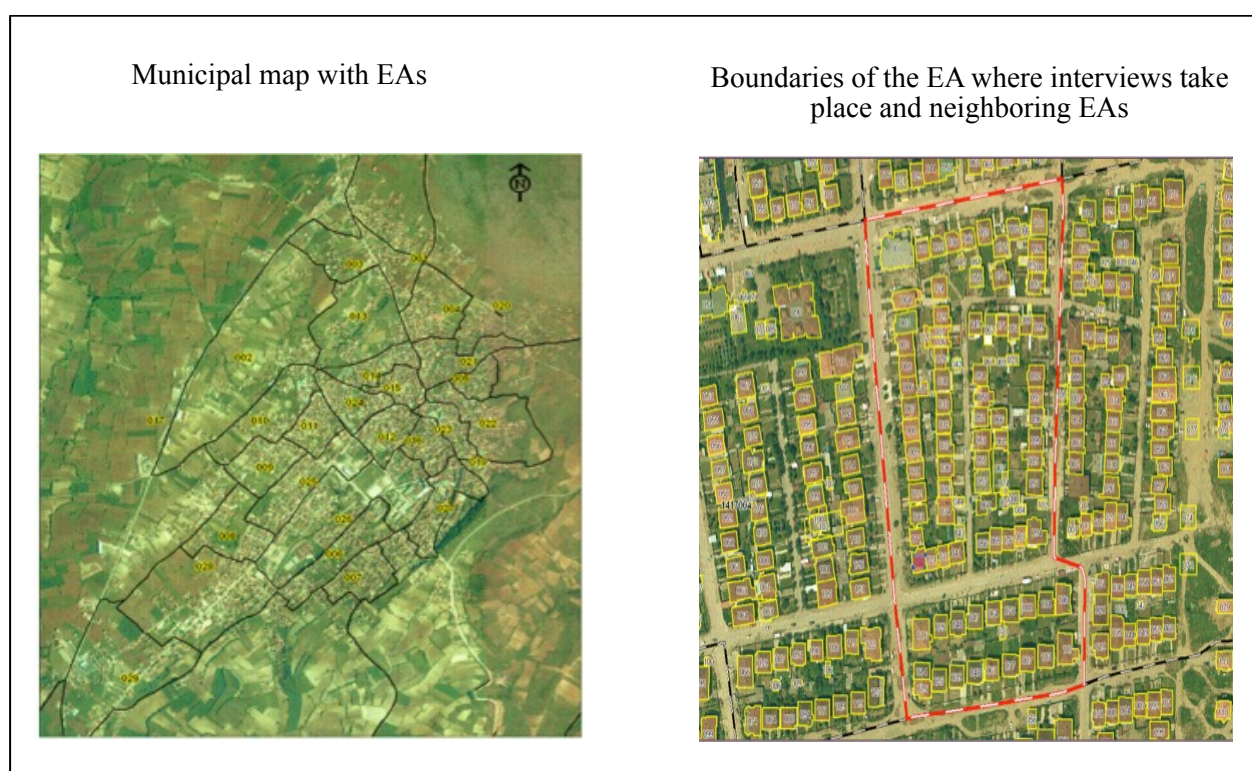
Where:

$W_{\text{HBS}hi}$  – Sampling weight for the HBS sample households selected in the  $i$ th sample EA in stratum  $h$

### 3.3 Recording period and survey instruments

Recording periods for the HBS sample were spread out over a one year survey period (starting January 1, 2014 to December 31, 2014) by interviewing 200 households per month. The recording periods were alternated over the study period to even out the effect of monthly, seasonal, and other temporal variations (EUROSTAT, 2003). The KAS used excel to select each month of the year 200 households to be interviewed randomly. The KAS in Prishtina within the selected EA identified the houses on a map. The EA boundaries where the interviews were planned to take place were marked on the map with a red and white broken line, whereas the boundaries of the neighboring EAs were marked with black and white broken lines as presented in Figure 3.2. Maps were given to the interviewers with the entrance number, block, or flat number, as well as the name of the head of the household.

Figure 3.2 Municipal and Enumeration Area boundary maps



Source: Kosovo Agency of Statistics 2014

KAS interviewers used the paper assisted personal interview as a tool for data collection and based on Kosovo Law 04/L-36, articles 19 -21.1 and 34.4 of this Law regulated the informed consent and confidentiality of the data.



The interviewers submitted “food expenditure diaries” to the respondents. These diaries included daily recordings of all food and non-alcoholic beverage consumption expenditures with a moving recording period of two weeks, and the household was in the sample during that the period that diary was filled. Four out of eight households of the selected EA wrote in the diary for the first two weeks of the month and the other four households filled in the diaries for two weeks in the second part of the month, at the time that it was represented in the sample. The diary was given to the households willing to fill in. In cases where the diaries were not filled in (or in cases when a household did not want to write in the diaries or was not able to fill in the diaries), the households were asked during the interview about their food and non-food expenditure consumption according to the HBS questionnaire for the last month.

The HBS questionnaire also recorded data on the last three months’ expenditures on clothing and footwear, furnishings, household equipment, and routine maintenance of the house, health, transport, communication, recreation and culture, restaurants and hotels, education and other services. Expenditures on durable goods (goods that can be used over a period usually three or more years) and some other items were recorded for the past 12 months. Durable goods included furniture and furnishings, carpets and other floor coverings, and other items, including gifts received as a present, assistance, gifts given and money transfers, agriculture, fishing and hunting, rental and imputed rental. Data were adjusted from monthly to annual figures.

The NIPH in close collaboration with the Ministry of Health developed a “Guide to administration and question by question specifications for the out-of-pocket health expenditure and health service utilization questionnaire”. Based on this guide, the KAS included six additional questions in the 2014 HBS questionnaire on OOP HP during the last three months: (i) private outpatient services, (ii) private hospital services, (ii) private dentistry services, (iii) private diagnostic, and (iv) treatment abroad services, (v) including ambulance, food, and travel costs, (vi) medical devices and appliances. For studying the utilization of health services the NIPH also introduced 13 additional questions that were adapted from the WHO World Health Survey questionnaire on: (i) health insurance coverage, (ii) whether or not the needed health services were obtained last time, (ii) reasons if not, (iv) whether the household member had received outpatient health service 30 days prior to the interview, (v) if yes, what were the three main reasons; (iv) if in the last 30 days household member had any drug prescribed, (vii) how many of the prescribed drugs were obtained, (viii) whether or not the household member was hospitalized during the last 12 months, (ix) the name of the hospital, (x) whether the hospital was

in Kosovo or abroad, (xi) the primary reason for hospital services abroad, (xii) country of hospital services if abroad, (xiii) main source of funding health services for the last 12 months. For purposes of this study: from the above, the following questions were used: (i) health insurance coverage, (ii) whether the household member had obtained outpatient health service 30 days before the interview, (iii) whether the household member had been hospitalized during the last 12 months.

Each question in the KAS HBS questionnaire had a unique questionnaire code and a four-digit code according to the Classification of Individual Consumption According to Purpose Codes (COICOP) (EUROSTAT, 2017).

The HBS survey was conducted through direct interview, mainly with heads of the households or the most knowledgeable household member. Two main interviews were conducted. The first interview was conducted immediately before handing over the diary. During this interview, the general part of the questionnaire and questions related to ownership were completed. The household was visited during the first week to follow up with the diary, and at the end of the second week when the diary was collected. During this visit, the non-food consumption expenditures were filled in the questionnaire.

### **3.4 Checking the data**

The KAS trains interviewers continuously. Newly employed interviewers were trained and sent into the field with more experienced interviewers. Two meetings with interviewers from all KAS HBS Unit field offices were held. Definitions of health expenditures and service utilization questions were explained.

The KAS HBS Unit data entry staff was based in Prishtina. Once the questionnaires arrived in Prishtina, the HBS Unit in the KAS checked data for errors occurring in the food diary and questionnaire, according to the KAS working document on HBS Data Processing Guidelines. Data were checked for logical and arithmetical errors. If any mistake was found it was reported in the log with relevant data, and an interviewer in the field was contacted. This was done as soon as possible so the interviewer could still remember what the answer was. Also the central office at KAS chose random questionnaires and visited households in order to check the accuracy of the questionnaires.

Data inspection of the HBS database was conducted randomly by selecting questionnaires from seven regions. The questionnaires selected were checked on whether data was entered in the database as in the questionnaire. Data inspection was done also by using the tabulation approach for summary statistics of each variable. Data were checked for average, maximum, minimum and standard deviation values.

If an error or mistake was found, the KAS HBS Unit corrected them only after consulting the interviewers and documenting all corrections. All errors and mistakes found were summarized in the report and submitted to the staff involved in the survey, data entry and data analyses. More detailed information on the HBS data processing is described in (Kosovo Agency of Statistics, 2010)

KAS was responsible for data collection and data checking. The 2014 HBS data was transformed from Access into STATA and was used for purposes of this study.

### **3.5 Source variables**

The basic unit of analysis in HBS was the household. Each person in the study belongs to one and only one household. The word “household” in Albanian is translated as “family economy” since one household can be represented by one person (with no other family members) or 2 or more families that occupy a housing unit.

The household was defined by: (i) accommodation (living together in the same dwelling unit), (ii) sharing expenditures for joint essentials of living, (iii) pooling income and resources, and (iv) family emotional ties. The 2014 HBS included the following four household categories: household with one member, household with one family with other persons, household with two or more families, the household with all members that belong to other families.

Members of the household are defined as related to the head of the household and include the following categories: spouse son/daughter, family related, not family related.

Head of the household is considered the person who contributed the most to household financial resources.

Age was reported as the number of years of the household member on their last birthdate.

Household members whose number of years on their last birth date was equal to and below 15 years were defined as children. For children less than one year of age, 0 was written. For study purposes, age of children was categorized as presented in Table 3.2.

Members of the household whose number of years on their last birth date was equal or above 16 years were defined as adults. For purposes of the study, the age of adults was categorized as presented in Table 3.3.

Households having at least one member belonging to most vulnerable age groups were considered households with at least one member equal or less than 5 year old and/or household with at least one member equal or over 65 years old.

Education level for those six and above presents the literacy and levels of schooling completed or underway. As a source variable, education level was reported in the following categories: 1) no formal education, does not read and write; 2) no formal education, reads and writes; 3) attends primary school; 4) primary school; 5) secondary school general; 6) secondary school professional; 7) high school; 8) university or higher. For purposes of this study, education level for those six and above was re-coded as presented in Table 3.2 and 3.3.

Marital status as a source variable was reported under the following categories: 1) single; 2) legally married; 3) living together with agreement; 4) widowed; and 5) divorced and not married again. Marital status of the reference person for this study purposes was re-coded as presented in Table 3.3.

The employment status variable was generated from the HBS “activity” source variable. Employment was defined as main activity of the reference person during last 12 months. All persons who were not classified as "working" or "unemployed" were considered to be inactive (EUROSTAT, 2003). The employment status variable was generated from the HBS “activity” source variable. Employment was defined as the main activity of the reference person during last the 12 months. All persons who were not classified as "working" or "unemployed" were considered to be inactive.

Settlement refers to the area of the residency and is categorized as presented in Table 3.2 and 3.3.

HCE quintiles referred to the economic status of the household and its ability to pay. HCE quintiles were estimated based on the annual HCE per adult equivalent (excluding durable goods and rent) as presented in Tables 3.1 and 3.2.

Health insurance coverage was reported as a source variable on whether the household member had health insurance coverage at the time surveyed.

Medicaments were defined as payments made for medicinal preparations and drugs; any substance or combination of substances used for the purpose of treating, diagnosing, or preventing diseases, or correcting or modifying physiological functions in human beings.

Pharmaceutical products were defined as payments made for items other than medicaments, e.g. dietary supplements (including herbal ingredients). A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. Permitted ingredients of dietary supplements include vitamins, minerals, herbs or other botanicals, and amino acids.

Medicinal devices and appliances were defined as payments made for personal medical use, such as corrective eyeglasses and contact lenses, hearing aids, dental prosthetics, ortho-prosthetics; any instrument, equipment, application material or other item intended by the manufacturer to be used by human beings aiming to increase the quality of life.

Outpatient services were defined as consultation fees paid for services delivered at the outpatient facilities funded by municipal authorities and outpatient services of the hospitals or clinics at the Kosovo Hospital University Clinical Services and private health care facilities, including those run by non-governmental organizations or religious institutions.

Dentistry services were defined as consultation fees paid for dentists' visits in public or private health facilities.

Medical analysis laboratory and radiology services were defined as payments made for any medical test or imaging services performed to aid in the diagnosis or detection of disease, performed in public or private institutions.

Hospital services were defined as payments made for administrative fees, for hospital days spent and operation fees in cases when the operation is performed in public and private hospitals.

Health services abroad payments were defined as payments made for the health services obtained in health institutions outside of the territorial borders of Kosovo.

Utilization of health services was defined as utilized/realized access to health care, and utilization of the outpatient services for the last 30 days, and being accommodated for the duration of the treatment, 12 months, at the household member level.

### **3.6 Derived variables**

Household final consumption expenditure, in the text further referred to as HCE, was used as a welfare aggregate calculated by the KAS according to Eurostat 2003 methodology and recommendations for harmonization of the HBS in the European Union. Based on four-digit Classification of Individual Consumption According to Purpose nomenclature, HCE was composed of food and non-food items. Food included alcoholic and non-alcoholic beverages. Non-food items included: clothing and footwear, housing (water, electricity, and other fuels), furnishings, household equipment and routine maintenance, health, transport, communication, recreation and culture, education, restaurants and hotels, and miscellaneous goods and services (EUROSTAT, 2017). HCE represents the annual monetary and in-kind payments on all goods and services, including the monetary value for the consumption of home made products. The HCE (excluding durable goods and rent) is used to estimate effective income after basic subsistence needs have been met. This variable reflects more accurately the ability to pay than the income reported in household surveys (Xu et al., 2003), especially in developing countries where informal employment is more common, as well as changing sources of income and more self-produced goods (O'Donnell et al., 2008b).

