



RESULTS OF THE STUDY ON CATASTROPHIC HEALTH EXPENDITURES AMONG BANKING SECTOR EMPLOYEES OF YEREVAN

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Abstract

The study aimed to investigate catastrophic health expenditures, identify occurrence frequency, the impact of certain risk factors, as well as to explore possible mechanisms of their reduction, as well as improvement of health care accessibility. The study was conducted on the basis of a sociological survey, involving 384 banking sphere employees of Yerevan, among which 239 had corporate medical insurance, while 145 had no such assurance. It was revealed that in insured participants catastrophic were expenditures of 7.1% respondents, whereas among those, who were not insured, they made 9.6%. It should be mentioned that among uninsured participants, whose expenditures were catastrophic, 35.7% were forced to stop their treatment at some stage, because of lack of financial resources. After the reimbursement, the percent of insured persons, whose expenditures were catastrophic, decreased to acceptable 2.1%. The relative risk of catastrophic health expenditures occurrence among uninsured respondents was 4.6 times higher compared to the group of insured. The risk for occurrence of such expenditures did not depend on household income, medical bill, and type of provided medical care.

Keywords: insurance, catastrophic health expenditures, direct payments, accessibility, health, medical insurance.

INTRODUCTION

The level of economic development and well-being of a country is precisely enough reflected on the state of public health. Many health problems have deep socioeconomic roots, and, accordingly, this or that way of social development, infringing the interests of population *en mass*, predetermines its health trends. Processes of health formation that are inseparable from changes occurring in a country, run in conditions of an unfavorable and tense demographic and socioeconomic period, which the population of the former Soviet Republics experiences within the last decades. The decline in living standards, inevitable at adaptation to market economy, in conditions of deterioration of natural and social environment, rise in unemployment, decrease in availability of medical care, etc. predetermined further health regression in population of the former

Soviet Union Republics, including Armenia. This was reflected in birth-rate decrease and natality crisis, reduction of the average life expectancy, deplorable trend of death-rate observed largely due to socially important diseases [Hayryan A. *et al.*, 1999; Hayrapetyan A., 2000; Hayryan A., Hayrapetyan A., 2001; Khachatryan T., Lepyan M., 2006].

Disintegration of the USSR brought to the collapse of the health care services providing the population with affordable, and above all, mainly free health care. The independent Armenia was not able to maintain the bulky and not very effective former system. At reformation of the health care in the Republic of Armenia (RA), there was established an intermediate system, which including elements of both the state and private health care systems, lost its main purpose, i.e. rendering financial support for the population in case of diseases, and this, in terms of the above-stated, affected the basic medical-demographic parameters of the population.

Official and private direct payments done by patients and their relatives belong to the features of health care transition system. According to WHO,

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private financing of health care in Armenia makes 50% from the total country expenditures on health, 84% of which are payments from consumers' own means [Residents of Armenia, 2009].

The population of Georgia also faces similar problems. According to data of 2006, from the total expenditures on health the consumers' private expenses made 72%, which is the highest percent not only for the countries of the European Region (25% on the average), but also for the CIS countries (46% on the average). Furthermore, in Georgia, according to a public opinion poll conducted after the decentralization of health care and transition to the market system, 19% of households were forced to borrow money or sell personal belongings for paying medical bills, and 16% were not able to buy the prescribed medicine [Xu K. et al., 2003; National Health Accounts, 2006; Health for all, 2010].

The research shows that the poor are compelled to pay for medical services from personal means of household more often, than the rich; combined with the low incomes such payments increase the risk of catastrophic expenditures [Pannarunothai S., Mills A., 1997; Frenk J., Knaul F., 2002]. Such payments are one of the causes for the population to be reduced to penury in case of contingency costs for treatment. In specialized literature these expenses are known as catastrophic health expenditures. WHO defines the expenditure as catastrophic, if "a family spends 40% and more of its 'not subsistence means', i.e. means, which remain after covering the basic charges for maintaining normal vital activity, on health". However, taking into consideration the features of a specific region and country, it is possible to use a lower percent as a starting point for financial disaster [Xu K., 2005]. When people are forced to pay for medical services, the price might be so high that in some cases it will inevitably lead to a financial catastrophe for an individual or household as a whole. Such high contingencies making people save on food, clothes, children's education, etc. are the direct reason for essential decline in conditions of life. According to WHO data, every year more than 150 million people approximately in 44 million households face catastrophic expenditures, and about 25 million households or more than 100 million people grow poor because of the necessity to pay for medical services [Xu K., 2005]. The percent of households facing a financial catastrophe as a result of paying more than they can afford varies from less than 0.01% in Czech Republic

and Slovakia up to 10.5 % in Vietnam.

The majority of developed countries have social institutes for protecting population from insolvency, such as social insurance or health care system based on taxation [World Health Report, 2010].

In many cases people may refuse medical services merely because they are not able to afford neither the direct expenses for the service cost, such as consultation, prices of medicines, laboratory analyses, etc., nor the indirect expenses for treatment, such as transport charges, costs for special diets, etc. Socially vulnerable households are more subject to immersion in poverty, because of the complex effect of an illness on their earnings and general well-being.

For catastrophic expenditures three factors are necessary: medical service requiring direct payments (from one's own pocket); low solvency level of population; and shortage of prepaid mechanisms of minimizing the risks of catastrophic expenditures [Technical Briefs, 2005].

Unfortunately, in Armenia all the factors furthering the rise of catastrophic expenditures on health care exist. Thus, the overwhelming majority of in-patient medical care services is paid. The existing mechanisms of social protection are fragmentary and do not cover the entire population. Despite some increase in solvency of the population (income *per capita* in 2009 was 28,038 Armenian drams (AMD), versus 15,949 AMD in 2005), the vast majority of expenses are necessary for a consumer: 55.7% for provisions, including tobacco, 27.4% for services [Living conditions, 2009] which leaves few means in case of unforeseen expenses for health.

