
What determines healthcare utilization and related out-of-pocket expenditures in Tajikistan? Lessons from a national survey

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Abstract

Objectives: The government of Tajikistan is currently exploring the ways to test the possible introduction of a Basic Benefit Package which is to provide healthcare for the most vulnerable groups within the population. In this context, the objective of this study is to analyze individual, household, geographical and systemic factors which explain healthcare utilization and out-of-pocket expenditures in Tajikistan.

Methods: Using a nationally-representative survey, the author examines the determinants of healthcare utilization and its related out-of-pocket expenditures. Two empirical multivariate models are employed: binomial logit regression to estimate the determinants of healthcare utilization and Tobit regression to estimate the determinants of out-of-pocket expenditures.

Results: An increase in the ability to pay is associated with a higher propensity to utilize healthcare. Likewise, being a woman, being elderly, having higher educational attainment and having chronic illness also increase the propensity to utilize healthcare. Conversely, needing to travel a long distance to health post reduces the likelihood of utilization. An increase in ability to pay, being female and using specialized healthcare facilities increases the amount of out-of-pocket expenditures. In contrast, using ancillary healthcare personnel and outpatient facilities reduced the amount of out-of-pocket expenditures.

Conclusions: Linking receipt of the package with targeted social assistance and development of Community Based social insurance scheme can improve accessibility and affordability of healthcare.

Keywords: Health policy – Poverty – Inequality – Central Asia – Tajikistan.

Introduction

Since the beginning of transition, the countries of the former Soviet Union have experienced significant drops in public spending with regard to the healthcare sector, a considerable rise in out-of-pocket expenditures, ineffectiveness of healthcare delivery and a growing inequality in terms of the accessibility and affordability of healthcare utilization^{1–4}. Among the worst affected was the healthcare sector in Tajikistan.

Being one of the poorest countries among the republics of the former Soviet Union, Tajikistan has a per capita GDP of US\$ 180⁵. Healthcare sector expenditures in the country constitute approximately 1 percent of GDP, the second lowest level, after Georgia, among all transitional countries⁶. In real terms, expenditures on the healthcare sector are at less than a tenth of their pre-transitional levels⁷. From 1990 to 1999, the average official monthly salary of healthcare personnel has dramatically plummeted from US\$228 to US\$2.87, much lower as compared with other industries in the country⁵. Some healthcare facilities were completely destroyed during the civil war ended in 1997. Others, especially in rural and remote areas, ceased to operate as a result of a lack of personnel, equipment, and utility supplies. The burden of healthcare expenditures has shifted dramatically from the state to individuals. Consequently, approximately 60 percent of total healthcare expenditures in Tajikistan come from private sources⁸.

In light of this evidence, the objective of this study is to analyze individual, household, geographical and systemic factors which explain healthcare utilization and out-of-pocket expenditures in Tajikistan. More specifically, this paper seeks to answer to two questions:

Table 1. Descriptive statistics of the sample.