Food consumption expenditure represents the annual amount spent on food, including in-kind food and self-produced food.

Non-food consumption expenditure was defined as the annual amount spent on non-food items and aggregated in the HCE.

OOP HP represent households' health care expenditures for medicines, medical appliances, public and private outpatient, hospital, dentistry, diagnostic services, and treatment abroad. The expenditures also include spending in traditional medicine. They exclude transportation costs and health insurance premiums.

### **3.7 Construction of statistical parameters and analyses**

To analyze equity in OOP HP and assess the health financial risk protection in 2014 in Kosovo, the study applied the guided techniques as presented in the “Analyzing Health Equity Using Household Survey Data” (O’Donnell et al., 2008b) and the technical notes (O’Donnell et al., 2008b).

#### **3.7.1 Progressivity of out-of-pocket health payments**

To assess whether there is a fair distribution of OOP HP across expenditure quintiles, the relationship between OOP HP and HCE (ability to pay) was examined. Progressivity of the OOP HP was measured by observing departure from proportionality (OOP HP always account for the same proportion of the HCE) in the relationship between the OOP HP and the HCE. This study examined whether OOP HP comprises an increasing proportion (progressive) or a decreasing proportion (regressive) of the HCE, as the HCE increases.

The proportion approach was used to analyze, and present graphically, the progressivity of the OOP HP share (in %) across the HCE quintiles, with an average of the OOP HP (in €) across the HCE quintiles.

To assess the total distribution of OOP HP that incurred during 2014 across the HCE quintiles, following the same principle of progressivity, the relative and cumulative shares of OOP HP across the HCE quintiles were tabulated.

To assess the degree of ability to pay related to inequality in distribution of the OOP HP at the population level, STATA “glcurve” command (a downloadable program) was applied to micro data to generate the Lorenz curve for the HCE per adult equivalent and the concentration curve for the OOP HP per adult equivalent (World Bank, 2008b). Further using “two-way” command, the curves were presented graphically. The cumulative percentages of the OOP HP and HCE were plotted in y-axis against the cumulative percentage of the sample, ranked by HCE, beginning with the lowest, and ending with the highest in the x-axis.

Lorenz curve for HCE was used for the graphical representation of the ability to pay distribution. The Lorenz curve plots cumulative HCE in y-axis against the cumulative percentage of population, by HCE, beginning with the lowest, and ending with the highest HCE in the x-axis.

If the share of the population would account for the same share of HCE, the Lorenz curve would be a 45-degree straight-line. This line is known as the hypothetical line of equality.

Concentration curve for OOP HP is a graphical representation of the OOP HP distribution. The concentration curve plots the cumulative percentage of the OOP HP in the y-axis against the cumulative percentage of the population sample ranked by HCE, beginning with the lowest, and ending with the highest HCE in the x-axis (O'Donnell, 2008a). The departure from proportionality was assessed by comparing the shares of OOP HP contributed by household expenditure quintiles as shares of their ability to pay (HCE). If OOP HP always accounts for the same proportion of ability to pay, then the share of the OOP HP incurred by any groups must correspond to its household consumption (ability to pay). These points would represent a 45-degree straight-line known as the line of equality. If OOP HP has higher (lower) values amongst lower total consumption households, the concentration curve will lie above (below) the line of equality (World Bank, 2008b).

Progressivity of OOP HP is presented graphically by comparing the concentration curve of OOP HP with the Lorenz curve of HCE as a living standard and respectively ability to pay variable. When proportional, the curves coincide. Under progressivity, the Lorenz curve lies inside of the OOP HP concentration curve and vice versa for regressivity (World Bank, 2008d).

To quantify the degree of HCE related inequality in the OOP HP variable, the concentration curve is computed (World Bank, 2008c). The “glcurve” command was applied to micro data to generate HCE weighted fractional rank per adult equivalent. The “glcurve” command generated fractional rank variable HCE “rank” from the HCE variable. The “cor” command with the mean “m” and covariance “c” options was used to generate the mean of the OOP HP and the covariance between it and the HCE fractional rank. Then the “cor” command estimates the mean of the OOP HP variable and the covariance between the fractional rank variable HCE “rank” and OOP HP. The covariance between the OOP HP and HCE “rank” was 3.66 and the mean OOP HP 41.69 € per adult equivalent. These values were used in the “convenient covariance” equation from the WB publication (World Bank, 2008c) to estimate the concentration index:

$$C = 2\text{cov } y_i R_i / \mu$$

In this equation  $y_i$  is the OOP HP,  $\mu$  is its mean and  $R_i$  is the  $i$ th individual's fractional rank in HCE per adult equivalent consumption distribution. Based on this equation, the concentration index (C) is presented as a bivariate measure that quantifies inequality of the OOP HP by measuring the covariance between the mean of the annual OOP HP per adult equivalent and the fractional rank of the HCE. Concentration index (C) lies in the range from -1 to +1. The index C assumes values  $>0$  ( $<0$ ) if OOP HP are disproportionately concentrated among those with higher



ability to spend (among those with lower ability to spend). The index C becomes 0 if the distribution is proportionate.

To enable comparison of OOP HP progressivity across other countries and time, the Kakwani index was computed. The Kakwani index is estimated directly from the “convenient regression” shown in equation 1 (World Bank, 2008d):

$$2\sigma_R^2 \left[ \frac{h_i}{\eta} - \frac{y_i}{\mu} \right] = \alpha + \beta R_i + u_i$$

In this equation  $h_i$  is the OOP variable for  $i$ th household,  $\eta$  its mean,  $y_i$  is HCE variable, and  $\mu$  is its mean.  $R_i$  is household fractional rank in the HCE distribution and  $\sigma_R^2$  sample variance of the fractional rank. The ordinary least squares estimate of the  $\beta$  represents the value of the Kakwani index (World Bank, 2008d). The Kakwani index values lie in the range from  $-2$  (indicating severe regressivity) to  $+1$  (indicating strong progressivity) of the OOP HP (De Maio, 2007). Positive values of Kakwani index mean that the OOP HP reduces inequalities (highest expenditure quintiles pay more), and negative values increases inequalities (lowest expenditure quintiles pay more); whereas zero indicates that OOP HP does not change equity in consumption expenditure (Carrin et al., 2009).

### 3.7.2 Incidence and intensity of catastrophic health expenditure

Methods used to estimate the catastrophic health expenditure measures are illustrated in Table 3.1. Catastrophic health expenditure represents the share of HCE and non-food expenditures. In Table 3.1 are also presented different thresholds ( $z$ ) for the catastrophic health expenditure share, at which one can consider occurrence of the adverse effects of catastrophic health expenditure on the living standard and ability to pay. The reader can choose any threshold as cut-off point for the adverse effects of catastrophic health expenditure. The cut-off point remains a matter of judgment. However, in this study, analyses are presented using the two most common thresholds: 10 % when using the HCE as denominator and 40 % when using the non-food consumption expenditure, as shown in equation 18.1 (O’Donnell et al., 2008b). An indicator function for headcount was defined as 1 if the argument was true (individual lived under the threshold  $z$ ) and 0 otherwise. The incidence of catastrophic health expenditure (headcount ratio) was defined as the share of the population whose OOP HP exceeded the threshold ( $z$ ). Since this measure did not present the extent to which households surpassed the threshold  $z$ , the overshoot was estimated as per equation 18.2 (O’Donnell et al., 2008b). The overshoot was defined as the

average percent of OOP HP that exceeded threshold z only across the population, while the Mean Positive Overshot (MPO) was only across those that incurred catastrophic health expenditure for individuals who incurred OOP HP, as illustrated in Table 3.1.

Table 3.1 Illustration for estimation of catastrophic health expenditure measures

	Percent of HCE spent on health	Catastrophic health expenditure headcount	Overshot
Household 1	50 %	1	40.0 %
Household 2	35 %	1	25.0 %
Household 3	25 %	1	15.0 %
Household 4	20 %	1	10.0 %
Household 5	10 %	0	0 %
Household 6	5 %	0	0 %
Total %		4/6=67 %	90 %
Mean Overshot			90/6=15 %
Mean Positive Overshot (MPO)			90/4=23 %

While headcount measures the incidence of experiencing catastrophic health expenditure, the overshoot measures the intensity of such experience across all populations; the MPO is estimated as a proportion of both measures, as presented in equation 18.3 (O’Donnell et al., 2008b).

**3.7.3 Poverty line and poverty headcount**

Definition of the poverty line was conducted in two stages. The first stage was to estimate the welfare aggregate HCE as defined in section 3.6. The second required calculating the poverty line, defined as minimum welfare level below which the individual is considered poor.

Initially, based on two weeks’ food expenditure, monthly food expenditure was estimated. Monthly non-food expenditure was added to calculate total household expenditure. Monthly household consumption was further added to total household expenditure to calculate the HCE. Since the HCE is related to household size and demographics, the HCE was estimated per adult equivalent (adjusted for household size and age of its members). Annual HCE and non-food consumption expenditure per adult equivalent were reported.

Official poverty estimates in this study were based on consumption per adult equivalent. The HCE was adjusted for adult equivalents and economies of scale as recommended by KAS. There is an established equivalence scale for Kosovo, defined as follows:

$$AE = (A + \alpha K)^\theta$$

A is the number of adults in the household and K is the number of children. The  $\alpha$  is the cost of a child as compared to that of an adult, and has assigned values 0 to 1. The equivalence scale as recommended by the KAS and WB was used, with an assigned value for children (0.75), which is higher than the values assigned to children by the OECD equivalence and modified scales (0.5 and 0.3 for each child). In this study it is assumed that consumption needs of the children (household members aged  $\leq 15$ ) were two-thirds of the consumption needs of the adults (household members aged  $\geq 16$ ). In this study  $\alpha$  equals 0.75. The  $\theta$  may also have assigned values from 0 to 1 and represented economy of scale at the household, meaning that there is no economy of scale when  $\theta$  equals one. In this study, the  $\theta$  equaled 0.75.

Monetary values in this study are reported in € and are adjusted for inter-temporal price variation because the data collection period was spread over one year. This study used monthly information on prices of the 12 COICOP groups for Kosovo. Using the 2014 CPI (Berisha et al., 2015), the monetary values were normalized and presented in real prices if not otherwise stated.

The poverty line is computed based on daily cost of the set of basic food and non-food items as defined by the KAS in 2002. Normalized CPI for 2014 was estimated and was used to account for changes in prices (2014). The food component represented the cost calorie intake of 2100 kilocalories per person per day, as estimated by KAS using the Cost of Basic Needs Method (Simler et al., 2011). The cost according to the KAS was determined considering average consumption of households near the poverty line, whereas the non-food component represented the share of total expenditures that poor households allocated to non-food items (Simler et al., 2011) within the poverty line. The year 2002 was the base year for the Kosovo c CPI. Monetary values in this study were normalized using the 2014 CPI for all items (Berisha et al., 2015) and were presented in real prices. The 2014 the poverty line was defined as:

$$PL = (1.417 * 127.0 / 99.0) * 365$$

PL – stands for annual poverty line, the value of 1.417 represents basic needs in € in 2002 as estimated by KAS. The value of 127.0 represents the average CPI for 2014, whereas 99.0 represents the average value of the CPI for 2014, multiplied by the number of calendar days; the estimated annual poverty line is presented in the results chapter. Annual poverty consumption

per adult equivalent at the population level was presented in the results part.

The pre-payment headcount measured the percentage of the poor population, whose consumption per adult equivalent was less than the estimated poverty line for 2014, before incurring OOP HP. This percentage equaled the poverty headcount.

#### **3.7.4 Impoverishment due to out-of-pocket health payments**

Post-payment headcount is defined as the absolute percent change in the share of the population that falls under the poverty line and becomes poor after accounting for OOP HP.

Impoverishment is defined as the relative percent change of the population share that falls below the poverty line after incurring OOP HP.

The poverty gap is estimated as the amount in € that would have to be transferred to the poor to bring their consumption expenditures (after accounting for OOP HP) up to the poverty line (as a proportion of the poverty threshold) (World Bank, 2005) .

#### **3.7.5 Analyses of the factors associated with health service utilization**

This study used utilization of health services as a proxy measure to assess the access to health care services (Roberts J. M. et al., 2008, Oliver and Mossialos, 2004). The Andersen's Behavioral Model was used to analyze and categorize the potential factors that influence utilization of outpatient and inpatient health services among 15-year-olds and younger and 16-year-olds and older. Household members characteristics from the 2014 HBS were grouped under: (i) predisposing, (ii) enabling and (iii) need factors. Predisposing factors were mostly considered demographic characteristics that cannot be or are not easily influenced. Enabling factors were considered those that can be influenced by the individual or society, whereas the need factor was considered to be related directly or indirectly to health status. The variables used to measure these factors differed among age groups 15-year-olds and younger (Table 3.2) and 16-year-olds and older (Table 3.3).