Great bills for medical services are not synonymous with catastrophic expenditures [Merlis M. et al., 2006]. *Per se*, a great bill, e.g. for a cardiosurgical treatment (2,500,000 AMD on the average), should not lead to a financial catastrophe of a household, provided that the household pays a part of the bill, or there exist prepaid mechanisms or citizens' social protection. But on the other hand, even a small bill for treatment of an ordinary disease may lead to financial problems of poor households, if they are not involved in any mechanism of social protection.

Prepaid mechanisms of social protection in case of diseases are at the stage of formation. In our Republic the only mechanism of a prepaid system is voluntary medical insurance (VMI), including no more than 30,000 people according to our rough estimate. Mentioned persons are mainly insured by

their employers, i.e. they are members of a corporate package of insurance. At the same time most of the insurers are international companies having culture of social responsibility and care for health of the employees. These are "ArmenTel", "HSBC Bank", "Pro-Credit Bank", "VivaCell" and other branches of foreign companies. Among domestic organizations perhaps the only and the largest insurance company is the Central Bank of Armenia, owing to which an increasing number of organizations are interested in insurance of employees.

It is also important to consider that the majority of our medical institutions and doctors are not ready to work under the conditions of the insurance system yet, demanding a special approach to document circulation, book keeping, active use of modern information technologies, as well as to the existence of developed infrastructure. The problem of unreadiness concerns both the state regulators and the population in general. Against the background of the aforesaid the example of Kazakhstan is significant.

In Kazakhstan the first experience of introducing the compulsory medical insurance in 1996-1998 was a failure. The problems were the dishonesty of the Corporate Medical Insurance (CMI) Fund, the absence of the normative base, approved programs of medical insurance and standards of medical services. Because of the unsuccessful experience of the CMI introduction the trust of the population was undermined which interfered with the attempts of its revival in 2000-2003 [*Analysis of compulsory insurance, 2008*].

Today the stimulation of the CMI can serve as a temporary alternative. Unfortunately, the given problem is insufficiently studied in Armenia, and it should be scientifically substantiated. In terms of the above-stated, the urgency of research on revealing the frequency in occurrence of catastrophic expenditure on health and pursuit of ways to increase the availability of medical care is apparent.

The goal of the study is to explore possible mechanisms for reduction of too high proportion of direct payments of patients and their relatives and assistance to introduction of prepaid health financing mechanisms, without which achievement of the goals adopted in 2005 by WHO Member States resolution WHA58.33 is not possible.

Achieving overall coverage is not limited with providing free primary health care, it also includes such protection mechanisms as the cost of expensive

diagnostic procedures, compensation for hospital care, full or partial compensation of the cost of medicines, social insurance during illness up to patient's travel expenses coverage. The research on reasons of incompleteness of treatment for chronic diseases show that earnings loss in connection with transport expenses is more often reason than the actual payment for medical services. Besides, if services are not accessible at all or they are not present nearby, people cannot use them even if they are free [*WHO, 2010*].

MATERIAL AND METHODS

With the support of the Central Bank of RA we conducted a pilot study to justify urgency of this problem among the population of Yerevan and to test tools with the aim of further in-depth study.

For the achievement of research objectives the following goals were put forward:

1. Develop a special Survey Questionnaire to explore the incidence of catastrophic health expenditures among the banking sector employees in Yerevan;
2. Estimate the factors, which have impact on the occurrence of catastrophic expenditures on health;
3. Reveal the role of some mechanisms on increase of population security from risks of financial disaster occurrence.

Research material is the data of banking sector employee's households sociological survey performed using the special informative statistical Questionnaire developed by us. The Questionnaire included various clusters of issues with sub-issues such as personal data, social and living conditions, medical and sanitary characteristics, socioeconomic data, and some characteristics of the activities performed by insurance companies.

The following research methods were used: historical, sociological, and statistical.

To conduct the study we selected two homogeneous groups of the banking sector employees. The choice is caused by the fact that part of banks in a package of social services provides the employees with the corporate medical insurance as well. In all other respects, employees of banks have in general comparable working conditions: similar intensity and character of the work, comparable compensation for it. Thus, an experimental or the 1st group (the group of insured) and the control or the 2nd group (uninsured) are as close as possible; intra-group variability makes acceptable conditions for

Table 1

Distribution of respondents by sex, age and the work experience

Compare groups	Rates	Male	Female	Total	
				n	%
Insured	n	96	143	239	62,2
	%	40,0	60,0	100	
Uninsured	n	57	88	145	37,8
	%	40,0	60,0	100	
Total	n	153	231	384	100
	%	39,8	60,2	100	
Average age (years)					
Insured	M±m	29,3±0,4*	27,8±0,4*	28,4±0,3*	
Uninsured		37,8 ±0,7	33,3 ±1,2	35,0 ±1,0	
Total		32,6±0,7	29,9±0,6	31,0±0,5	
Average work experience (months)					
Insured	M±m	35,2±3,0	31,9±2,7	33,0±1,8	
Uninsured		57,8±6,7	98,0±8,6	82,0±6,8	
Total		43,6±3,0	57,2±5,8	51,8 ±3,0	

*Note: difference between the compared rates is statistically significant ($p < 0.05$).

statistical processing of a material and a comparative estimation of the received results.

Statistical data processing was done using Excel and SPSS software.

RESULTS

From the given data (Table 1) it is visible that from the total number of respondents 239 (62.2%) had a corporate medical insurance, and 145 (37.8%) did not. Both among the insured (1st group) and uninsured (2nd group) 40% were male, 60%: female.

Among the insured respondents, the average age was 28.4 years old (men: 29.3; women: 27.8 y.o.). The average experience of employees of the given group was equal to 33 month (men: 35.2; women: 31.9 months).