Variables	Description	Mean	Std. Dev.
Dependent variables			
Utilized	Has utilized healthcare for any reason during the last 4 weeks (1=yes)	0.060	0.238
Amount paid	Amount of out-of-pocket payments related to healthcare utilization including travel to and from medical consultation, payments for services, laboratory tests and diagnostics, value of any gifts to personnel in form of money, chocolates, barter services, etc. Amount is in Somoni, Tajikistan national currency.	0.637	7.209
Independent variables			
Ability to pay	Household total expenditure adjusted to household size. Amount is in Somoni, Tajikistan national currency.	19.343	19.619
Female	Gender female (female=1)	0.501	0.500
Education	Individual's education expressed in the years of schooling	8.759	3.773
Age	Individual's age in years	24.126	18.732
Chronic	Individual suffers from a chronic illness or disability that has lasted more than 3 months	0.062	0.241
Distance to health point	Distance for the nearest health post in km (community perception)	1.603	5.803
Long travel	Traveled one hour or more to the medical consultation, actual experience of the patients (1=yes)	0.006	0.079
<i>Type of healthcare personnel provided care</i>			
Nurse	Care provide by a nurse (1=yes)	0.038	0.191
Health post	Care provided by health post personel (1=yes)	0.015	0.122
<i>Type of health condition, illness or disease for which care has been received</i>			
Heart	Received medical care for heart condition (1=yes)	0.110	0.313
Respiratory	Received medical care for respiratory condition (1=yes)	0.213	0.410
Digestive	Received medical care for digestive condition (1=yes)	0.088	0.284
Diarrhea	Received medical care for diarrhea condition (1=yes)	0.028	0.165
Malaria	Received medical care for malaria condition (1=yes)	0.036	0.185
T.B.	Received medical care for T.B. condition (1=yes)	0.006	0.079
Abortion	Received medical care for abortion (1=yes)	0.004	0.062
Cancer	Received medical care for cancer (1=yes)	0.014	0.117
Blood pressure	Received medical care for blood pressure (1=yes)	0.060	0.237
Hepatitis	Received medical care for hepatitis (1=yes)	0.010	0.097
Typhoid	Received medical care for typhoid (1=yes)	0.008	0.090
Rheumatism	Received medical care for rheumatism (1=yes)	0.027	0.163
<i>Type of healthcare facility where care has been received</i>			
Patient's home	Received care in patients' home (1=yes)	0.344	0.475
Polyclinic	Received care in polyclinic (1=yes)	0.261	0.439
Medical houses	Received care in medical house (1=yes)	0.012	0.109
CRH	Received care in CRH – Central District Hospital (1=yes)	0.088	0.284
Health point	Received care in health point (1=yes)	0.037	0.190
Dispensary	Received care in dispensary (1=yes)	0.008	0.087
Diagnostic center	Received care in diagnostic center (1=yes)	0.009	0.094
City hospital	Received care in city hospital (1=yes)	0.098	0.298
Regional (oblast) hospital	Received care in regional (oblast) hospital (1=yes)	0.034	0.182
Republican hospital	Received care in republican hospital (1=yes)	0.032	0.177
SUB	Received care in SUB – Small Rural Hospital (1=yes)	0.031	0.174
SUV	Received care in SUV – Rural Physician Ambulatory (1=yes)	0.015	0.122

Data source: TLSS 2003.

- What are the determinants of healthcare utilization in Tajikistan?
- What are the determinants of out-of-pocket expenditures related to healthcare utilization?

This paper attempts to provide practical information to help support evidence-based policy-making for healthcare sector reform in Tajikistan. The government is currently exploring the ways to test the possible introduction of a Basic Benefit

Package⁹. The purpose of this package is to provide partly or fully subsidized healthcare for the most vulnerable groups within the population. In this context, the findings of this paper will help clarify the relationship between individual, household, geographical and systemic factors and healthcare utilization and out-of-pocket expenditures in order to calibrate the terms and conditions of the Basic Benefit Package.

Methods

Data set

The data set used for analysis in this paper comes from the Tajikistan Living Standards Survey (TLSS) of 2003. The TLSS is a cross-sectional multitopic nationally-representative survey which was designed and implemented to estimate the major parameters of living standards in Tajikistan during transition. The overall sample of the TLSS is 26,141 individuals in 4,156 households. It is based on a stratified clustered random probability sample. The sample stratified according to regions and urban/rural settlements and further clustered to 208 primary sampling units.

The advantage of the TLSS is that it collects information about various aspects of health care utilization including which form of professional healthcare assistance was sought, for which illness assistance was sought and in which healthcare facility assistance was provided. The survey also inquired about the distance patients had to travel to reach the nearest healthcare facility, and about the specific chronic illnesses and disabilities that patients suffered. Another advantage of the TLSS is that it defined out-of-pocket expenditures as covering a wide range of expenditures related to healthcare utilization such as payments for healthcare professionals, laboratory tests and diagnostics, payments in cash and in-kind, and payments for travel to and from healthcare facilities. The disadvantage of the TLSS is that it does not provide information about the number of times healthcare was utilized, the quality of utilized healthcare, and healthcare utilization by children.

Empirical models and variables

This study uses a two-stage sequential model^{1,10}. The detailed definitions of dependent and independent variables included in the model, together with descriptive statistics, are shown in Table 1.