Table 3.2 Variables in regression analysis of health service utilization among children

Independent factors/variables	Description	Measurement
<b>Predisposing factors</b>		
Age groups	Household member age categories	Ordinal variable: 1 = 0 - 4 years 2 = 5 to 10 years 3 = 11 to 15 years
Gender	Gender of the household member	Bivariate variable: 1 = male, 2 = female
Household type	Composition of the household	Ordinal variable: 1 = One person/family 2 = One family with other persons 3 = Two or more families
Settlement	Household in urban/rural area	Bivariate variable: 1 = urban, 2 = rural
<b>Enabling factors</b>		
Head of household education level	The level of education of the head of the household	Ordinal variable: 0 = Primary or no formal education 1 = Secondary or higher education
Head of household employment status	Head of the household's main activity last 12 months	Bivariate variable: 1 = Employed 2 = Unemployed or inactive
Head of household health insurance status	Head of household has health insurance coverage	Dummy variable: 1 = yes, 0 = no
HCE quintile (€)	Households ranked in increasing order quintiles according to annual HCE per adult equivalent (excluding durable goods and rent) presenting the cut-off points for each quintile	Ordinal variable: Lowest I = 45 - 652 II = 653 - 849 III = 850 - 1064 IV = 1065 - 1365 Highest V = 1366 - 5768

To analyze factors that affect utilization of health services (inpatient and outpatient services) among 15-year-olds and younger, the following predisposing factors were considered: age categories, gender, household size, household type and settlement (urban/rural). For enabling factors, the households' head education level, employment, and health insurance status were examined. The enabling factors for the 15-year-olds and younger were defined by the attributes of the household head in contrast to the 16-year-olds and older that were reported at the household member level. Among the enabling factors, HCE was also tested as the ability to pay variable. Table 3.2 outlines the individual level variables used in regression analyses of the health service utilization among 15-year-olds and younger.

To analyze factors that affect utilization of health services (inpatient and outpatient services) among 16-year-olds and older, the following predisposing factors were considered: age categories, gender, marital status, household size and type, and settlement area. Enabling factors were considered education level, employment and health insurance status, and the HCE. Self-reported Body Mass Index (BMI) was used to indicate the need for utilization of health services among 16-year-olds and older. Based on the self-reported height and weight, BMI was defined as body weight in kilograms divided by square of height in meters (Centers for Disease Control and Prevention, 2017). Table 3.3 outlines the individual level variables used in regression analyses of the health service utilization among 16-year-olds and older.

To identify potential covariates to be tested in the multivariate models for each model separately, initially bivariate statistics (Chi-square test) were tested. It used a threshold of  $p < 0.1$  to determine the statistical significance of potential covariates in the multivariate analyses so that any potentially relevant variables that influence health service utilization were not missed.

Correlation of the explanatory variables was analyzed through a correlation matrix, which was generated using the STATA “corr\_svy” command, considering sampling weights and stratification (survey-based variance estimates). The correlation of  $r > 0.5$  was considered collinear. To control potential confounding when two or more covariates were found to be collinear, the covariate most strongly associated and most reasonably conceptualized with utilization of health services (outpatient and hospital services) was included in the model. The variables were entered in a hierarchical approach in the model based on their  $p < 0.05$ , which identified significance of the determining factors and level of association with utilization of outpatient and hospital services among 16-year-olds and older.

For utilization of outpatient services among 15-year-olds and younger, the following logistic models were presented: Model 1 including predisposing factors only, Model 2 including predisposing and enabling factors, and Model 3 including predisposing, enabling and need factors. Following the models for inpatient health services were presented: Model 1 including predisposing factors only, Model 2 including predisposing and enabling factors, and Model 3 including predisposing, enabling and the need factors.

Table 3.3 Variables in regression analysis of health service utilization among adults

Independent factors/variables	Description	Measurement
<b>Predisposing factors</b>		
		Ordinal variable: 1 = 16 - 30 2 = 31 - 45 3 = 46 - 59 4 = 60 and above
Age groups	Household member age categories	
Gender	Gender of the household member	Bivariate variable: 1 = male, 2 = female
		Categorical variable: 1 = Single 2 = Legally married/living together 3 = Widowed 4 = Divorced and not married again
Marital status	Marital status of the household member	
		Ordinal variable: 1 = One person/family 2 = One family with other persons 3 = Two or more families
Household type	Composition of the household	
Settlement	Is household settled in urban or rural area	Bivariate variable: 1 = urban, 2 = rural
<b>Enabling factors</b>		
		Ordinal variable: 1 = No formal education 2 = Primary school 3 = Secondary school 4 = Higher school or University
Education level	The level of education of the household member	
		Categorical variable: 1 = Employer/employed 2 = Pupil, student 3 = Retired 4 = Unemployed 5 = Housewife/house worker 6 = Disabled and other
Employment status	The employment status of the household member	
Health insurance status	The household member is insured	Dummy variable: 1 = yes, 0 = no
		Ordinal variable: Lowest I = 45 - 652 II = 653 - 849 III = 850 - 1064 IV = 1065-1365 Highest V = 1366 - 5768
HCE quintiles (€)	Households ranked in increasing order quintiles according to annual HCE per adult equivalent (excluding durable goods and rent) presenting the cut-off points for each quintile	
<b>Need factor</b>		
		Ordinal variable: Underweight BMI < 18.5 Normal weight BMI >= 18.5 to < 24.9 Overweight BMI = 25 – 29.9 Obese BMI >= 30 obese
BMI	Self reported BMI	

For utilization of outpatient services among 16-year-olds and older, the following logistic models were presented: Model 1 including predisposing factors only, Model 2 including predisposing and enabling factors, and Model 3 including predisposing, enabling and need factors. Also, the following models for inpatient health services were presented: Model 1 including predisposing factors only, Model 2 including predisposing and enabling factors, and Model 3 including predisposing, enabling, and the need factors.

### **3.7.6 Analysis of factors associated with catastrophic health expenditure**

The logistic regression model was used to identify variables associated with catastrophic health expenditure. Table 3.4 presents and describes briefly the variables considered in the logistic regression model. Based on available data and existing literature, this study examined socio-demographic variables that may be associated with catastrophic health expenditure.

To identify correlated binary variables, the Pearson's R correlation coefficient was used. Collinear variables were considered those with correlations of  $r > 0.5$ . To avoid missing any potential relevant variables for the model, a threshold of  $p < 0.1$  was used.

Correlation of explanatory variables for the catastrophic health expenditure was analyzed through a correlation matrix which was also generated by using the STATA "corr\_svy" command, considering sampling weights and stratification (survey-based variance estimates). The correlations of  $r > 0.5$  were considered collinear. To control potential confounding, when two or more covariates were found to be collinear, the covariate most strongly associated and most reasonably conceptualized with the context, was included in the model.

Using catastrophic health expenditure (10 % or more household consumption) as outcome variable by stepwise entering/removing the explanatory variables from the model identified statistically significant variables (predictors) that influenced occurrence of the catastrophic health expenditure. Explanatory variables with  $p < 0.05$  were included in the model and were removed from the model if  $p > 0.1$ , except when the variable was considered a significant predictor.

STATA was used to analyze data. The sampling weights as defined by KAS were applied throughout the analyses. Excel was used to assess direct progressivity of the OOP HP as the share of HCE.



Table 3.4 Variables in the regression analyses of catastrophic health expenditure

Independent variable	Description	Measurement
Household size	Total number of the members living in the household	Continuous variable
Education	The level of education of the head of the household	Dummy variable: 0 = primary or lower 1 = secondary or higher
Most vulnerable age groups	At least one or more member of the household aged under 5 years	Dummy variable: 1 = yes, 0 = no
	At least one or more members of the household aged 65 or more	Dummy variable: 1 = yes, 0 = no
Gender	Gender of the household head	Dummy variable: 1 = male, 2 = female
Health insurance	At least one member of the household is covered by health insurance	Dummy variable: 1 = yes, 0 = no
	Head of the household is covered by health insurance	Dummy variable: 1 = yes, 0 = no
	At least one employed member in the household	Dummy variable: 1 = yes, 0 = no
	At least one unemployed member in the household	Dummy variable: 1 = yes, 0 = no
Employment status	At least one inactive (members not defined as employed or unemployed) member in household	Dummy variable: 1 = yes, 0 = no
	At least one disabled member in household	Dummy variable: 1 = yes, 0 = no
	Employment status of the Head of the Household	Dummy variable: 1 = yes, 0 = no
Payment for inpatient care	Has any member of the household paid for inpatient care in the past 12 months?	Dummy variable: 1 = yes, 0 = no
Settlement	Is household living in urban or rural area	Dummy variable: 1 = rural, 0 = urban
HCE quintiles (€)	Households ranked in increasing order quintiles according to annual HCE per adult equivalent (excluding durable goods and rent) presenting the cut-off points for each quintile	Ordinal variable: Lowest I = 45 - 652 II = 653 - 849 III = 850 - 1064 IV = 1065-1365 Highest V = 1366 - 5768
Health insurance coverage	At least one member of household has health insurance coverage	Dummy variable: 1 = yes, 0 = no
	Head of household has health insurance coverage?	Dummy variable: 1 = yes, 0 = no
Health care utilization	At least one member of the household is hospitalized during past 12 months?	Dummy variable: 1 = yes, 0 = no

### **3.8 Ethical considerations**

The study protocol with additional health questions to the HBS 2014 was submitted to the Ethical Committee of the Medical Faculty Prishtina University, and the Research Ethics Committee of the Ludwig-Maximilians-Universität of Munich; it was approved in Kosovo under decision number 1448 and in Germany under decision number 232-15.

The HBS was conducted by the KAS. The consent, the right to be informed, and the obligation of confidentiality were implemented based on the Law of Official Statistics in Kosovo.

## 4 Results

### 4.1 Household characteristics

Table 4.1 presents descriptive analyses of household characteristics. The average household size in Kosovo is 5.49. Approximately half of households (55.16 %) have at least one member equal to or less than five years old and/or 65 years and older.

Table 4.1 Description of Kosovo household characteristics, 2014

Total number of households	2375
Mean annual HCE per adult equivalent (€)	1088.23
Mean household size	5.49
Households with at least one member less than 5 years or less (%)	27.41
Households with at least one member 65 years or more (%)	35.63
Education of household head, primary or lower (%)	37.07
Households with male head (%)	91.94
Head of the household covered with health insurance (%)	7.68
Households with at least one member covered by health insurance (%)	8.33
Households with employed head (%)	57.95
Households at least one member employed (%)	78.75
Households with a disabled member during past 12 months (%)	5.24
Households with at least one member being hospitalized during past 12 months (%)	17.71

Most of the households' heads are male (91.94 %). Of all households' heads, 37.07 % have a primary or lower level education, and only 7.68 % of them are covered by a health insurance scheme. Of all households, only 8.33 % have at least one member covered by a health insurance scheme.

### 4.2 Factors associated with outpatient health service utilization

Of 2,400 households planned, 2,375 households participated in the survey and comprised 12,781 household members, with 3,319 being 15-year-olds or younger and 9,462 being 16-year-olds or older. Of the 12,781 household members, 12,550 (98.19 %) members provided an answer to the

question whether or not outpatient services had been utilized 30 days before the interview. Of those, 3,254 (25.93 %) subjects were 15-year-olds or younger, and 9,296 (74.07) were 16-year-olds or older (Table 4.2).

Table 4.2 Frequency of outpatient services utilization by age, 2014

	15-year-olds and younger		16-year-olds and older		Total	
	N	%	N	%	N	%
Sample size	3,319	25.97	9,462	74.03	12,781	100.00
Utilized outpatient services last 30 days						
Yes	670	5.34	1,875	14.94	2,545	20.28
No	2,584	20.59	7,421	59.13	10,005	79.72
Total	3,254	25.93	9,296	74.07	12,550	100.00

Only one-fifth of the population in Kosovo reported having utilized outpatient services 30 days before the interview; of that, one-fourth were 16 years old or younger.

**4.2.1 Factors associated with outpatient services utilization among children**

Of the 3,319 subjects reported as 15-year-olds and younger in our sample, 3,254 (76.68 %) reported whether or not they had utilized outpatient services. Only 670 (5.34 %) of those said they had used outpatient services 30 days before the interview. The mean age among 15-year-olds and younger was 8.16. This study indicates that 6.55 % of heads of households with children had no formal education. Other characteristics studied in the sample can be seen in Table 4.3.

Bivariate analyses indicated that gender (predisposing factor) and expenditure quintiles, head of the household’s education level, and employment status (enabling factors) were not significantly associated with utilization of outpatient services among 15-year olds and younger. Household size and type were found collinear. To control potential confounding, the household type was tested in the multivariate model since it was more strongly associated with utilization of outpatient services.

Table 4.3 Regression models: outpatient services utilization among children, 2014 (N = 3,250)

Factors	Categories	Model 1			Model 2				
		OR	Confidence interval 95 %		P	OR	Confidence interval 95 %		P
<b>Predisposing factors</b>									
Age groups	0-4		1.00		0.001		1.00		0.001
	5 to 10	0.52	0.41	0.65		0.51	0.41	0.64	
	11 to 15	0.28	0.22	0.36		0.28	0.22	0.36	
Gender	Male		1.00				1.00		0.819
	Female	0.97	0.81	1.17	0.774	0.98	0.81	1.18	
Household type	One person/family		1.00		0.131		1.00		0.077
	One family with other persons	1.08	0.80	1.46		1.11	0.82	1.51	
	Two or more families	1.24	1.00	1.53		1.30	1.03	1.64	
Residential area	Urban		1.00				1.00		
	Rural	1.82	1.53	2.17	0.001	1.84	1.54	2.21	0.001
<b>Enabling factors</b>									
Head of household education level	Primary or no formal education						1.00		
	Secondary or higher education					1.14	0.92	1.40	0.230
Head of household employment status	Employed						1.00		
	Unemployed					0.98	0.80	1.22	0.877
Head of household insurance coverage	No						1.00		
	Yes					2.19	1.45	3.31	0.001
Household consumption expenditure quintile (€)	45 - 652						1.00		0.226
	653 - 849					0.89	0.66	1.20	
	850 - 1064					1.00	0.75	1.32	
	1065-1365					1.05	0.78	1.42	
	1366 - 5768					0.75	0.55	1.02	

Estimated empirical results of the multivariate logistic regression presented in Table 4.3, Model 1, including only predisposing factors, shows the significance of age and settlement area in utilizing outpatient services. This model indicates that the older the children get, the less they use outpatient services. Also, the same model suggests that the children from rural areas tend to use more outpatient services as compared to the children from urban areas.