Among uninsured (2nd group) the average age of respondents was 35.0 years old (men: 37.8; women: 33.3 y.o.). The average experience of employees of the given group was equal to 82 months (men: 57.8; women: 98.0 months). The comparative analysis showed that group of insured persons in general was significantly younger in comparison with the 2nd group ($t = 6; p < 0.05$), as reflected by

the values of age indicators for both men and women ($t = 11; p < 0.05$ and $t = 4; p < 0.05$, respectively).

Among the 239 insured persons 238 (99.6 %) of respondents had higher education. Amongst them 53 persons (22.3%) were heads of households (men: 85%; women: 15%). Only 0.4% had incomplete higher education.

Among 145 uninsured persons 123 (84.8%) of respondents had a university degree. In this group 34 (27.6%) persons were heads of households (men: 70.6%; women: 29.4%). In the given group, 5.5% of respondents had vocational education, among them heads of households made 37.5% (men: 66.7%; women: 33.3%). Respondents with secondary education made 7.6%; among them heads of households were 81.8% respondents (men: 88.9%; women: 11.1%). Only 2.1% of respondents failed to obtain higher education, from which only one female respondent was the head of a family.

According to the survey data (Table 2) monthly income of persons interviewed in general might be distributed as follows: revenue of 99,999 Armenian drams (AMD) and below had 7.3% of households,

Table 2

Distribution of respondents by income

Comparable groups	Income (Armenian drams)								
	Indices	<99,999	100,000 - 199,999	200,000 - 299,999	300,000 - 499,999	>500,000	Difficult to answer	Total	
								n	%
I-group	n	2	14	29	66	91	37	239	62,2
	%	0,8	5,9	12,1	27,6	38	15,6	100	
II-group	n	26	39	34	27	5	14	145	37,8
	%	17,9	26,9	23,4	18,7	3,4	9,7	100	
Total	n	28	53	63	93	96	51	384	100
	%	7,3	13,8	16,4	24,3	25	13,2	100	

100,000-199,999 AMD had 13.8%, 200,000-299,999 AMD: 16.4 %, 300,000-499,999 AMD: 24.3%, 500,000 AMD and more: 25.0%; the remaining respondents (13.2%) found difficulty in answering to this question.

Among the insured persons, 0.8% of households had an income below 99,999 AMD; 5.9% had 100,000-199,999 AMD, in 12.1% it made 200,000-299,999 AMD, in 27.6%, it amounted 300,000-499,999 AMD, in 38% households the income reached 500,000 AMD and more; 15.6% of respondents found difficulty in answering to this question.

Among uninsured respondents the income below 99,999 AMD was declared in 17.9% of households; 100,000-199,999 AMD made the income of 26.9%; 200,000-299,999 AMD in 23.4%; 300,000-499,999 AMD in 18.7%; 500,000 AMD and more was the income of 3.4% households. For the remaining respondents (9.7%) it was difficult to answer this question. Moreover, among the respondents with an income of 99,999 AMD and less 34.6% did not have higher education; among them 77.8% were heads of households. This is probably one of the reasons for the relatively large percentage of households with relatively low incomes. It should be noted that in the uninsured group 5% of the respondents considered their living conditions as unfavorable, of which 85% had household income of 99,999 AMD and less. In general, the income was higher in the 1st group compared with the 2nd group.

The study showed that in the group of insured 29.3% of respondents considered their living conditions as favorable; among them 61.4% had a household income of 500,000 AMD and more, 69% of respondents considered their living conditions and

accommodation as middle or requiring improvement.

Among the uninsured, 19.2% of respondents considered their living conditions as favorable, 72.4% considered their living conditions to be of middle level or requiring improvement. In addition, as noted above, 5% of the respondents lived in unfavorable conditions.

Research data indicate that in the group of insured the average family consisted of 3.7 persons, among them 22% were heads of families. In the group of uninsured the average family (4.3 persons) was significantly greater than in the 1st group ($t=2.37$; $p<0.05$). In the second group the heads of families were 32.6% of respondents, which is also higher compared with the 1st group. This difference is likely explained by the younger age of the first group respondents.

The study revealed (Figure 1) that among the respondents of the 1st group, during the last year the number of persons, who visited a doctor (65.3%), was significantly higher compared with the 2nd group (47.6%) ($t=2.5$; $p<0.05$).

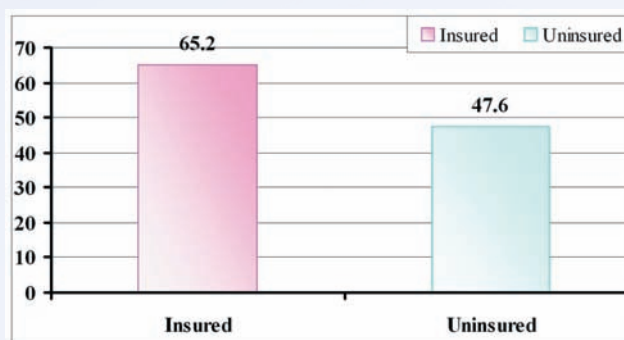


Figure 1. Number of persons, who visited doctor in the comparable groups (%).

Table 3.