In the first stage, we assess the probability of healthcare utilization. Since the dependent variable in this stage is binary (utilized = 1, otherwise = 0), binomial logit regression is estimated. At this stage a few household and individual characteristics such as ability-to-pay, gender, education, age and health status are observable. In addition, we link household and per-

sonal data with the community module of the TLSS which records answers about distance from the population point to the nearest health post. Community response reflects community perceptions about the distance rather than the actual experiences of the patients who use health post. Nevertheless, this variable is important since it plays a role as a proxy for the rural and remote areas of the country where the health post is often the nearest healthcare facility available.

In the second stage, we assess which factors affect the level healthcare utilization expenditures for those individuals who utilized healthcare. The computation was restricted to those individuals who actually utilized healthcare. At this stage, the type of healthcare personnel consulted, the type of health condition, illness or disease for which care was provided and the type of healthcare facility where care or treatment was received become observable. In addition, we use the variable “long distance” to indicate that the patient traveled 1 hour or more to receive healthcare. In contrast to the variable, “distance to health post”, the “long distance” variable reflects the actual experience of the patients who utilized healthcare.

For the second stage, Tobit regression is estimated since the distribution of healthcare expenditures is not normal¹. Indeed, the data on the amount of expenditures for healthcare is censored since not all individuals who utilized healthcare paid out-of-pocket expenditures. Thus, amount of payment are observable only for those individuals who actually made payments. Analysis of such data using OLS regression will provide inconsistent results because censoring of data is ignored by OLS. By contrast, Tobit model estimates effect of independent variables on the expected amount of out-of-pocket expenditures, given that the individual was not censored. Therefore, Tobit provides consistent regression estimates by properly taking into account the individuals who were censored (i. e. did not make payment).

Results

Stage 1: Determinants of healthcare utilization

The result of estimation is presented in Table 2. The first two columns of the table exhibit the results of binomial logit regression on the probability of healthcare utilization. All six household and personal characteristics included in the model have significant impact on the propensity of healthcare utilization at the highest level of significance. The ability to pay is one such significant factor. An increase in the ability to pay is significantly associated with an elevated likelihood of utilization. More specifically, for a one unit increase in household total expenditures, the log odds of healthcare utilization increases by 0.007.

Table 2. Determinants of demand for medical consultations and out-of-pocket expenditures associated with healthcare utilization.

Independent variables	Determinants of healthcare utilization (Binomial Logit regression)		Determinants of out-of-pocket expenditures associated with healthcare utilization (Tobit regression)	
	Regression Coefficient	Standard Error	Regression Coefficient	Standard Error
Ability to pay	0.007***	0.00	0.083*	0.04
Female	0.567***	0.07	0.597*	0.26
Education	0.027**	0.01	2.24	2.03
Age	0.017***	0.00	-0.097	0.06
Chronic	2.27***	0.08	0.419	2.12
Distance to health post	-0.024***	0.00	n/a	n/a
Long travel	n/a		19.01*	7.33
<i>Type of healthcare personnel provided care</i>				
Nurse	n/a		-21.83**	7.27
Health point	n/a		-8.446	5.84
<i>Type of health condition, illness or disease for which care has been received</i>				
Heart	n/a		-0.800	2.76
Respiratory	n/a		-1.037	2.66
Digestive	n/a		-1.739	3.19
Diarrhea	n/a		-22.93**	7.14
Malaria	n/a		-0.211	4.24
T.B.	n/a		9.348	17.29
Abortion	n/a		51.96	41.63
Cancer	n/a		-17.37*	7.63
Blood pressure	n/a		-1.058	3.44
Hepatitis	n/a		4.623	9.55
Typhoid	n/a		13.41	17.89
Rheumatism	n/a		7.346	4.85
<i>Type of healthcare facility where care have been received</i>				
Patient's home			-17.62***	5.15
Polyclinic	n/a		-8.350	4.84
Medical houses	n/a		-8.554	6.07
CRH (Central District Hospital)	n/a		-5.556	5.86
Health point	n/a		-17.32**	6.56
Dispensary	n/a		-7.448	12.11
Diagnostic center	n/a		4.407	11.93
City hospital	n/a		-0.531	5.51
Regional (oblast) hospital	n/a		14.95	12.09
Republican hospital	n/a		31.73**	10.23
SUB (Small Rural Hospital)	n/a		-0.094	6.06
SUV (Rural Physician Ambulatory)	n/a		-8.802	9.38
	n/a			
Number of obs = 19453			Number of obs = 1302	
F(7) = 176.51			F(32) = 3.04	
Prob > F = 0.0000			Prob > F = 0.0000	

* p < 0.05; ** p < 0.01; *** p < 0.001 adjusted to complex survey design through Taylor' linearization.