Model 2 presented in Table 4.3 includes both predisposing and enabling factors. This model shows the significance of age, household type and settlement area in the utilization of outpatient

services among 15-year-olds and younger. The same model indicates that no enabling factor variable, except for head of household insurance coverage, is significantly associated with outpatient health service utilization among 15-year-olds and younger.

Model 2 from Table 4.3 shows that younger children tend to use more outpatient services than the older do. Children from rural areas use more outpatient services as compared to their peers those from the urban areas. The more composite the household type of the child, the more they use the outpatient services. Also, children whose household heads have health insurance coverage have twice the odds of using outpatient services as compared to those whose heads do not have health insurance coverage.

#### **4.2.2 Factors associated with utilization of outpatient services among adults**

Of the 9,462 subjects 16-year-olds and older with a mean age of 39.86, 9,296 (97.69 %) of the respondents reported on whether or not to have utilized outpatient services during the last 30 days before the interview (Table 4.2). Of those, 1,875 (14.94 %), with a mean age of 53.33 years, reported to have used outpatient services in the last 30 days.

Bivariate analyses indicated that only household size and residence area (predisposing factors) and expenditure quintiles (enabling factors) were not significantly associated with utilization of outpatient services among 16-year-olds and older. When a correlation matrix for the model variables was generated, the correlation between household size and household type was found to be 0.6. The household type was considered a more important variable as opposed to household size, and was included in the model. The study indicated that marital and employment status are important confounders of the relationship between outpatient health care utilization and age categories, and, respectively, gender.

Results of hierarchical logistic regression analysis of the factors associated with outpatient services utilization among 16-year-olds and older are presented in Table 4.4.

Table 4.4 Regression models: outpatient health service among adults, 2014 (N = 9,291)

Factors	Categories	Model 1			Model 2			Model 3				
		OR	Confidence interval 95 %		P	OR	Confidence interval 95 %		P	OR	Confidence interval 95%	
<b>Predisposing factors</b>												
Age groups	16 - 30		1.00		0.001	1.00		0.001	1.00		0.001	
	31- 45	1.81	1.52	2.15		1.75	1.47	2.08		1.80	1.50	2.17
	46 - 59	3.99	3.38	4.71		3.79	3.20	4.49		3.87	3.21	4.66
	60 and above	12.86	10.84	15.25		11.08	9.16	13.40		11.37	9.27	13.93
Gender	Male		1.00			1.00				1.00		
	Female	1.70	1.51	1.91	0.001	1.54	1.36	1.75	0.001	1.52	1.34	1.73
Type of household	One person/family		1.00		0.893	1.00		0.780	1.00		0.763	
	One family with other persons	1.00	0.83	1.19		1.01	0.84	1.21		1.01	0.84	1.21
	Two or more families	1.01	0.88	1.15		1.03	0.91	1.18		1.04	0.91	1.18
	Members from different families	0.62	0.19	2.08		0.56	0.16	2.01		0.56	0.16	1.98
Residential area	Urban		1.00			1.00				1.00		
	Rural	1.05	0.94	1.18	0.371	0.98	0.87	1.10	0.739	0.98	0.87	1.11
<b>Enabling factors</b>												
Education level	No formal education					1.00		0.001	1.00		0.001	
	Primary school					0.95	0.78	1.16		0.95	0.77	1.16
	Secondary school					0.73	0.58	0.92		0.74	0.59	0.92
	Higher school or University					0.58	0.44	0.76		0.59	0.45	0.77
Insurance coverage	Yes					1.00				1.00		
	No					0.54	0.41	0.70	0.001	0.54	0.41	0.70
Household consumption expenditure quintile (€)	45 - 652					1.00		0.530		1.00		0.554
	653 - 849					0.99	0.82	1.20		0.98	0.81	1.19
	850 - 1064					0.87	0.71	1.06		0.87	0.71	1.06
	1065 -1365					0.99	0.82	1.20		0.99	0.82	1.20
	1366 - 5768					1.00	0.82	1.22		1.00	0.82	1.21
<b>Need factor</b>												
BMI	< 15.5 underweight									1.00		0.008
	>= 18.5 to <25 – 24.9 normal weight									0.79	0.55	1.13
	>= 25 – 29.9 overweight									0.73	0.50	1.06
	>= 30 obese									1.02	0.67	1.53

Model 1, including only predisposing factors, showed significant association of gender and age in utilizing the outpatient services. Women tended to use more outpatient services than men did. The odds of using outpatient services rose with the age of the users. Model 2, including both predisposing and enabling factors, continued to show significance in gender and age in the utilization of outpatient services. Health insurance coverage and education level of the household head showed significant association with odds of outpatient services utilization. Finally, the results of Model 3 continued to demonstrate the significance of gender, age, education level, and insurance coverage in the utilization of outpatient services among 16-year-olds and older. The increase of self-reported BMI decreased odds of utilizing outpatient services for normal and overweight patients, but slightly increased the odds for obese patients, as compared to those underweight ones.

### 4.3 Factors associated with utilization of hospital services

Of the 12,781 household members, 11,638 (91.06 %) members provided an answer to the question whether or not they were hospitalized 12 months before the interview. In total, 4.93 % of the population was hospitalized during 2014. Of those, 96 (0.82 %) subjects were 15-year-olds or younger, and 478 (4.11 %) were 16-year-olds or older (Table 4.5).

Table 4.5 Frequency of hospital services by age, 2014

	15-year-olds or younger		16-year-olds or older		Total	
	N	%	N	%	N	%
Sample size	3,319	25.97	9,462	74.03	12,781	100.00
<b>Hospitalized last 12 months</b>						
Yes	96	0.82	478	4.11	574	4.93
No	2,899	24.91	8,165	70.16	11,064	95.07
Total	2,995	25.73	8,643	74.27	11,638	100.00

#### 4.3.1 Factors associated with utilization of hospital services among children

When tested in a bivariate manner only, among all factors (predisposing and enabling), age groups and household type were significantly associated with hospitalization among 15-year-olds and younger. When generating the correlation matrix for the model variables, correlation



was found between household size and type was found (0.6). The model included the household type variable. Explanatory variables for hospital services included in the hierarchical logistic regression analysis are presented in Table 4.6.

Table 4.6 Regression models: hospital services utilization among children, 2014 (N=2,991)

Factors	Categories	Model 1			Model 2				
		OR	Confidence interval 95 %		P	OR	Confidence interval 95 %		P
<b>Predisposing factors</b>									
Age groups	0-4		1.00		0.001		1.00		0.001
	5 to 10	0.21	0.11	0.39		0.20	0.11	0.38	
	11 to 15	0.23	0.13	0.39		0.21	0.12	0.37	
Gender	Male		1.00				1.00		
	Female	0.76	0.48	1.20	0.241	0.77	0.48	1.21	0.254
Household type	One person/family		1.00		0.320		1.00		0.362
	One family with other persons	1.62	0.82	3.17		1.61	0.82	3.14	
	Two or more families	1.32	0.81	2.15		1.27	0.75	2.15	
Residential area	Urban		1.00				1.00		
	Rural	0.84	0.54	1.31	0.446	0.80	0.51	1.25	0.327
<b>Enabling factors</b>									
Head of household education level	Primary or no formal education						1.00		
	Secondary or higher education					0.97	0.59	1.59	0.900
Head of household employment status	Employed						1.00		
	Unemployed					1.11	0.66	1.85	0.699
Head of household insurance coverage	No						1.00		
	Yes					1.32	0.48	3.58	0.588
Household consumption expenditure quintile (€)	45 - 652						1.00		0.193
	653 - 849					1.44	0.72	2.89	
	850 - 1064					1.39	0.68	2.84	
	1065 -1365					1.82	0.92	3.61	
	1366 - 5768					0.79	0.37	1.69	

Model 1 includes only predisposing factors and shows significant results for age only. The older the children get, the odds of being hospitalized become less. The difference in using hospital services among 15-year-olds and younger was found insignificantly associated with gender, household type, and settlement area. Next, Model 2, including all predisposing factors from Model 1 and enabling factors from household level, continued to show a significant increasing

dose-response relationship in odds for being hospitalized as age increased. Model 2 indicates no significant variable among the enabling factors to have a significant influence on the odds of being hospitalized among 15-year-olds and younger.

#### **4.3.2 Factors associated with hospital services utilization among adults**

Bivariate analyses indicate that all predisposing factors (age, gender, marital status, household type), except for settlement area (urban/rural), are significantly associated with the odds of being hospitalized among adults in Kosovo. Bivariate analyses of the enabling factors (education level and employment status) are significantly associated with the odds of being hospitalized among 16-year-olds and older; health insurance coverage and economic status (enabling factors) are not. The self-reported BMI (need factor) is significantly associated with odds of being hospitalized among 16-year-olds and older.

Correlation matrix of the model variables indicated collinearity between marital status and age (0.7), household size and household type (0.6), as well as employment status and gender (0.5). Considering the importance of the independent variables related to context and outcome, the study did not include model variables such as marital status, household size, and employment status.

In Table 4.7 presents the results of hierarchical logistic regression analysis related to the odds of being hospitalized among 16-year-olds and older. Model 1 shows the results for the odds of being hospitalized when tested only for enabling factors of age, gender, and household type. The older the household members, the odds of being hospitalized increases significantly. The significance is also shown for gender and household type. Females, as well as those who live in a composite type of household, have higher odds of being hospitalized as compared to males, and respectively those residing in a one person/family type of household.

Model 2 includes enabling factors, besides the predisposing factors (sex, age, and household type). The predisposing factors continue to remain significant. The education level but not economic and health insurance status were associated with the odds of being hospitalized among 16-year-olds and older. Increasing educational attainment showed significant decreasing dose response in odds of being hospitalized.

Table 4.7 Regression models: hospital services utilization among adults, 2014 (N=8637)

Factors	Categories	Model 1			Model 2			Model 3					
		OR	Confidence interval 95 %		P	OR	Confidence interval 95 %		P	OR	Confidence interval 95 %		P
<b>Predisposing factors</b>													
Age groups	16 - 30		1.00		0.001		1.00		0.001		1.00		0.001
	31- 45	1.11	0.83	1.47		1.08	0.82	1.44		1.04	0.77	1.42	
	46 - 59	1.36	1.02	1.81		1.32	0.98	1.76		1.22	0.87	1.71	
	60 and above	2.47	1.87	3.26		2.09	1.52	2.88		1.95	1.36	2.79	
Gender	Male		1.00		0.001		1.00		0.001		1.00		
	Female	1.86	1.51	2.29		1.79	1.43	2.23		1.80	1.43	2.26	0.001
Type of household	One person/family		1.00		0.028				0.017		1.00		0.020
	One family with other persons	1.06	0.77	1.45		1.04	0.75	1.43		1.03	0.75	1.42	
	Two or more families	1.38	1.11	1.72		1.41	1.13	1.77		1.40	1.12	1.75	
	Members from different families	1.58	0.46	5.43		1.54	0.44	5.41		1.62	0.46	5.74	
Residence	Urban		1.00								1.00		
	Rural	0.97	0.80	1.18	0.771	0.98	0.80	1.20	0.823	0.98	0.80	1.21	0.865
<b>Enabling factors</b>													
Education level	No formal education						1.00		0.013		1.00		0.013
	Primary school					0.65	0.47	0.90		0.65	0.47	0.89	
	Secondary school					0.73	0.51	1.05		0.73	0.51	1.05	
	Higher school or University					0.51	0.32	0.81		0.51	0.32	0.81	
Insurance coverage	Yes						1.00				1.00		
	No					0.92	0.57	1.48	0.730	0.92	0.57	1.48	0.726
Household consumption expenditure quintile (€)	45 - 652						1.00		0.050		1.00		0.058
	653 - 849					1.08	0.77	1.50		1.07	0.77	1.49	
	850 - 1064					1.05	0.74	1.47		1.04	0.74	1.47	
	1065 -1365					0.91	0.64	1.28		0.91	0.64	1.28	
	1366 - 5768					1.42	1.03	1.95		1.41	1.02	1.94	
<b>Need factor</b>													
BMI	< 15.5 underweight										1.00		0.010
	>= 18.5 to <25 - 24.9 normal weight									2.41	1.14	5.10	
	>= 25 overweight									2.31	1.05	5.09	
	>= 30 obese									3.44	1.51	7.83	

Insignificant dose response was found among the members of the households in the lowest expenditure quintiles who had lower odds of being hospitalized as compared to those from the highest expenditure quintiles. Also, those individuals with health insurance coverage had insignificantly higher odds of utilizing health services as compared to those without health insurance coverage.

Finally, in Model 3, all predisposing and enabling variables initially found significant in Model 1 and Model 2, remained critical in the same direction related to the odds of being hospitalized among 16-year-olds and older. The BMI categories were found significant in increasing the odds of being hospitalized. Those with the higher BMI had higher odds of being hospitalized as compared to those with the lower BMI.