Number of persons, who applied for medical care by types in the two groups

Types of medical care	Indices	Insured (I group)			Uninsured (II group)			Total
		M	F	Total	M	F	Total	
outpatient	n	41	70	111	14	27	41	152
	%	73,2	70,0	71,1	51,9	64,3	59,4	67,6
inpatient	n	7	20	27	6	6	12	39
	%	12,5	20,0	17,3	22,2	14,2	17,4	17,3
urgent	n	-	2	2	2	7	9	11
	%	-	2,0	1,3	7,4	16,7	13,1	4,9
outpatient, inpatient	n	4	3	7	1	1	2	9
	%	7,1	3,0	4,5	3,7	2,4	2,9	4,0
outpatient, urgent	n	1	1	2	3	-	3	5
	%	1,8	1,0	1,3	11,1	-	4,4	2,2
inpatient, urgent	n	1	2	3	-	1	1	4
	%	1,8	2,0	1,9	-	2,4	1,4	1,8
outpatient, inpatient, urgent	n	2	2	4	1	-	1	5
	%	3,6	2,0	2,6	3,7	-	1,4	2,2
Total	n	56	100	156	27	42	69	225
	%	100,0	100,0	100,0	100,0	100,0	100,0	100,0

A comparative analysis showed that among respondents, who consulted a doctor, distribution by types of medical care (Table 3) was as follows:

- number of persons, who applied for outpatient care in the 1st and 2nd groups was 71.1% and 59.4%, respectively;
- for hospital care applied 17.3% and 17.4%;
- for urgent care 1.3% and 13.1% attended a doctor;
- for outpatient and inpatient care: 4.5% and 2.9%;
- for outpatient and urgent care: 1.3% and 4.4%;
- for inpatient and urgent care: 1.9% and 1.4%;
- for all three types of care applied 2.6% and 1.4%, respectively.

Summarizing the obtained results, we can conclude that insured persons are generally more likely to visit doctors, which is considered as a positive indicator for them in terms of health and accessibility of medical care.

Within the study on number of visits to a doctor in the group of uninsured, several negative tendencies were revealed.

First, in this group only 18.1% of respondents

were able to pay for provided services from personal funds, 45.6% were forced to borrow money from friends and relatives, 18.2% got credit, and 18.2% were forced to sell property belonging to their households. It should be mentioned that 45.6% of these respondents indicated that they radically changed the traditional way of life, because of medical payments. Furthermore, it is important to note that among the uninsured persons 35.7% of the total number of calls to ambulance services falls on this narrow group of people.

Hence, the above-mentioned group of people applied for primary care and/or hospital care, but was unable to afford further treatment and/or diagnosis due to lack of funds, also because of the significant negative impact of payments for provided medical services on the standard of living of their families, and second, this group preferred to apply to emergency services, as most affordable form of care, despite the fact that the primary outpatient care in Armenia is free. As a result, the effectiveness of health care delivery breaks, as well as the principles of pre-

vention and early detection of diseases, which are assigned on primary health care facilities. In such circumstances, emergency care service deals with unusual works: provision of outpatient care to population. It should be emphasized that in the insured group such negative trends were not observed.

Secondly, in the two groups (Table 3) the percentage of visits for hospital care is almost identical. However, these figures disguise some negative trends. In particular, if 100% of persons of the 1st group paid for hospital treatment from their own funds, then in the 2nd group only 66.7%; the remaining respondents of the 2nd group were forced to borrow money or sell property of the household. More than half of the respondents of the first group (55.6%) did not mention any negative impact on the life of the household because of funds spent for treatment, while in the second group percentage of such respondents was 41.7%. Moderate impact on the living standards indicated 44.4% of insured and 41.7% uninsured. Finally, 16.6% of uninsured respondents indicated that because of payments for hospital care they were forced to radically cut expenditures and change lifestyles. In the light of the above-stated it should be noted that the expenses of 85.2% insured persons, who have applied for hospital care, were partially or fully reimbursed by insurance companies, but in 33.3% of cases dates of reimbursement were significantly violated. This latter may explain the relatively high percentage of people, who indicated a moderately negative impact of expenditures on the life of households.

Thirdly, as can be seen from Table 3, among the uninsured respondents there were much more persons, who applied for emergency care. As noted above, the difference between compared indicators is not associated with age, but it was related to higher accessibility of emergency care (from the group of persons, who applied for emergency care, 33.3% of respondents mentioned that they could not afford visit to a doctor), which in this case served as the primary care institution. This latter was confirmed by results of special research in this area [Poghosyan V., 2005]. Particularly, to the same also indicates a higher percentage of appeals to urgent care in the 2nd group (13.1%) compared with the 1st group (1.3%).

Thus, the analyzed data indicate that among uninsured respondent the number of cases was significantly lower in comparison with the insured, who actually took care of their health, were more often visiting doctors, even for the reasons not requiring

urgent medical intervention. This, in the perspective, would positively impact on health indicators of the investigated contingent.

Finally, the low attractiveness of outpatient care, as well as relatively high attractiveness of urgent care are indicators of low availability of health care for persons, who are not covered by any of the existing types of social insurance. Special attention should be given for analysis of payments for provided medical services.

As can be seen from the given data (Figure 2), among the insured persons, who got medical care, 66.0% of respondents paid for it, while among uninsured respondents: 84.0% ($t=2.6$; $p<0.05$).

The explanation of reasons for the revealed difference between the number of respondents, who applied for medical care and paid, in the 2nd group is fairly difficult, while for the 1st group it is obvious. Explanation of this phenomenon lies in the working scheme of the insurance companies. Insured person, whenever he/she applies to a medical facility, which is a partner of the insurance companies, does not pay for provided services. The insurer pays for them based on the invoice, which is given after the end of treatment by the providers of medical services. Another advantage is that after diagnosis clients are informed regarding covering of their further treatment, and in cases, which do not require immediate medical intervention, it allows the insured person to choose the most comfortable time for the start of treatment.

It was revealed that the average amount of expenditures for medical services in the 1st group was 159,299 AMD (within the range of 7,350-3,000,000 AMD), in the 2nd group: 206,738 (ranging from 2,000 to 4,000,000 AMD).