Data source: TLSS 2003.

Two important points should be highlighted here. On the one hand, this finding demonstrates that poorer households in low-income countries face considerably greater financial barriers in applying for medical assistance as they have to

spend a larger proportion of their budget on healthcare than do wealthier households. In Georgia, for instance, household expenditures on outpatient care utilization for the households in the wealthiest quintile of income distribution constitutes 15

percent of total income, while a comparable figure for households in the poorest quintile is 23 percent⁴. Similarly, in Kazakhstan, expenditures on a physician visit comprise only 6 percent of the monthly income for the wealthiest households, while the poor have to spend about 21 percent¹¹.

On the other hand, this finding highlights the differences between low and middle income transitional countries in relation to the impact of ability to pay to the probability of utilizing medical consultations. Although our findings show a significant effect of ability to pay in Tajikistan, a low-income country, this effect seems to be much less pronounced in relatively wealthier transitional countries³.

Gender is another significant factor explaining probability of healthcare utilization. Women have a significantly higher propensity to utilize healthcare than men which can be explained by the differences in lifestyles such as smoking and drinking alcohol. Additional explanation is that women need healthcare with their pregnancies which can really impact utilization figures comparing men and women.

Two other important factors explaining the likelihood of attending medical consultations are education and age. An increase in educational attainment and age are both strongly associated with the increased propensity to attend medical consultations since both characteristics are well-known predisposing factors of healthcare utilization¹². For example, individuals with higher educational attainment may better understand the need for medical consultations and the ways that the healthcare system functions. Hence, they may be more predisposed to utilizing healthcare services than less educated individuals. Similarly, the elderly are more vulnerable to illness than are the young, and so are more likely to use healthcare.

The most important factor affecting the probability of consulting healthcare professionals is having a chronic disease. Chronically ill and disabled individuals have strong needs for regular monitoring and diagnostics and therefore have a higher propensity of healthcare utilization. This result is consistent with findings in other transitional countries¹³.

Finally, the distance to the health post is important since the longer the distance to travel to the nearest health post, the lower the likelihood of healthcare utilization. Other studies also found that in Tajikistan, needing to travel a longer distance to a healthcare facility significantly increases the probability of not seeking care while sick¹⁴. In contrast, distance is irrelevant in explaining the probability of healthcare utilization in middle-income transitional countries¹. It must also be noted that health posts are more important in rural areas than in urban ones, where consultations are available through polyclinics. Therefore, these results confirm previous findings about the urban/rural gap in healthcare utilization in Central Asian countries².

Stage 2: Determinants of expenditures related to healthcare utilization

The last two columns of Table 2 exhibit the results of Tobit regression on the amount out-of-pocket expenses related to healthcare utilization. Three household and individual factors, namely, ability to pay, being female and longer distances to the consultation point are still significant.

An increase in the amount of out-of-pocket payments is strongly associated with an increase in ability to pay. Thus, a unit increase in household total expenditures lead to a 0.083 increase in the predicted amount of out-of-pocket expenditures associated with healthcare utilization. Furthermore, there is evidence that informal prices for healthcare services are negotiated in such a way as to take into consideration the patient's ability to pay: "the price is set after the negotiations with the patients and according to her/his ability to pay"¹⁵. Typically, an informal assessment of ability to pay is based on information regarding the household members' professions, area of residence and an assessment of the quality of clothing of prospective patients. Patients who are considered poor by healthcare providers may pay less for the same services that can only be acquired at a greater cost by wealthier patients. Sometimes patients deemed not to be able to pay at all are served utterly free of informal out-of-pocket charges. Perhaps this practice can explain the significantly lower out-of-pocket expenditures paid for acute conditions such as diarrhea and cancer. Nevertheless, questions remain about how widespread this practice is, and whether the patient's ability of pay can be evaluated accurately by providers.