#### **4.4 Progressivity of out-of-pocket health payments**

In 2014, on average HCE per adult equivalent is estimated at €1,088.23. Half of the household heads (57.95 %) were employed. However, 78.75 % of the households had at least one member employed in the past 12 months. During 2014, 5.24 % of the households reported to have a disabled member, and 17.71 % of households had at least one member hospitalized during the past 12 months (Table 4.1).

Table 4.8 shows 80.76 % of the households that incurred OOP HP paid on average €304. The average OOP health expenditure per household was €239. Most of the households spent their OOP health expenditures for medicines, pharmaceutical products, and medical devices, followed by diagnostic, outpatient, dental, hospital and treatment abroad services. The highest average amongst households that incurred OOP was paid for treatment abroad (€1893) and hospital services (€317), followed by dental services (€140), diagnostic services (€137), and outpatient services (€104). Treatment abroad services totaled up to €5 million (nominal prices).

With €43.58 per household member (nominal), most of the incurred OOP HP were for medicines, pharmaceutical, products and medical devices (79.62 %), followed by diagnostic services (14.40 %), outpatient services (13.81 %), and dental services (5.73 %).

Table 4.8 Household annual out-of-pocket health payments, by area of expenditure, 2014

OOP HP	Number of households that incurred OOP HP (N)	Households that incurred OOP HP (%)	Mean OOP per households that incurred OOP HP (€*)	Mean OOP HP per all households (n=2375) (€*)	Mean OOP per household member participated in survey (€*)
Medicines, pharmaceutical products and medical devices	1891	79.62	225.01	174.99	31.86
Outpatient services	328	13.81	104.29	13.73	2.50
Dental services	136	5.73	140.41	7.31	1.33
Diagnostic services	342	14.40	136.64	7.78	3.24
Hospital services	80	3.37	316.96	9.13	1.66
Treatment abroad	23	1.05	1893.34	15.63	2.85
Other medical services	37	0.02	57.47	0.82	0.15

\*Nominal prices

Although households with higher consumption expenditure paid more OOP for health than households with lower consumption expenditure, the latter spent a larger share of their consumption expenditure on health. OOP HP per capita accounted for 5.34 % (on average €26.45) in the lowest consumption expenditure quintile, and 3.47 % (on average €63.12) in the highest consumption expenditure quintile. On average, households in Kosovo spend 4.27 % of their budget for health care, as presented in Figure 4.1.

Figure 4.1 Annual average out-of-pocket health payments gradients

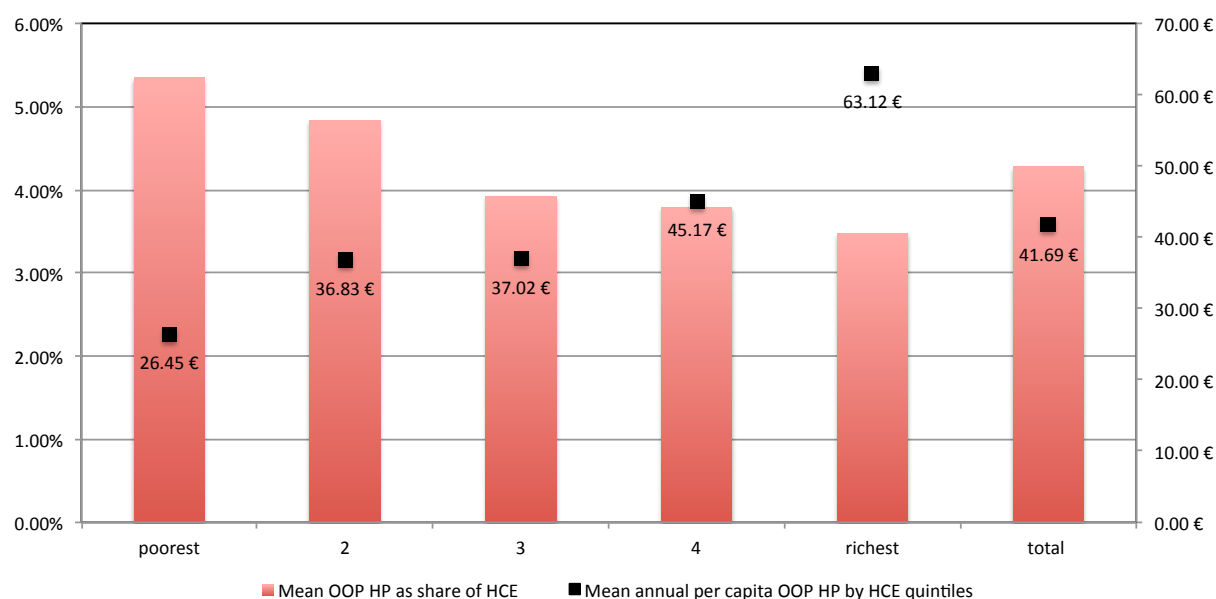


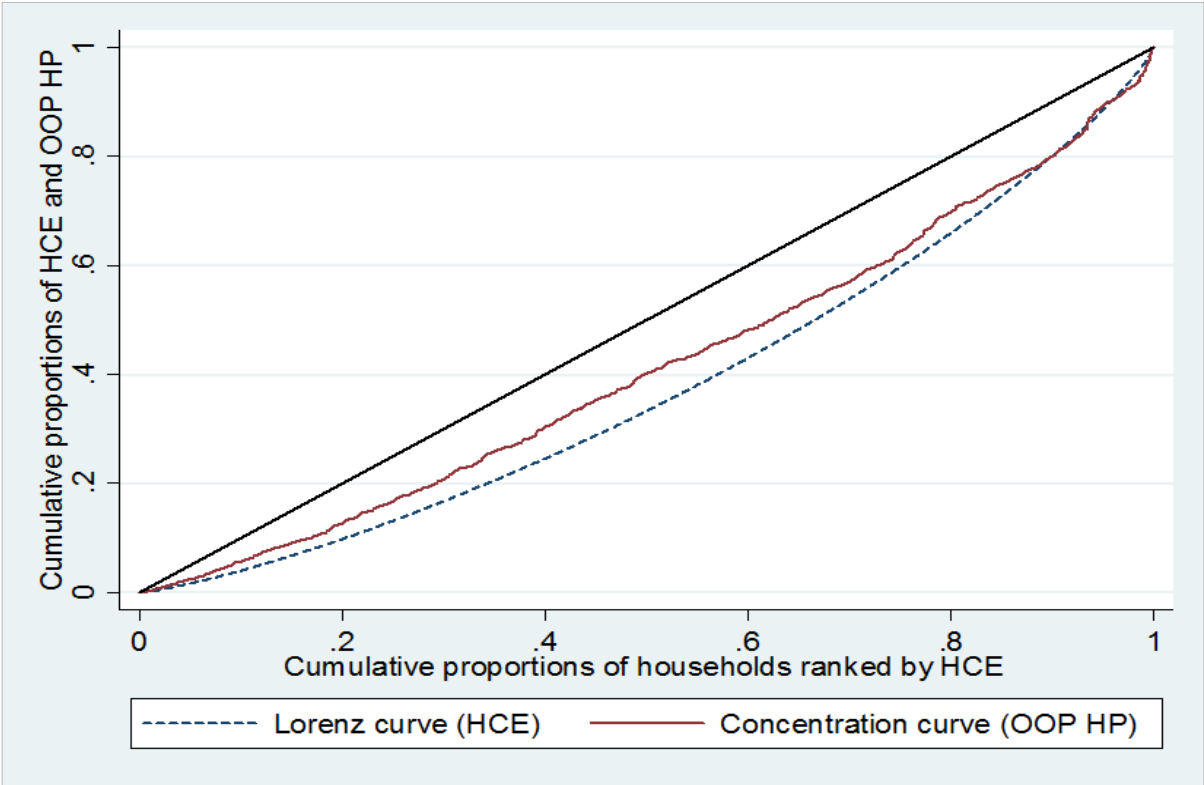
Table 4.9 presents the total OOP HP shares across the expenditure quintiles and as a cumulative percentage of the total OOP HP ordered by expenditure quintiles.

Table 4.9 Progressivity of out-of-pocket health payments

Per capita HCE quintile	OOP HP share	Cumulative % of OOP HP
1	12.74 %	12.74 %
2	17.61 %	30.36 %
3	17.75 %	48.10 %
4	21.65 %	69.75 %
5	30.25 %	100.00 %
Concentration index	0.176	
Kakwani index	- 0.066	

Figure 4.2 presents a concentration curve of the OOP HP with the Lorenz curve of the total annual HCE, according to the cumulative proportion of the sample ranked by total consumption expenditure on the x-axis.

Figure 4.2 Lorenz curve (household consumption expenditure) and concentration curve (out-of-pocket health payments)



It appears that the OOP HP is regressive (concentration curve lies inside the Lorenz curve) for lower and middle quintiles and slightly progressive for the richest decile (concentration curve touches the Lorenz curve and lies outside of the Lorenz curve).

However, the convexity of the concentration curve shows that OOP HP is still concentrated among the highest consumption percentiles. The richest 40 % of the households cover half (51.90 %) of all OOP HP incurred at the population level, while the poorest 40 % of the households cover approximately one-third (30.36 %) of all OOP HP incurred at the population level (Table 4.9).

Table 4.9 indicates that better-off households tend to pay a relatively higher share of the OOP HP than poor households. The covariance between the OOP HP and fractional rank of the HCE is estimated 3.662, and the mean of OOP HP is €41.69. This gives a concentration index of 0.176, meaning a slight progressivity of the OOP HP during 2014. Those better off in Kosovo pay more than the poor; therefore, they bear a higher share of the OOP HP. However, a slightly negative Kakwani index reflects inequality in OOP HP since the lowest expenditure quintiles spend a greater percentage of their annual HCE for health as compared to highest expenditure quintiles (Figure 4.1 and Table 4.9).

## **4.5 Catastrophic health expenditure and impoverishment**

### **4.5.1 Incidence and intensity of catastrophic health expenditure**

Incidence and intensity of catastrophic health expenditure is defined with respect to total and nonfood household expenditure at various thresholds for OOP HP; it is presented in Table 4.10. The same table shows that as threshold  $z$  for the HCE share of OOP for health increases from 5 % to 25 %, the incidence of catastrophic health expenditure decreases from 29.63 % to 1.69 % and the overshoot drops from 1.92 % to only 0.17 %. This does not apply for the MPO (OOP average percent only among those households that exceed the threshold  $z$ ). Those spending more than 10 % of HCE in health care on average spent 17.21 % (10 % + 7.21 %).

The OOP average percent that exceeds threshold  $z$  among households that incurred OOP (the overshoot) is found low at any threshold, as a share of both household consumption and non-food consumption expenditure, whereas the OOP HP average percent only among households exceed the  $z$  threshold is found higher (MPO). Those spending more than 25% of their household budget on health, on average paid 35.30 % (25 % + 10.30 %), and respectively 39.05 % of their non-food consumption expenditure.

Table 4.10 Incidence and intensity of out-of-pocket health payments, 2014

Catastrophic health expenditure measures	Threshold z budget share				
	5 %	10 %	15 %	25 %	40 %
OOP payments for health as share of HCE	5 %	10 %	15 %	25 %	40 %
Head count (H)	29.63	13.01	5.87	1.69	-
Standard error for H	0.99	0.71	0.50	0.26	
Overshot (O)	1.92	0.94	0.48	0.17	-
Standard error for O	0.10	0.08	0.06	0.04	
Mean Positive Overshot (MPO)	6.50	7.21	8.09	10.30	-
As share of non-food consumption expenditure					
Head count (H)	-	-	30.24	16.01	5.34
Standard error for H			1.00	0.79	0.48
Overshot (O)	-	-	4.47	2.25	0.75
Standard error for O			0.22	0.16	0.09
Mean Positive Overshot (MPO)	-	-	14.78	14.05	14.04

Table 4.10 also shows that 16.01 % of households spent at least one-quarter of their non-food expenditure on health; respectively only 1.69 % of households spent at least one-quarter of their HCEs, indicating that the share of OOP HP are always larger within the non-food consumption as compared to household consumption, expenditure.

#### 4.5.2 The impact of out-of-pocket health payments on national poverty

At the estimated annual poverty line of €664 per adult equivalent, Table 4.11 shows that 20.70 % of the population in Kosovo lives below the poverty threshold.

Table 4.11 Impact of out-of-pocket health payments on poverty headcount and poverty gap

<b>Poverty headcount</b>	<b>Total</b>	<b>Urban</b>	<b>Rural</b>
Pre-payment headcount (%)	20.70	20.83	20.62
Post-payment headcount (%)	22.21	21.60	22.61
Percentage point change (absolute)	1.50	0.77	1.99
Percentage change (relative %)	<b>7.26</b>	<b>3.68</b>	<b>9.66</b>
<b>Poverty gap</b>			
Pre-payment poverty gap (€)	31.60	31.60	31.60
Post-payment poverty gap (€)	35.00	34.75	35.17
Point change (absolute) (€)	3.40	3.14	3.57
Percentage change (relative %)	<b>10.76</b>	<b>9.95</b>	<b>11.30</b>



After paying OOP for health, the poverty headcount increased to 22.21 %, indicating a 7.26 % increase of the headcount ratio due to the OOP for health care. The same table shows that more people become poor in rural areas after paying OOP for health. Chi-square analyses show no significant difference between rural and urban populations.