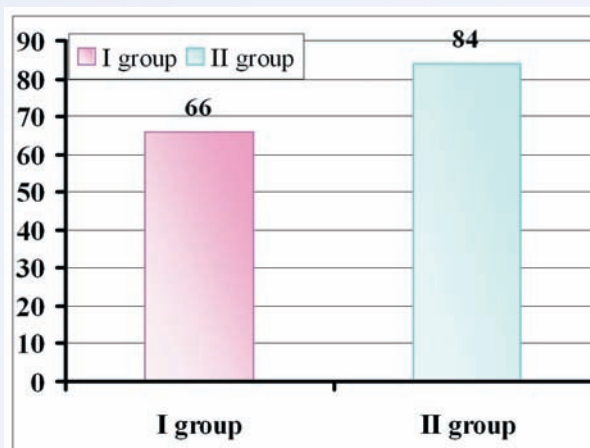


Figure 2. Frequency of the payments for medical services of the respondents in the two groups (%).

Table 4.

Distribution of payments for medical services and/or medications by its influence on the life of the household in compared group¹

Payment amount	Indices	Insured				Uninsured				Total
		Degree of impact of payments on the life of the household								
		Deep	Moderate	No impact	Total	Deep	Moderate	No impact	Total	
<100,000	n	1	20	21	42	2	16	9	27	69
	%	2,4	47,6	50,0	100	7,4	59,3	33,3	100	28,4
100,000-200,000	n	2	7	7	16	4	3	1	8	34
	%	12,6	43,7	43,7	100	50,0*	37,5	12,5	100	9,9
>200,000	n	-	9	1	10	4	3	-	7	17
	%	-	90,0	10,0	100	57,1	42,9	-	100	6,5
Difficult to answer	n	1	30	20	51	5	27	8	40	91
	%	2,0	58,8	39,2	100	12,5	67,5	20,0	100	45,3
Total	n	4	66	49	119	15	49	18	82	201
	%	3,4	55,4	41,2	100	18,3	59,8	21,9	100	100

Notes: ¹ - as 100% taken the number of respondents who indicated the presence of payments to maintain health

* - difference between the comparable rates (7.4 and 50.0), statistically significant (p <0.05)

Data was analyzed by the amount of expenditures with the potential impact on the life of surveyed households and sources of payment for medical bills. As presented in Table 4, in the 1st and 2nd groups up to 100,000 AMD was paid, accordingly, by 35.3% and 32.9% of respondents.

Data indicate that even relatively small accounts lead to complication of financial situation of households. In the 1st and 2nd groups 47.6% and 59.3% of respondents, accordingly, mentioned, about the moderate negative impact of expenditures; deeply negative impact was noted by 2.4% and 7.4%, correspondingly.

Fairly significant difference was found during the study of the payments sources. Namely, among respondents of the 1st and 2nd group 88.1% and 63.0%, accordingly, paid from personal funds, 7.1% and 33.3% respondents borrowed the money, and 3.7% of respondents from the 2nd group were forced to sell the property of the the household.

In the 1st and 2nd groups 13.4% and 9.7% of respondents, accordingly, paid 100,000-200,000 AMD.

As obvious from data of Table 4, in the group of uninsured higher expenses (100,000-200,000 AMD) resulted in the significant ($t=2.2$; $p<0.05$) increase in number of respondents with a deep deterioration of

the standard of living of the household: 50.0% *versus* 7.4%; half of them was forced to borrow money for covering medical bills. Among respondents with a deep deterioration of living standards, as the reason of not applying for medical care, 25% mentioned the lack of financial resources. In case of expenditures at a rate of 100,000-200,000 AMD such negative trends in the group of insured were not observed.

More clearly negative tendencies were shown at expenditures at a rate of more than 200,000 AMD. As a result, despite the fact that in the group of insured nobody mentioned about the deep negative impact of expenditures on the living standards of households, nevertheless 33.3% of them were forced to borrow money for covering medical bills. In the group of uninsured 57.1% of respondents mentioned about deep negative impact, among them 28.6% used own funds for covering medical bills, 28.6% were forced to ask help from friends or relatives, and 42.8% of respondents were forced to sell property of the household.

As revealed, 42.0% and 48.8% of respondents of the 1st and 2nd groups, accordingly, found it difficult to answer questions regarding the amount of payments. Nevertheless, they mentioned the sources of payment and the impact of expenditures on the

Table 5

Sources of payment for medical bills¹

Sources of payment for medical bills	Rates	Insured			Uninsured			Total
		M	F	Total	M	F	Total	
Personal funds	n	45	59	104	20	29	49	153
	%	83,3	90,8	87,4*	60,6	59,2	59,8	76,2
Borrowed	n	3	4	7	6	11	17	24
	%	5,6	6,2	5,9	18,2	22,4	20,7	11,9
Received credit	n	1	-	1	3	1	4	5
	%	1,8	-	0,8	9,1	2,1	4,8	2,5
Sold the property	n	-	-	-	3	3	6	6
	%	-	-	-	9,1	6,1	7,3	2,9
Paid by sponsors	n	2	1	3	1	2	3	6
	%	3,7	1,5	2,5	3,0	4,1	3,7	2,9
Difficult to answer	n	3	1	4	-	3	3	7
	%	5,6	1,5	3,4	-	6,1	3,7	3,6
Total	n	54	65	119	33	49	82	201
	%	100,0	100,0	100,0	100,0	100,0	100,0	100

Note:¹ – as 100% was taken the number of respondents, who indicated the presence and source of payment, regardless of seeking medical care.

life of the household. Thus, from their own funds among the insured paid 90.2%, whereas among the uninsured it was done only by 65.0%. Among the respondents of the 1st and 2nd groups the negative impact was not mentioned by 41.3% and 30.8%, accordingly; moderate impact was mentioned by 58.7% and 69.2%. Among uninsured respondents 22.5% borrowed money and this fact quite unfavorably affected their living standards, while 35.7% of them reported a profound negative impact and 64.3% mentioned a moderate impact. Five percent of the respondents sold the property of the household and 7.5% of the respondents found difficulty in answering to this question.