The factor of a longer traveling time to the health post is significant in increasing out-of-pocket expenditures related to consultation in Tajikistan. In contrast, the time and distance it takes to travel to the healthcare facility is irrelevant in explaining the amount of out-of-pocket expenditures in Russia, and even in neighboring Kazakhstan¹⁻². This finding again highlights the differences between low and middle income transitional countries.

Applying for healthcare from nurses and having consultations take place in the patients' home or health point all significantly reduce the amount of out-of-pocket payment that are made. Conversely, attending a consultation at a republican hospital significantly increases the amount of payments made. This finding reflects the increasing gap in ability to pay between the poor and the wealthier. The burdens of out-of-pocket expenditures, which affect the poor and the wealthier differently, seriously alter the health-seeking behavior of these two groups. Financial barriers force the poor to seek consultations from less specialized healthcare professionals – nurses not doctors, or from less specialized facilities – at home or at local health points, and not at republican hospitals. In contrast, the wealthier tend towards using more specialized facilities and personnel.

Discussion

The government of Tajikistan faces the difficult task of maintaining the accessibility and affordability of healthcare utilization against a backdrop of plummeting government revenue and expenditures on healthcare and an increase in private out-of-pocket expenditures. The results of this study have confirmed that out-of-pocket payments have indeed become the major barrier to healthcare utilization. Therefore, it would be useful to establish a policy of fully or partly subsidized healthcare for the neediest to cover the costs of utilization through the Basic Benefit Package. The empirical results presented in this paper allow us to draw several implications for the successful design and implementation of such a package.

First, policy-makers and health administrators should be aware that the package must be comprehensive from a clinical perspective. The results of this study suggest that there is a need to redirect resources so as to target the groups that are experiencing most of the problems with accessibility and affordability. The package should be developed to provide long-term support and follow-up for the chronically ill and the disabled. Likewise, special attention should be paid to restoring a gender balance in the utilization of medical consultations, taking into consideration the significant gap between the sexes in terms of mortality and morbidity. Similarly, the package should include compensation for travel to healthcare facilities, especially for those living in rural and remote areas.

Second, the package should have carefully calibrated targeting criteria so as to effectively reach out to the neediest segments of society. The effectiveness of the package is often low in transitional countries since the identification of the poor and vulnerable is difficult and often inefficient in the context of transitional economies⁶. Under these circumstances, one possible approach to the efficient identification of the poor

is to link the receipt of subsidized healthcare with the receipt of targeted social assistance benefits. The Tajik government is currently developing a targeted social assistance scheme aimed at the poor. The objective of the program is to reach out the poor and to provide them with social assistance benefits. The coverage of the package, therefore, can be extended to recipients of this program. The recent studies in Armenia and Georgia have demonstrated that the use of a subsidized benefit package, which is linked to the receipt of carefully calibrated social assistance schemes, can significantly improve utilization and affordability of outpatient health services in transitional countries^{16–17}.

Third, another possible approach to raising extra revenue in order to fund healthcare involves community-based health insurance (CBHI). A standard nation-wide health insurance scheme based on compulsory wage and salary taxation could be difficult to implement in Tajikistan. The level of urbanization is low, and participation in the informal labor market is high in this country. These two factors will limit the contributory base of the scheme, especially in rural areas. On the other hand, CBHI is a more appropriate system for rural areas of the low-income transitional countries where people know each other well, and where the level of social capital is high¹⁸. In such areas CHBI are successful in raising insurance contributions and improving the accessibility and affordability of healthcare utilization.

Finally, from a theoretical perspective, this study provided some evidence on the differences between low- and middle-income transitional countries in the determinants of healthcare utilization in the former USSR. Some factors which are significant for low-income countries are utterly irrelevant for middle-income countries. This finding suggests the need for rigorous cross-country comparative studies to better understand the divergent patterns in healthcare development.

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