This study estimated a 10.76 % increase of the poverty gap after paying OOP for health. The increase is slightly less in urban as compared to rural areas. Based on this percentage, the cost of eliminating poverty per adult equivalent would amount to € 71.44, meaning € 28,645,976 would be needed to transfer to all those under the poverty line and near the poverty line so that they do not fall below the poverty line due to OOP HP, provided there is a perfect targeting mechanism.

### 4.5.3 Factors associated with catastrophic health expenditure

In Table 4.12, presents Odds Ratio (OR) estimated from a multivariate logistic regression model for catastrophic health expenditure at a 10 % cut-off point of HCE. Settlement area (urban/rural) was not included in the model, since bivariate statistics (Chi-square) did not identify as potential covariate related to odds of incurring catastrophic health expenditures.

Table 4.12 Factors associated with catastrophic health expenditure, 2014<sup>a</sup>

Factors	OR	Standard Error	T	P> t	95 % Confidence Interval
Expenditure quintile <sup>b</sup>					
Quintile 1 vs 5	2.47	0.49	4.57	0.001	1.67 - 3.63
Quintile 2 vs 5	1.66	0.33	2.57	0.010	1.13 - 2.44
Quintile 3 vs 5	0.92	0.19	-0.39	0.696	0.61 - 1.39
Quintile 4 vs 5	0.90	0.19	-0.52	0.601	0.60 - 1.35
Age of the household head	1.01	0.01	2.03	0.042	1.00 - 1.02
Household size	0.81	0.03	-6.06	0.001	0.75 - 0.87
≤5 years old in the household	1.13	0.18	0.80	0.425	0.83 - 1.54
≥ 65 years old in the household	1.97	0.28	4.73	0.001	1.49 - 2.61
At least one employed member in the household	0.98	0.16	-0.12	0.904	0.72 - 1.34
Disabled member in the household last 12 months	2.82	0.60	4.88	0.001	1.86 - 4.28
Insurance coverage of household head	0.27	0.09	-3.87	0.001	0.14 - 0.53
Education level of household head	1.11	0.15	0.81	0.419	0.86 - 1.44
Constant	0.13	0.06	-4.50	0.001	0.06 - 0.32

a OOP HP divided by HCE  $\geq 10$  %

b Quintile 1 has the lowest and quintile 5 the highest, HCE

Logistic regression analyses indicate that it is less probable for a household to incur catastrophic health expenditure when a household head has insurance coverage. Expenditure quintiles used as a proxy for economic status are significantly associated with catastrophic health expenditure with the OR decreasing across expenditure quintiles. Also, household head's age, insurance coverage, household size, belonging to the two poorest consumption expenditure quintiles, and having a disabled and aged member were identified as significant predictors of probability to experience catastrophic health expenditure due to OOP HP.

## 5 Discussion

In the absence of published studies on evaluation health system performance in Kosovo, and on the verge of the introduction of the health insurance fund and scheme, this study aimed to provide data on utilization and factors affecting health service use, OOP HP spending, fairness, and financial risk protection of the health system in Kosovo. Understanding and addressing these findings by the policy makers and further closely monitoring and broadening this research area by the scientific community will help the Kosovo Government to achieve equity in health care financing as one of the main principles of health policy in Kosovo.

Using data from the 2014 HBS and publicly available data, this study estimated the total health spending and OOP HP for 2014 in Kosovo. Applying the health behavior model, it analyzed the socio-economic factors affecting utilization of health services. Examining the relationship between OOP HP and HCE departures from proportionality, the study applied standard approaches of presenting and measuring this progressivity (tabulation, proportion, Lorenz and concentration curves, concentration and Kakwani indices). Setting different threshold levels for OOP HP as the share of HCE and non-food expenditures, the study estimated incidence and intensity of OOP HP at the household level. Poverty line as determined by KAS (to meet basic needs) was adjusted for inflation and presented per adult equivalent at the population level. Estimating poverty headcount before and after incurring the OOP HP, this study presented the incidence and intensity of the poverty.

The factors affecting health services utilization were analyzed by using logistic regression analysis and analyzing HBS 2014 data. Health service utilization in Kosovo was found to be better explained by predisposing and need factors (16-year-olds and older) rather than enabling factors. This study found that expenditure quintiles in Kosovo did not influence utilization of health services. In the absence of need variables these findings should be interpreted cautiously.

The results of this study indicated that, associated with utilization of health services, gender did not significantly affect utilizing health services among 15-year-olds and younger, as opposed to 16-year-olds and older. Household head employment status and education level were not significantly associated with health services among 15-year-olds and younger. Health insurance status was found significantly associated only with utilization of outpatient services. There are

no previous studies on factors affecting utilization of health services in Kosovo that can be compared to the present study.

### **5.1 Factors affecting outpatient health service utilization**

Age was found to be associated with odds of utilization of outpatient services in both age groups. This study found age was significantly related to odds of utilizing outpatient services in a decreasing dose-response relationship among 15-year-olds and younger, and in increasing dose relationship among 16-year-olds and older. Our findings are consistent with other findings. The decreasing odds of utilizing outpatient services among 15-year-olds and younger can be explained by higher vulnerability of children under five, whereas the increased odds of utilizing the outpatient services with age groups among 16-year-olds and older may be related to ageing itself, which is associated with increased need and utilization of health service (Dou et al., 2015).

Gender was found to be a factor associated with odds of utilizing outpatient services among 16-year-olds and older, but not among 15-year-olds and younger. This is an important finding, indicating that there is no gender inequality associated with odds of utilizing outpatient services among children in Kosovo while, as expected and consistent with findings from other studies (Bertakis K.D. et al., 2000, Fernandez et al., 1999), the odds of using outpatient services among women were higher as compared to men. This may be due to conditions and pathologies associated with gender differences throughout the life span (Mustard et al., 1998).

Settlement area and household type did not influence the odds of utilizing outpatient services among 16-year-olds and older. However, they significantly influenced the odds of utilizing outpatient services among 15-year-olds and younger. The children from rural areas and more composite households had the higher odds of utilizing outpatient services as compared to those living in urban areas and respectively from less composite households. The first explanation would be that outpatient services in rural areas offer drugs from the essential list. Second, traveling with a child is less convenient and more costly. Third, hospital services for a child would require parental presence; therefore, people in rural areas may rely more on outpatient services. Finally, composite households in the countryside may have poorer living conditions as compared to less composite households, possibly indicating a greater need for outpatient services.

Head of household education level, employment status, and household expenditure quintiles were not associated with odds of utilizing outpatient services among 15-year-olds and younger. This indicates equality in the utilization of outpatient services among 15-year-olds and younger when it comes to socio-economic status.

Children whose household heads reported to have insurance coverage had significantly higher odds of utilizing outpatient services as compared to those children, whose household heads did not have insurance coverage. This finding is consistent with contextual realities; the children whose household heads had health insurance coverage were more likely to have also health insurance coverage and use more outpatient services, as compared to those whose household heads did not have insurance coverage, and may have chosen drugs at pharmacies without physician consultation.

Having health insurance coverage and increasing education level among 16-year-olds and older had decreased the odds of utilizing outpatient health services. This may be explained due to high opportunity costs of outpatient services for these groups, assuming they have higher chance of being employed.

Increasing BMI among adults decreased odds of utilizing outpatient services. This decrease may be related to increased odds of utilizing hospital services as the BMI increases. This increase may indicate that those with higher BMI have higher odds of utilizing hospital services, most probably treating the consequences of higher BMI, and outpatient services may be bypassed for different reasons among others, due to lack of a referral system or low level of knowledge to prevent diseases related to overweight.

## **5.2 Factors affecting hospital service utilization**

The findings from this study show that hospital service expenditures are second highest among the OOP HP. However, expenditure quintiles were not found significantly associated with hospital services among both age groups. This study found that none of the enabling factors were found significant in influencing hospital services among 15-year-olds and younger.

Age, gender, education level, and the BMI were found significantly associated with hospital services among 16-year-old and older. While age increased, the odds of being hospitalized

decreased. The odds of women being hospitalized were approximately twice that of the men. This difference can be explained first by the fact that 99.8 % of births take place in the hospitals (Government of Kosovo, 2017). Second, the fact that women over 60 are more frequently admitted to the hospital than men (Redondo-Sendino A. et al., 2006) may be explained by the fact that women are more likely to seek health care for physical disabilities, since they more inclined to seek easier help as compared to men.

Further, this study's findings indicate that the likelihood of being hospitalized decreases as the education level increases. This decrease may be explained by higher hospital opportunity costs for those with higher education, who have greater chance to be employed and lose more, as compared to those with a lower education level.

Household type was found to be a significant factor to influencing utilization of hospital services among adults only. Members from the composite households (households with two or more families or households with members from different families) have higher odds of being admitted to the hospital as compared to those from one person households or households with one family and other members. This increase of odds may be explained by the more difficult living conditions in the composite households.

The Anderson model as the most widely used theoretical construct was used to categorize and analyze predictors of health service utilization at the individual level (Babitsch and von Lengerke, 2012). The study applied the logistic regression model as a standard method used to define factors that influence health services utilization and predict future utilization (Diehr et al., 1999). Most common variables influencing health service utilization were categorized under predisposing, enabling, and need factors. Most of the studies evaluate need through both self-rated and evaluated health (Babitsch and von Lengerke, 2012). The health need is considered one of the most important determinants of health service utilization and is recommended to be examined when assessing the health system's equity in evaluating utilization patterns among socio-economic groups as compared to those who need the most (Mendoza-Sassi and Beria, 2001).

To the best of our knowledge, there are no previous studies that analyzed factors affecting utilization of health services in Kosovo. Even with limited need variables, the findings from this study can be used to predict behavior; decreasing odds of utilizing outpatient services and

increasing odds of being hospitalized with the increasing BMI may be indicative that effective health promotion programs related to healthy lifestyles are not provided at the primary health care level. The study findings also reflect the positive aspect of gender equality. In the absence of proper need indicators in the model the absence of socio-economic gradient in the utilization of health services in Kosovo should be interpreted cautiously.

### **5.3 Out-of-pocket health payments and their progressivity**

Although comparable with the neighboring countries (Table 1.3), OOP HP in Kosovo still represents a relatively high share (32.34 %) of the total health spending, and sets the country considerably far off the 20 % upper limit as proposed by WHO (World Health Organization, 2010).

In Kosovo 80.76 % of households have paid OOP for health; of those, 79.62 % paid for medicines, pharmaceutical products, and medical devices, representing the third most expensive category of the OOP HP among the households that incurred them. There are frequent drug shortages from the essential drug list and consumables, which are provided by the Ministry of Health (Imasheva and Seiter, 2008). Lack of essential drugs and consumables is a crosscutting challenge throughout the levels of care. Therefore, revisiting the pharmaceutical policies, setting drug prices and their volume in the essential drugs list and consumables, reviewing planning, distribution, prescription, and dispensing processes are critical to a functioning health system.

During 2014, in Kosovo, 4.93 % of the population was hospitalized during the last 12 months. There are no data available on the percentage of population hospitalized from previous years. According to the WB's latest assessment, available data from public hospitals in Kosovo indicate that hospitals are underutilized. Kosovo public hospitals have low bed occupancy rates (42 % - 75 %) caused by low hospital admission rates, 6.3 per 1,000 and a short average length of stay, 5.9 days (World Bank, 2008a). The main reasons for treatments outside of public hospitals may be due to shorter waiting times, low level of hospital accommodation services, and shortage of drug supplies and consumables, as well as the limited scope of the services. The last may be also one of the reasons to seek service abroad.

According to the WB, between 2006 and 2009 average public spending per case for treatment abroad was estimated at €6,300 (World Bank, 2010). The amounts paid through the public program for treatment outside of the public health institutions partially covers treatment costs that are paid directly to private hospitals in Kosovo and public and private hospitals abroad, for

services that are not provided in the public sector. The public program for treatment outside of public health institutions covers 100 % of treatment expenses for exempted categories of persons, such as those under social assistance, war invalids, and those under 18 years old (including travel costs), while for other groups this program covers 50 – 70 % of the treatment expenses. Despite this rationing, there may be low-income households that forgo treatment abroad for different reasons.

Dental services are provided in both public and private sectors. There are no studies on utilization of dental health services in Kosovo. There may be several reasons for high spending on dental care. First, the public dental health institutions provide a very limited scope of dental services, mainly due to unreliable regular consumable supplies. Second, there is a high prevalence of tooth decay in Kosovo (Begzati et al., 2011, Kamberi et al., 2016). Third, similar to other developing countries, there is increasing demand for cosmetic dentistry in Kosovo. Moreover, nominal prices for dental services in Kosovo are making dental services in Kosovo a popular destination for dental tourism, in particular for those households whose members live and work abroad (Hoxhaj, 2016). To the best of our knowledge, this study for the first time publishes OOP HP in dentistry services. However, it does not analyze progressivity of the OOP HP for dental services.

Diagnostic services are required at all levels of care. However, the unreliable regular consumables and reagent supplies, and low maintenance system of diagnostic equipment, lead to frequent interruption of the public diagnostic service provision at all levels of care, and therefore patients seek services in the private sector. Similar to the health services provision, there are medical personnel that practice in both the private and public sectors.

The latest available WB data from 2006 indicate that Kosovo has a very low utilization rate. The outpatient health service utilization rate for Kosovo was 1.9 outpatient visits per capita per year, which is low compared to Bosnia Herzegovina (3.3 outpatient visits per capita), Turkey (4.6 outpatient visits per capita), and Macedonia (6.0 outpatient visits per capita). Only Albania reported lower rates of outpatient visits (1.5 outpatient visits per capita) as compared to Kosovo (World Bank, 2008a). High spending on outpatient services can be explained by the use of primary health care services directly in private outpatient specialist clinics or private hospital outpatient services. In addition, when the patient is discharged from the hospital regardless of public or private, the patient may decide to use private outpatient services in private clinics of doctors who for example treated them in public or private inpatient clinics.