The analysis of sources of payment for medical bills in the two groups is reflected in Table 5.

According to the given data, it is obvious that 87.4% respondents of the 1st group paid from personal funds. From this number of respondents, 55.8% mentioned the amount of payments, average bill for services was 114,161 AMD (within the range of 7,350-1,000,000 AMD). Despite the rather large average amount, 43.3% of respondents did not re-

port about any negative impact of expenditures on the life of household. This is because the expenditures of more than 82.2% of them were fully or partially reimbursed by insurance companies.

From the total number of insured persons, who paid for medical services, 5.9% were forced to borrow money from their relatives or friends. The average amount of borrowed funds was 537,285 AMD. The cost of treatment was partially or fully reimbursed for 66.7% respondents, who took the money. From the group of those, who were insured, but borrowed money, 85% respondents mentioned a moderate impact of expenditures on the living standards of their families, and 15% did not report about any impact, which is the result of relatively small bills for provided services (21,000 AMD), as well as their full reimbursement.

The costs of treatment of 2.5% respondents from the first group were paid by sponsors, and expenditures of all respondents were fully reimbursed by insurance companies. Half of respondents in the same group mentioned a deep negative impact of expenditures on household, which might be explained

by a long period of reimbursement: 30 days. In the 2nd group the percentage of those, who paid for medical services from personal funds, made 59.8%; compared to the 1st group it was significantly lower ($t=3.9$; $p<0.05$). From this group 46.9% mentioned the amount of medical payments; at an average rate 235,782 AMD (ranging from 2,000 to 4.0 million AMD). Among those from the 2nd group, who paid for provided services from personal funds, 30.6% respondents did not mention any impact on the life of household, a moderate impact was mentioned by 63.3%, and the deep negative impact was mentioned by the remaining 6.1% respondents.

In the group of uninsured, 20.7% respondents were forced to borrow money from their relatives or friends (the average amount borrowed was 55,000 AMD) for covering medical bills; in this group it was more than 3.5 times higher compared to the group of insured. Despite the higher level of income of the insured, the amount they borrowed was much higher (537,285 AMD) compared with the 2nd group. Among them 50% of respondents mentioned a moderate impact on quality of life and 41.6% a deep negative impact, while for others it was difficult to answer this question.

As follows from above-stated, in case of unexpected expenditures on health the most vulnerable groups are in need of adequate, effective protection mechanisms. From the total number of uninsured 7.2% were forced to sell something from the property of their households, which caused a radical change in lifestyle and habits of 75.0% respondents from this group.

The remaining respondents of the 2nd group with the purpose of medical bills payment were forced to obtain credit or ask for help from sponsors, and they all mentioned the deep negative impact of medical expenditures on the living standards of their households.

WHO defines the expenditure as catastrophic, if "a family spends 40 % and more of its 'not subsistence means', i.e. means, which remain after covering the basic charges for maintaining normal vital activity, on health". In addition, WHO do not count household expenditure on tobacco and alcohol.

In the Questionnaire developed by us, household incomes are presented in the form of intervals; therefore to avoid artificially high levels of catastrophic expenditures we used upper limits of these intervals. At the same time as catastrophic we have taken the

costs that constitute 40% or more of total household income without deducting the subsistence means. This approach will obviously reduce the total expenditures recognized as catastrophic, but nevertheless, will identify negative trends in the social insurance system and the need of its further study.

The research has shown that among the total number of insured respondents, expenditures were catastrophic in 7.1% of cases, which is quite uncommon for developed countries, the average bill of these respondents for provided medical services was $487,875 \pm 175,603$ AMD, and it was on average 97% of households' total revenue. Household income of this group was distributed as follows: 100,000-199,999 AMD in 5.9%, 200,000-299,999 AMD in 11.8%, 300,000-499,999 AMD in 29.4%, 500.000 AMD and more in 52.9% of respondents. In this group, 29.4% of the respondents were heads of families (average for the whole group: 22.3%). Households faced to financial disaster consisted of 4.0 ± 0.28 persons, which is slightly higher, but not statistically significant ($t=1.17$; $p<0.15$) in comparison with the general group rate of 3.65 ± 0.1 . From the analyzed group 23.5% of respondents considered their living conditions as favorable, the remaining 76.5% considered their living conditions as moderate (the average for the 1st group was 29.3% and 70.7%, accordingly). Appeals for outpatient care were in 29.4% of respondents, for inpatient care in 41.2%; the remaining 29.4% applied for both inpatient and outpatient care.

A certain interest represents data regarding reimbursement of catastrophic expenditures by insurance companies. Among the above-mentioned group, expenditures of 70.6% individuals were reimbursed fully or partially, which reduced percent of households faced to disastrous payments to an acceptable 2.1% from the total number of insured persons. As a result, among insured persons the absence of any negative impact was mentioned by 29.4%, moderate impact by 64.7%, and a deep negative impact by 5.9% of the respondents (Figure 3).

Our research showed that among the total number of uninsured, catastrophic expenditures were in 9.6% of cases, which is again quite uncommon for developed countries. The average bill of these respondents for provided medical services was $543,214 \pm 270,735$ AMD, and it was on average 153% of their households' total revenue. Household income of this group was distributed as follows: 99,999 AMD and less in 14.3%, 100,000-199,999 AMD in

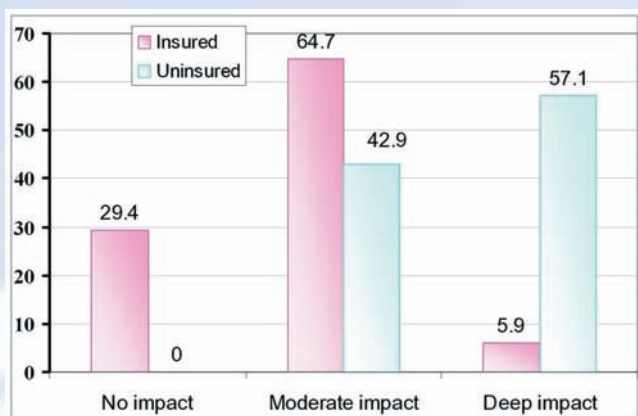


Figure 3. Impact of catastrophic expenditures on the life of households.