The results from this study indicate that OOP HP is slightly regressive, with a Kakwani index of - 0.066. The proportion of OOP HP decreases as the ability to pay increases. Households from the



lowest quintile spend 5.34 % of consumption expenditures as compared to the highest quintile 3.47 %, which is less regressive for example as compared to Hungary. In Hungary the Kakwani index was estimated at a very regressive - 0.22, since the lowest income quintiles paid 6 - 7 % of their income for the OOP HP, which was approximately three times higher as compared to the share paid for the OOP HP by the highest income quintile (2 %) (Baji et al., 2012).

The results of this study showed that the highest consumption expenditure quintiles covered half (51.90 %) of all OOP HP incurred at the population level. The lowest consumption expenditure quintiles comprised approximately one-third (30.35 %) of the OOP HP paid in 2014 in Kosovo, yielding a slightly positive Concentration index (0.176). Findings indicate that even though the public health services are delivered almost free of charge and that half of the OOP HP are still borne by the households within the highest expenditure quintiles, there is a disproportionate financial burden across the expenditure quintiles. These findings indicate that members of the households from the highest expenditure quintiles have a wider freedom of choice for health services in the private sector, or they may choose to utilize public services and pay for more expensive pharmaceuticals or other health-related services.

The Kosovo Lorenz curve of the HCE and concentration curve of the OOP HP present a regressive pattern, as indicated by the concentration curve which lies mostly inside of the Lorenz curve, except for the highest decile where the concentration curve touches the Lorenz curve and lies outside of the Lorenz curve (Figure 4.2). Also, the Kakwani index reflects an increasing pattern of the OOP HP share as the HCE decreases. There may be several explanations for these findings. Due to limited essential medicines and consumables list, there are frequent shortages of pharmaceuticals and consumables across all levels of care (Imasheva and Seiter, 2008), households from the lowest expenditure quintiles have to spend a higher share of their HCE on OOP HP. On the other hand, different individual health seeking behaviors, in a country where the public health sector coincides with an ever growing, strong private sector, may have led to a slightly regressive Kawani index.

In 2009, according to the WB, the Kakwani index for OOP HP in Kosovo was estimated to be zero, meaning that OOP spending for health was equally distributed across income levels. In 2011 the Kakwani was estimated at 0.1, showing that the highest income quintiles spent a greater share of their income on OOP HP as compared to the lowest income quintiles. The WB interpreted the finding as moderately progressive and may have reflected self-rationing by the poor. (World Bank, 2014).

Our findings of the OOP HP progressivity measures (concentration and Kakwani indices) are consistent with findings from the Asian region, where the better-off pay more out-of-pocket for health care than those who are less well-off, and are therefore indicated with positive concentration indices. The negative Kakwani index in the data from Kosovo is consistent with findings in the same study from the Asian region, indicating that the rich spend proportionately less in relation to their ability to pay for OOP HP (O'Donnell O, 2008). The study findings are consistent also with those from OECD countries and lower middle-income countries in Africa, where OOP HP is consistently regressive (Wagstaff et al., 1999, Mills et al., 2012) as reflected in Table 5.1. There are no studies on progressivity of the OOP HP conducted in the region, except in Croatia, conducted for the OOP HP in two major cities (Mastilica and Bozиков, 1999).

Figure 4.1 presented the OOP HP as a share of the HCE and mean OOP HP across consumption expenditure quintiles. This figure shows visually an increasing trend for the OOP share for health payments as the HCE quintiles decrease, and at the same time an increasing trend of the mean OOP HP as the HCE increase. This figure clearly presents the growing trend of the OOP HP share and at the same time shows a regressive pattern of the OOP HP across the expenditure quintiles; the richest quintiles on average spend almost three times more for health as compared to the poorest quintiles, thus bearing the highest share of the OOP HP.

Figure 4.2 presented the proportions of the OOP HP graphically across household expenditure quintiles and visually identified departures from proportionality, determining their occurrence across consumption expenditure quintiles. To ensure comparability to the largest extent possible, taking into account different definitions of the primary variables (OOP HP, HCE, or any other ability to pay variables), this study estimated concentration and Kakwani indices. A positive concentration index with a slightly negative Kakwani index indicates that OOP payments in Kosovo are slightly regressive, and furthermore imply that they are inequitable. The OOP HP represents one-third of the total health expenditures and is an important source of financing, known in the literature as the most regressive. To understand OOP HP equity implications the progressivity of the OOP HP was assessed, and this is crucial for health financing policy purposes. Further research with comprehensive health financing sources, including private insurance data, would be able to indicate more precisely how equitable the overall health financing system in Kosovo is. Moreover, decomposing the OOP HP and estimating progressivity measures would give interesting insights that would help prioritize the areas of intervention (outpatient, hospital, diagnostic, and other services) and fine tune policy interventions.

Table 5.1 Kakwani index for selected countries

Country	Year	Studies published	OOP HP share of the total health expenditures (%)	Kakwani indices for OOP HP	Progressivity of OOP HP
Kenya	2007	Munge, Briggs (2014)	29.10	-0.310	Regressive
Hungary	2008	Baji et al. (2012)	-	-0.215	Regressive
Croatia	1994	Mastilica, Bozikov (1999)	13.54*	-0.299	Regressive
Germany	1989	Wagstaff et al. (1999)	9.96*	-0.096	Slight regressive
Taiwan	2000	O'Donnell et al. (2008)	30.20	-0.096	Slight regressive
Italy	1991	Wagstaff et al. (1999)	26.86*	-0.081	Slight regressive
Tanzania	Most recent	Mills et al. (2012)	-	-0.080	Slight regressive
Thailand	2004	Limwattananon et al.2011	-	-0.076	Slight regressive
Ghana	Most recent	Mills et al. (2012)	-	-0.070	Slight regressive
South Africa	Most recent	Mills et al. (2012)	13.00	-0.040	Slight regressive
Netherlands	1992	Wagstaff et al. (1999)	9.64*	-0.038	Slight regressive
Malaysia	1998/1999	Yu et al. (2006)	42.80	0.009	Slight progressive

\* OOP HP share of the total health expenditures from WHO Health for All Database (first available 1995)

Source: compiled by author

## 5.4 Financial protection in health

According to the WHO, countries that spend less than 20 % of OOP HP as share of the total health expenditures show a negligible proportion of the households facing catastrophic health expenditure (World Health Organization, 2010). Considering this recommendation, the study indicates that the current health financing system does not well protect the population from catastrophic health expenditure and impoverishment due to OOP HP. During 2014, 13.01 % of the households in Kosovo spent more than 10 % of their HCE on OOP HP. This share is comparable to that reported in 2009 (11.5 %) but higher than the share reported in 2011 (7.3 %) (World Bank, 2014).

Considering different definitions and methodologies to estimate the share of households facing catastrophic health expenditure, the results of this study indicate that the headcount ratio of households that faced catastrophic health expenditure due to OOP HP is comparable to those from neighboring countries, latest available from 2008 in Albania, 13.3 % (Tomini et al., 2012) and from 2007 in Serbia 5.0 % (Arsenijevic et al., 2013).

In general, there are three main factors that may give rise to the OOP HP, and they apply in Kosovo as well: (i) limited public health spending, (ii) low household capacity to pay and (iii) absence of the risk pooling mechanism (Xu et al., 2005); also, respectively, programs targeting households in need of health care. However, there is no convincing evidence that the health insurance systems offer better or worse financial health protection as compared to tax-based systems (Xu et al., 2007). Since Kosovo is moving towards the social insurance system, it should use the opportunity to improve financial health protection by targeting those living under the poverty and near the poverty line.

The regression analyses from this study indicate that household heads' age, belonging to the lowest consumption expenditure quintiles, and having disabled and aged members in the household, increase the odds of the household to face catastrophic health expenditure. One option would be to consider these as predicting factors of catastrophic health expenditure at the household level. These factors may be used as proxy indicators in targeting those in need for health care, not just by exempting them from premium contributions but also by offering well-targeted health care assistance programs. A well-targeted assistance program would require investments in strengthening the capacities to administrate targeting procedures.

The results of this study allow for an estimation for the year 2014 that 7.26 % of the population fell into poverty due to OOP HP and the poverty gap increased 10.76 %. This estimated poverty gap increase can be covered by € 28,645,976 which is needed to transfer to all those under the

poverty line, and near the poverty line so that they do not fall below the poverty line due to OOP HP, provided there is a perfect targeting mechanism. In reality, due to weak targeting mechanisms of the near poor categories and those in need, the amount required will be higher.

Considering the differences in estimating the OOP HP, these study results indicate that the impoverishment and poverty gap due to OOP HP remained stable as compared to 2009 and 2011 (World Bank, 2014). In 2009 and 2011 the WB estimated that 8.9 %, and respectively 7.0 % of the population, became poor after having paid OOP HP, while the poverty gap increased in 9.9 % and respectively 10.1 % in 2011.

Critics of the catastrophic health expenditure concept as a measure of financial risk protection state that investment in health is considered risky as any other investment. Catastrophic health expenditure is considered only the expenditure that in return cannot improve or restore health, or without a return of the “future labor income” (Zweifel, 2016). Moreover, according to this approach, recommendations for policy makers remain the same over the years, addressing catastrophic health expenditure with an establishment of prepayment mechanisms such as the tax based social health insurance or a mix of prepayment arrangements. Based on the human rights approach to health, this study considers that facing catastrophic expenditures is a necessity even when there is no return in “future labor income”. Recommendations from the assessments may not have changed over time, but they have different meanings to different countries and require a different mechanism to increase financial risk protection. This study proves that the concept offers a mechanism for not just assessing financial risk protection, but also monitoring at the times when policy makers decide to introduce fundamental changes in the health financing mechanism or not, which was the case in Kosovo after the year 2000.

This study estimated household headcounts that face catastrophic health expenditure, those under the poverty line and those that fall under the poverty line due to OOP HP. Moreover, the study gives insights on intensity of the OOP HP by measuring MPO by estimating percentage points exceeding the threshold for catastrophic health expenditure among households that paid OOP for health. The study also estimates the poverty gap, the amount paid for health in €, by which households became poor or fell further under the poverty line. Moreover, by adding and analyzing variables on health service utilization model, the study presented factors affecting utilization of health services. This study examined whether the expenditure quintiles are associated with utilization of health services and financial catastrophe. Considering the limitations of this study, expenditure quintiles are a central link between utilization of the health service and catastrophic health expenditure when it comes to inequalities in health service utilization and financial catastrophe due to OOP HP.

## 5.5 Limitations of the study

The primary aim of the HBS in Kosovo is to update the CPI annually, and measure private household consumption including the OOP HP. The study has several limitations that are related to non-sampling errors and methodologies used to analyze statistical parameters, and general challenges of the HBS data collection.

Three main limitations of the study may arise from biases resulting from non-sampling errors. First, most heads of households, mostly men, responded for their members. It may be assumed that most men tend to know less about events related to children, as compared to the mothers. This recall bias may have happened because proxy respondents may not have been able to recall every detail, since they had not experienced them or simply did not know about all of them. Proxy respondents tend to report up to 20 % fewer events (Ravi, 2010). KAS addressed this non-sampling error by ensuring that the most knowledgeable person in the household responded to the questions from the HBS questionnaire. Another non-sampling error that may have happened was related to the exhaustive HBS questionnaire. However, considering the HBS has a thorough questionnaire, there may have been errors when the respondents may not have reported all events, in order to finish the interview as soon as possible (Ravi, 2010). KAS sends an experienced interviewer accompanied with one junior. Additionally, NIPH provided training for the KAS interviewers related to additional health questions included in the 2014 HBS questionnaire. Third, the HBS budgets are known to underestimate the OOP HP, since they primarily collect data on all items of household expenditures, as compared to specialized health surveys. In the literature, it is acknowledged that the HBS remains a low-biased source of data when it comes to proportion of the OOP HP in the HCE (Ravi, 2010). The biases described above are almost unavoidable and are present worldwide. They have the potential to appear in well designed or less well designed surveys. The researchers estimate that even countries with refined statistical capacities such as Honk Kong, China, cannot prevent underestimation of the total household consumption for 20 - 30 %. It is not possible to have an HBS survey with a zero non-sampling associated error; however they can be minimized if addressed and interpreted cautiously (Ravi, 2010).

To address the recall bias, utilization of outpatient services was asked for the past three months, and hospital services for the previous 12 months. In relation to utilization of health services, this study was subject to the following limitations: First, there was no need variable among 15-year-olds and younger. Socio-demographic variables grouped under predisposing and enabling factors represented the need of proxy for utilization of health services as a "latent" variable among children (Goddard and Smith, 2001). For the age group of 16-year-olds and older, the need

variable is represented by self-reported BMI. Therefore, all findings related to needs among these age groups for utilizing health services must be interpreted cautiously. Second, while this study observed the most common factors influencing utilization of health services, with the utilization models presented the study could not capture other specific barriers in utilizing health care, related to satisfaction, external environment such as functional and physical accessibility, or personal habits such as diet, exercise, and self-care (Aday, 2014).

Three other major limitations in this study are related to composites of total health spending and OOP HP progressivity. Published data on total health expenditures in Kosovo for 2002 - 2006 did not consider private insurance as a source of funding (World Bank, 2008a); the absence of available data on private health insurance expenditures is acknowledged in this study, and therefore the total health spending in 2014 in Kosovo may be higher than reported in this study. The study assessed the progressivity of OOP HP and did not detail the progressivity of the OOP HP by area of expenditure or source of funding.

Following are the limitations of the study related to the methodology used:

Progressivity of the OOP HP across expenditure quintiles was presented graphically (Figure 4.1). Although one can visually detect an increase, decrease, or proportionality of the OOP HP as HCE share, this approach cannot trace the magnitude of these shares in the total OOP incurred in 2014 at the population level. Therefore, the study tabulates the share of OOP HP in the total OOP HP incurred in 2014 (Table 4.9), which clearly quantifies the share of quintile contributions in the total OOP HP incurred in 2014 at the population level. Graphical presentation of the Lorenz curve (HCE), concentration curve (OOP HP), and 45 degree line in figure 4.2, visually presents departures from the equality of the OOP HP by size of the area between the concentration curve and the Lorenz curve, and does not test for dominance against the Lorenz curve of HCE. Using the descriptive and graphical methods becomes difficult when it comes to comparisons across health financing sources, time and countries. Therefore, for these purposes, this study presents progressivity of the OOP HP by estimating its concentration and Kakwani indices. Following are the limitations of this study in relation to estimation of concentration index; the study graphs the concentration curve from the micro data but does not test the concentration curve for dominance against the Lorenz curve of HCE. The study does not estimate the overall concentration and Kakwani indices for health expenditures by their source of financing.

This study could not capture funding aspects of the OOP HP, since they may be unpredictable and of high cost, or have a longer-term impact directly in the HCE or spending from savings, borrowing or selling assets. Since the study measures welfare through the HCE this study could

capture those unable to afford health care or opportunity costs lost due to disability, illness, or death of a household member.

Impoverishment due to OOP HP remains a rough indicator of the OOP HP effect on the poverty level. First, one can never be sure that incurred OOP HP were necessary. Second, one can never be sure that resources remain unchanged and are not replaced by spending from savings, borrowings, or selling of assets (O'Donnell et al., 2008b).

Due to the methodology used, the poverty line may be estimated higher and percentage of the population living under the poverty line may be overestimated. This may have occurred for two reasons. First, estimation of the poverty line per adult equivalent may underestimate the risk of pooling at the household level (Deaton, 2003). Second, adult equivalence rates for children (0.75) as assigned by the WB and KAS (Simler et al., 2011) are higher as compared to the OECD equivalence and modified scales, 0.5 and respectively 0.3 for each child (Douarin et al., 2011).

Finally, considering all of the above when comparing data from this study with previous years or countries, one should consider differences in estimating total health spending, OOP HP, and the poverty line, as well as methodological issues presented in this section.

## **5.6 Further research directions**

Health spending and related statistical parameters presented in this study are evolving concepts. In order to capture and reflect the evolving concepts, it is essential to enhance national research capacities to capture such changing realities. Further close monitoring not only on health spending but also of health financing equity is recommended. Repeated analyses of the catastrophic health expenditure and impoverishment due to OOP HP remain necessary mechanisms to follow the impact of health financing reforms and measure achievements towards equity as one of the main principles of a functioning health system in Kosovo. Moreover, interpretation of the findings related to health equity should be intuitively understandable to the policy makers.

Equity research in health service utilization should be further developed. Assessing the equity measures of health service utilization and detailing further factors affecting utilization of health services, including need factors, is recommended. Equity in utilization of specific health services would be a very important area to develop, e.g. due to high costs. Assessing utilization of dental



health services in Kosovo in the public and private sectors might highlight whether there is a periodic increase of dental services utilization that are related to periods of time when those working abroad visit Kosovo (e.g. summer and end of the year), which in turn may indicate a potential for dental tourism in Kosovo.

The reasons for seeking treatment abroad, and the types of services requested for treatment abroad, should be studied carefully. Possibilities to develop capacities for services most commonly used abroad should be explored, and developed in Kosovo. In order to ensure competitiveness of public and private health care, reasons for seeking treatment outside of public services should be studied and the findings addressed.

Detailed research on health financing equity in Kosovo, by estimating the concentration and Kakwani indices for total health expenditures by source of financing, is important. Estimation of health financing equity parameters, in order to closely monitor the impact of forthcoming health financing reforms, is of utmost importance. Moreover, understanding progressivity of the OOP HP across expenditure quintiles by the area of expenditure would help define the content of a basic package, balancing between the most frequent and highest paid health services.

Sustaining, repeating, and further detailing empirical research on financial risk protection, including catastrophic health expenditure and impoverishment, to closely follow up the impact of the health financing reform among vulnerable groups from the impoverishing effects of OOP HP.

Finally, research on health outcome inequalities should be initiated and considered as an ultimate tool in addressing specific health related conditions/diseases that will help, along with better targeting, in working towards equity as a core value of the health system performance in Kosovo.

## **6 Concluding remarks and further steps**

Kosovo is a lower middle-income country. Its growth strategy relies upon reforms related to governance and socio-economic policies, including health financing. Findings from this study indicate that there is no association between the HCE and odds of utilizing health services. The poorer households suffered from a disproportionate financial burden of OOP HP as compared to the wealthier households, which is resulting in a slightly regressive pattern; however, the total absolute OOP HP in 2014 were borne more by households with a higher ability to pay. The current health financing system does not provide adequate financial risk protection from catastrophic health expenditure and impoverishment due to OOP HP. This study is important for decision makers, given Kosovo's heavy reliance on OOP HP. On the verge of imminent health financing reforms, the research community in Kosovo should carefully monitor the equity of OOP HP and broaden the research to encompass health financing equity as the central principle of health policy in Kosovo. Otherwise, the impact of health financing reforms will go unnoticed and unaddressed.

Kosovo health spending remains the lowest in the region. Following its annual economic growth, the Government of Kosovo should increase public spending on health and should aim to decrease the OOP HP share to 20 % of the total health spending, the upper limit recommended by the WHO (World Health Organization, 2010), at the same time improving its macro and micro management capacities.

There are no data available on private health insurance spending in Kosovo. In the absence of annual health spending data, to monitor the above recommendations and be able to benchmark at the international level, the establishment of national health accounts is of paramount importance.

In Kosovo, OOP HP represents a relatively high share of the total health expenditures. OOP HP for pharmaceuticals represents the most common OOP for health. Therefore revisiting the pharmaceutical policies, setting drug prices and their volume on the essential medicines and consumables list, re-visiting plans, distribution, prescriptions and dispensing processes, are critical to a sustainable, functioning health system in Kosovo. Procurement and regular supply of consumables and efficient maintenance of medical equipment should be sought as a strategy to control OOP HP for diagnostic, outpatient, and hospital services. Services for treatment abroad represent less frequent but the most expensive OOP HP. A study followed up with a

comprehensive plan to develop national capacities to offer needed services in Kosovo is recommended.

There is no gradient in utilization of health services in Kosovo when it comes to household expenditure quintiles. This study finds that all equally utilize health services in Kosovo. Further monitoring of health service utilization to closely follow up impact of need, predisposing, and enabling factors is crucial.

A larger share of OOP HP was borne by the households with higher ability to pay. Positive concentration index (0.176) indicates that households with the highest HCE spent more and contributed slightly more in total OOP HP that incurred during 2014.

The poor suffer from a disproportionate financial burden of OOP HP. A slightly negative Kakwani index (- 0.066) indicates that the households belonging to the highest HCE quintiles spent proportionately less of their HCE share for OOP HP as compared to the households in the lowest HCE quintiles.

Slight positive concentration and negative Kakwani indices indicate the need for improved management of health care in the public sector, both at the governance and institutional level. Increased management capacities in the public sector would create a competitive environment with the private one. Better management of the public health facilities would subsequently ensure coexistence of the public and private health sectors in Kosovo without exacerbating further the slightly negative Kakwani index.

Current health financing does not offer adequate financial risk protection. In 2014, 13.01 % of households in Kosovo spent more than 10 % of their total consumption expenditure for health and faced catastrophic health expenditure. The households that incurred OOP HP exceeded that threshold on average by 0.94 %. The households that faced catastrophic health expenditure exceeded the 10 % threshold on average by 7.21 %. Belonging to the two lowest consumption expenditure quintiles and having disabled and aged household members were identified as a significant predictors of the probability to experience catastrophic health expenditure, indicating that the health care system does not provide a well-targeted financial risk protection.

In 2014, impoverishment due to OOP HP and the poverty gap remained stable as compared with 2011. According to the study findings, a poverty gap of 10.76 % means that the cost of

eradicating poverty, assuming that policy makers do not know who will become poor or not after paying OOP HP, would be € 28,645,976. Therefore to alleviate impoverishment, targeting poor and near poor categories should be considered. This targeting requires development of adequate administrative capacities. Furthermore, once targeted these categories should be exempted not only from premium contributions but also from the user fees. Therefore, revisiting the user fee scheme regarding costs and exempted categories is recommended. Finally, the forthcoming health insurance scheme should seek to establish a medical aid/assistance program that will ensure free health services for exempted categories.

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## **8 Annex**

### **8.1 Curriculum Vitae**

#### **Education**

Center for International Health – Ludwig Maximilians Universität – Munich, Germany– Ph.D. candidate in health systems research, 01/10/2013 – present;

Harvard University – School of Public Health, MPH International Health – Boston, MA – June 2004. GPA 3.714 and 3.674 (maximum 4);

Prishtina University - Medical Faculty, Specialist in Anesthesiology and Intensive Care – Prishtina, Kosovo – November 2000;

Sarajevo University - Medical Faculty – Medical Doctor – Sarajevo, Bosnia and Herzegovina – July 1991, average grade 8.86 (maximum 10).

#### **Work experience**

Coordinator of the Kosovo Health Project – WB Loan, Ministry of Health, May 2014 – present.

Community Development Fund, Deputy Director of the Board, 06/2016 – present

Technical Adviser to the Minister of Health – Kosovo Foundation of Open Society, UNDP 01/2012 - 09/30/2013.

Teaching Assistant, Medical Faculty Prishtina University, 10/2010 – 06/2013

HIV/AIDS Advisor UN Kosovo Team, UNDP, 04/2009 – 01/2012.

Technical Advisor to Deputy Minister of Health, Ministry of Health, 01/2008 – 04/2009

Head of National Professional Committee for Tobacco Control, 09/06 – 04/2009

Founding and member of the Balkans Breast Cancer Initiative, 12/07 – present

Head of Policy and Planning Unit, Ministry of Health, 10/04 – 01/08

HIV/AIDS Consultant in Moldova, Chisinau, WB Washington, August 2005.

Intern at the WB, Washington DC, Turkey Health Transition Project, 6/04 – 8/04.

Head of Policy and Planning Unit, Ministry of Health Kosovo, 4/03 – 8/03.

National Professional Officer - WHO Humanitarian Assistance Office Kosovo, 7/99 – 8/02

Health System Research, Foundation for Democratic Initiative NGO Advocacy Project, 9/02 – 4/03.

Professional Officer - WHO Liaison Office/ Humanitarian Assistance Office Skopje FYR of Macedonia, 3/99 – 7/99

National Professional Officer - WHO Humanitarian Assistance Office Prishtina, 10/98 – 3/99



## 8.2 List of Publications

Planning for health sector reform in post-conflict situations: Kosovo 1999-2000. D. A. Shuey, F. Arenliu Qosaj, E. J. Schouten and A. B. Zwi. *Health Policy*, 2003, vol. 63, issue 3, pages 299-310

Congenital Nephrotic Syndrome. M. Begolli, I. Begolli, Xh. Gojani, F. Arenliu-Qosaj, M. Berisha. *Medical Archives* 2011; 65(6): 378-379. doi: 10.5455/medarh.2011.65.378-379.

### **8.3 Statement on Pre-release and Contribution**

The thesis originated from:

The manuscript “Health system reforms in Kosovo: equity and financial protection in health” was submitted to the “European Journal of Health Economics” on July 14, 2016, and was rejected on July 26, 2016.

The manuscript “Catastrophic expenditure and impoverishment due to out-of-pocket health payments in Kosovo” was submitted for publication on October 24, 2016, to the “International Journal for Equity in Health.” The article is returned on January 12, 2017, for major revisions and was rejected on March 20, 2017.

The Ph.D. candidate with NIPH staff participated in defining the additional OOP HP and health service utilization questionnaire as well as the guide to administer these questions. The candidate has prepared and submitted relevant documents to the ethic committees and the institutions involved in the research.

The candidate has participated in the interviewer training conducted by the NIPH. With the KAS staff from the Department of HBS from the central office participated in randomly selected household visits to check the accuracy of the filled in questionnaires, used the data collected and verified from the KAS, conducted the statistical analyses, wrote, revised and submitted the thesis and manuscripts.

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The Director of the KAS Mr. Isa Krasniqi, former Director of the Social Statistics Mr. Bashkim Bellaqa and Chief of Department of the HBS Ms. Emina Deliu, Mr. Bekim Canolli and Ms. Besa Haçifi.

## 8.5 Affidavit

Fatime Arënliu Qosaj

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I hereby declare, that the submitted thesis entitled “**An empirical model of access to health care, health care expenditure and impoverishment in Kosovo**” is the result of my own work. I have only used the sources indicated and have not made unauthorized use of services of a third party. Where the work of others has been quoted or reproduced, the source is always given.

The submitted thesis or parts thereof have not been presented as part of an examination degree to any other university.

I further declare that the electronic version of the submitted thesis is congruent with the printed version both in content and format.

Prishtina, March 12, 2018

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Place, Date

Fatime Arënliu Qosaj

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Signature of PhD Candidate