35.7%, 200,000-299,999 AMD in 21.4%, 300,000-499,999 AMD in 14.3%, 500,000 AMD and more in 14.3% of respondents. In this group, heads of families were 42.8% of the respondents (average for the whole group made 32.6%). Households faced to financial disaster consisted of 3.85 ± 0.39 persons, which is slightly lower, but not statistically significant ($t=1.14$; $p<0.15$) in comparison with the general group rate of 4.32 ± 0.13 . From the analyzed group all respondents considered their living conditions as comfortable on average (the average for the 2nd group was 72.4%). For outpatient care applied 50.0% of respondents, for inpatient care 28.6%, remaining 21.4% applied for both inpatient and outpatient care.

The impact of catastrophic expenditures on household living standards among respondents of the 2nd group causes alarm. Thus, among the uninsured there were no respondents, who did not mention about any negative impact of expenditures; about moderate impact mentioned 42.9%, and deep negative impact mentioned 57.1%.

It is necessary to note that the income is not a risk factor for catastrophic expenditures (more than 50% of respondents in the 1st group had an income above 500,000 AMD), this indicates the importance to have effective mechanisms of social protection. The average size of funds spent in the two groups did not significantly differ, but in the 2nd group one of the respondents paid for treatment 4.0 million AMD, which impacted on average values. Without taking into account this value, the average expenditure was $257,500 \pm 54,623$ AMD, which is almost two times lower than in the 1st group (it should be noted that this amount is comparable with the price of surgical

treatment of appendicitis in Yerevan: 150,000-220,000 AMD). Consequently, even relatively small accounts can lead to financial disaster, which is evidenced by impact of expenditures on the living of households. It is noteworthy that among the uninsured persons, who faced catastrophic expenditures 35.7% at some point refused further treatment due to lack of funds. No such case was, observed among the insured respondents. Unfortunately, as seen from the data, above not only inpatient but also outpatient care can lead to the financial disadvantage: largely because of high cost of medicines and diagnostic procedures.

In that context, the comparative analysis of the reasons is interesting: when people need medical care, but did not apply for it. In the 1st group, if necessary, 22.6% of respondents did not apply to the doctor, while in the 2nd: 55.2% (the difference was statistically significant: $p<0.05$, $t=3.6$).

Among the cases, when people need medical care, but they did not apply for it, we are concerned in the lack of funds and distrust to the health care providers. In particular if in the 1st group only 1.8% of the respondents did not apply for medical care because of lack of funds, then in the 2nd group: 26.25%. Due to the distrust to the health care providers 22.2% of insured and 6.25% of uninsured. Respondents did not apply.

In addition, we have analyzed some aspects of activities of the insurance companies. Social protection of the respondents was provided by two insurance companies. In general, a package of insurance coverage embraces diagnostic testing, including the expensive methods of diagnostic, conservative and surgical treatment of an acute illnesses/conditions and injuries; outpatient and inpatient care, dental care, and in some cases, treatment of exacerbations of chronic diseases. Generally accepted exceptions are preventive measures, supportive treatment of chronic diseases, treatment of some specific diseases (sexually transmitted diseases, mental diseases, tuberculosis, etc.).

In general, 157 claims were selected, of which 52.3% were fully reimbursed, 30.5% were partially reimbursed, 17.2% were not reimbursed (Figure 4). Among respondents, whose expenditures were reimbursed partially, 18.7% of respondents were reimbursed for outpatient care; 10.5% for, the primary

consultation, 14.5% for primary consultation and cost of medicines, 10.5%, for inpatient care, while for 45.8% respondents it was difficult to answer, the costs of which services were reimbursed by the insurance company, and which not.

Such a high percentage of not informed respondents indicate insufficient provision of information by the companies to the insured persons. It should be noted that this group of insured spent for their treatment 55,545 AMD, on average, and since the amount is rather high people would like to clarify what is expected to be payable to them by the signed contract. The special attention should be given to the period of reimbursement. In cases of catastrophic health expenditures, people are forced to spend large amounts to maintain their health that in the short and medium term affect on the paying capacity of household and forced to reduce expenditures (this part is analyzed above). Immediate information to the insured person regarding reimbursement provides an additional protective mechanism against the financial disaster. Terms of reimbursement are regulated by contract between the insurers and insurant, therefore as a violation of the terms of compensation we have taken time exceeding 14 days from the date, when the last document was submitted to insurance company.

From the total number of persons, who applied for reimbursement, 23.0% had difficulty to answer the question regarding the terms of reimbursement and this also indicates insufficient provision of information to customers by the insurance companies. Terms of reimbursement were violated on average of 22 days in 19.1% of the cases. Violation of the terms of reimbursement was not observed in 32.0% cases (average duration of reimbursement made 9 days). The remaining 25.9% of respondents from

this group did not answer this question. Data analysis about the opinion of respondents regarding the activities of insurance companies revealed that among the respondents, who applied for reimbursement, 7.3% were dissatisfied with the activities of insurance company. Thus, expenditures of dissatisfied respondents were reimbursed partially or completely in 92.3% cases; however, terms of reimbursement were significantly violated. The relationship between violation of the terms of reimbursement and dissatisfaction of insured persons was discovered with a probability of 99% ($\chi^2=20.3, p<0.01$). Among respondents, 34.8% were partially satisfied or dissatisfied with the activities of insurance companies; 57.8% of respondents were satisfied with the activities of insurance companies.

CONCLUSION

Data obtained allows to draw the following conclusions.

The results of study indicate high occurrence frequency of catastrophic health expenditures among employees of the investigated banks, increasingly, among those, who are not covered by prepaid health care mechanisms, compared with people, who have corporate medical insurance. A special in-depth study is needed to investigate the problem in Armenia and develop a package of evidence-based recommendations to reduce the burden on health care system and citizens.

The study revealed that prepaid health care mechanisms increase the availability of health care; this is evidenced by the significantly higher level of attractiveness and prevalence of multiple preventive appeals among people with corporate medical insurance compared with the uninsured persons.

Results of the study show that among persons, who are not covered by prepaid health care mechanisms, a major cause of not applying for medical care or termination of the started treatment is absence of financial resources. In this case, the redistribution of attractiveness of that contingent to the emergency services creates an additional burden and takes forces and resources from the immediate sphere of its activities.

Persons, who are not covered by prepaid health care mechanisms, despite the presence of stable earnings, are not secured from borrowing money or

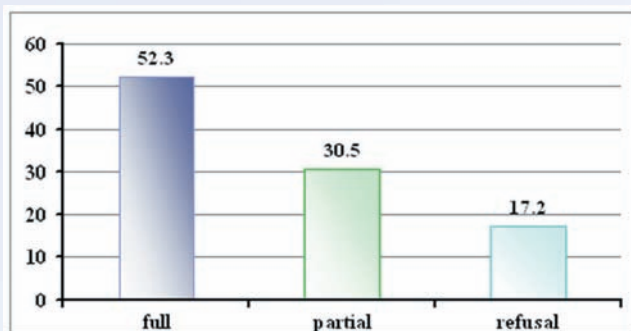


Figure 4. Distribution of decisions for reimbursement in the group of insured respondents.

selling property of the household for covering medical bills.

Prepaid health care mechanisms significantly reduce the number of direct payments of patients for provided medical services, and thus, prevent the risk of financial disaster.

The quality of activities performed by insurance companies, in the field of provision of information to clients and more effective decision making regarding reimbursement should be increased.

REFERENCES

1. *Analysis of compulsory insurance* in the Republic of Kazakhstan for the year 2008. Agency of the Republic of Kazakhstan on Regulation and Supervision of Financial Market and Financial Institutions. <http://www.agroinsurance.com/ru/analytics?pid=7806>. Last accessed on 22.06.2010.
2. Frenk J, Knaul F. Health and economy: empowerment through evidence. *Bull. World Health Organ.* 2002; 80: 88.
3. Hayrapetyan A.K. [Total mortality rate of the Armenian population during the last decade] [published in Russian]. *Bulletin of Institute of Social Hygiene, Economics and Management of Health after N.A. Semashko. Russian Academy of Medical Science (RAMS). Moscow.* 2000. Issue 2. 63-73.
4. Hayryan A.P., Hayrapetyan A.K. [Mortality as an integral indicator of population health] [published in Russian]. In: *Proceedings of IX All-Russian Congress of hygienists and sanitary doctors. "Hygienic science and practice at the turn of the XXI century". Moscow.* 2001. Volume II. 72-76.
5. Hayryan A.P., Smbatyan K.A., Hayrapetyan A.K. [The study on the influence of socio-economic impact of the transition on the life and health] [published in Russian]. In: *Proceedings of 10-th All-Russian Conference for Health Care Geography with international participation. St. Petersburg.* 1999. 182.
6. *Health for all* database. WHO: <http://www.euro.who.int/hfad>. Last accessed on 10.06.2010.
7. Khachatryan T.S., Lepyan M.K. [Poverty and health in Armenia] [published in Russian]. *Collection of materials of the 5th scientific medical congress "Human health". Yerevan.* 2006. 89-90.
8. *Living conditions of population.* Official web site of the Republic of Armenia National Statistical Service (NSS). <http://armstat.am/file/doc/99461558.pdf>. Last accessed on 10.06.2010.
9. Merlis M., Gould D., Mahato B. Rising Out-Of-Pocket Spending for Medical Care: A Growing Strain on Family Budgets. *The Commonwealth Fund Report.* February 1. 2006. http://thecommonwealthfund.net/~media/Files/Publications/Fund%20Report/2006/Feb/Rising%20Out%20of%20Pocket%20Spending%20for%20Medical%20Care%20%20A%20Growing%20Strain%20on%20Family%20Budgets/Merlis_risingoopspending_887%20pdf.pdf
10. *National Health Accounts.* Ministry of Labor, Health and Social Affairs of Georgia: http://moh.gov.ge/ge_pdf/angarishebi/geo/2006geo.pdf. 2006. Last accessed on 29.01.2009.
11. Pannarunothai S., Mills A. The poor pay more: health-related inequality in Thailand. *Soc. Sci. Med.* 1997; 44: 1781-1790.
12. Poghosyan V.R. [The evaluation and development mechanisms of emergency care in Yerevan] [published in Russian]. PhD Thesis. Yerevan. 2005. 22 p:
13. *Residents of Armenia* are struggling for medical care and medicines. *WHO Bulletin.* Issue 87, Number 7, July 2009. <http://www.who.int/bulletin/volumes/87/7/09-010709/ru/>. Last accessed on 22.06.2010.
14. *Technical Briefs for Policy-Makers Designing Health Financing Systems to reduce catastrophic health expenditures.* WHO/EIP/HSF/PB/05.02.1-2.
15. *World Health Report.* WHO. Geneva. 2010. P. XV- XVI.
16. Xu K. Distribution of health payments and catastrophic expenditures. *Methodology.* WHO. Geneva. EIP/HSF/DP/05.02. 2005. 4
17. Xu K., Evans D.B., Kawabata K., Zeramdini R., Klavus J., Murray C.J.L. Household catastrophic health expenditure: a multi-country analysis. *Lancet.* 2003; 362: 111-117.