

The inequity in out-of-pocket expenditures for healthcare in Tajikistan: evidence and implications from a nationally representative survey

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Abstract

Objective Out-of-pocket expenditures (OPE) for healthcare are a widespread and enduring phenomenon in post-communist countries. However, evidence regarding their effect on health equity is limited, especially in the low-income countries of Central Asia. With this in mind, the current paper presents the results of an analysis of the impact of OPE on equity in Tajikistan, one of the poorest transitional countries.

Methods Utilizing a sample from a nationally representative household survey, this paper presents a systematic examination of the effect of OPE on equity using concentration curve, quintile analysis and concentration indices. The impact was disaggregated by inpatient and outpatient services, and medication purchase. Further disaggregation was performed according to spatial dimensions, by types of providers, condition or disease, by place of medication purchase, and by type of facility and treatment received.

Results Overall, OPE in Tajikistan are equally distributed across the population, with the poorest and the wealthiest, in most cases, bearing a similar level of burden. However, the poor bear the heaviest burden in terms of expenditures for medication and other supplies in inpatient services. There is considerable spatial variation in the expenditures burden, with regional variation being more substantial than rural–urban variation. More importantly, the poor experience a

larger proportion of burden with regard to expenditures in vital areas such as those of infectious diseases and maternal health.

Conclusions While current economic constraints and the ongoing health sector reform in Tajikistan promote OPE for healthcare utilization, the lack of financial protection against the risk of these conditions should be of major concern to policy-makers. In particular, the problems of OPE, which have been found to place a higher burden on the poor, should be taken into consideration during healthcare reform in Tajikistan.

Keywords Health policy · Inequality · Poverty · Central Asia · Tajikistan

Introduction

Recent studies have shown an increasing level of interest in understanding private out-of-pocket expenditures (henceforth OPE) in transitional countries. Several studies on the middle-income countries of Eastern Europe and the western republics of the former Soviet Union show that private OPEs have functioned as the primary means of filling the gap in funding for healthcare, which emerged as a result of the continuing economic constraints in public financing (Aarva et al. 2009; Cockcroft et al. 2008; Gaal et al. 2006; Gaal and McKee 2006; Szende and Culyer 2006; Lohlein et al. 2003). The situation is even more dire in the transitional countries of the Caucasus and Central Asia, where money coming from OPEs have become the major source of healthcare financing, and where OPEs far exceed public levels of funding (Balabanova et al. 2004; Bonilla-Chacin et al. 2005; Gotsadze et al. 2005; Belli et al. 2004; Sari et al. 2000; McKee et al. 1998).

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With this background in mind, this paper focuses on Tajikistan, the former Soviet republic that has been, and still is, the poorest country of the former Union. Furthermore, Tajikistan has suffered from a cruel civil war and an economic recession that was more profound and prolonged than those in other transitional countries (Mirzoev et al. 2007). The country's public expenditures on healthcare have decreased dramatically since the beginning of transition, and are the second lowest among all low-income transitional countries, at approximately 1% of gross domestic product (Bonilla-Chacin et al. 2005). Over the same period, the transition has been accompanied by an increase in incidents of infectious diseases, child and maternal mortality, and a drastic decline in total fertility and life expectancy (Government of Tajikistan 2005).

The plummeting levels of public government expenditures and the deteriorating health status of the population have led to a shift in the burden of healthcare expenditures from the state, which previously was the exclusive funder of healthcare, to private households. Consequently, by 1999, almost half of patients reported paying OPE (Falkingham 2004). About 15% of those who needed healthcare reported not seeking healthcare at least once, and >12% reported not seeking healthcare three or more times (Fan and Habibov 2009a). Moreover, >77% of people reported that finding money to pay for healthcare had been difficult, while another 7% said that it was impossible. As a result, individuals from wealthier households utilized health care more frequently than did the poor (Habibov 2009a, b, 2010; Fan and Habibov 2009b).

Previous studies have primarily focused on the magnitude of OPE, and its effects on the utilization of healthcare. However, less is known about the impact of OPE on equity in Tajikistan and other transitional countries (Szende and Culyer 2006; Thompson and Witter 2000). To what extent are they unequally distributed across the population? Who bears the greatest burden regarding OPE, the poorest or the wealthiest? How does this burden vary between outpatient and inpatient services and the purchase of medications? How does this burden differ across regions, types of payments, providers and services received, as well as health conditions or diseases?

Answering the above questions is important in the current context of Tajikistan. At the beginning of the transition, Tajikistan, like all other transitional countries, inherited a universal and comprehensive but resource-intensive and ineffective healthcare system which was funded exclusively by the government and was characterized by high rates of utilization, regardless of ability to pay (Parfitt and Cornish 2007). Unable to provide universal-free healthcare during the transition, the government of Tajikistan adopted a sweeping program of

reforms (Government of Tajikistan 2005). A number of healthcare organizations, mostly those which were highly specialized such as the Republican Centre of Dentistry, the National Diagnostic Centre, and the Republican Centre of Rehabilitation Surgery, were permitted to charge out-of-pocket fees for services which had previously been offered for free (Falkingham 2004). Other healthcare organizations were permitted to charge fees only for certain services, for instance, ophthalmic services, orthopedics, X-rays, dentistry, and urine and blood tests.

In this context, the practical significance of this study is that it helps to quantify the burden of OPE on the population according to the specific parts of healthcare system—outpatient services, medication purchase, and inpatient services. This information is aimed at helping policy-makers identify key points in the healthcare system which are associated with a higher burden of OPE on the poor. In turn, these findings will also contribute to making informed decisions regarding further healthcare reform in Tajikistan aimed at improving the accessibility and affordability of healthcare.

The theoretical significance of this study is that it contributes to a better understanding of the nature of OPE payments in low-income transitional countries. Studies previously conducted in low-income transitional countries found that OPE payments play the vital role of an effective mechanism of quasi redistribution (Gotsadze et al. 2005; Belli et al. 2004). The authors reported that healthcare personnel discriminate in favor of the poor by providing them services at lower OPE, or completely free of charge, while lost revenues are “compensated” for by charging wealthier patients higher OPE payments. This cross-subsidizing has also been referred to as the “Robin Hood” hypothesis (Ensor and Savelyeva 1998). In contrast, studies conducted in middle-income countries of Eastern Europe tend to reject this proposition by showing that OPEs are regressive (Gaal et al. 2006; Gaal and McKee 2006).

Competing theories also exist on the relative importance of various types of OPE. Studies in middle-income countries emphasize the importance of OPE payments to personnel (Aarva et al. 2009; Cockcroft et al. 2008; Gaal et al. 2006; Gaal and McKee 2006). In contrast, scattered evidence from low-income transitional countries highlights a major role of OPE payments for supplies and medication (Habibov 2010; Ensor and Savelyeva 1998). Therefore, by assessing the relative importance of the various components of out-of-pocket payments in Tajikistan, this study contributes to filling the gap in the existing literature on the phenomena under investigation in the context of low-income transitional countries.

Methods

Data

Data were extracted from the 2003 Tajikistan Living Standards Survey (the TLSS), conducted by the World Bank and Tajikistan State Statistics Committee. The survey is a nationally representative instrument with a multistage stratified sample. The first level of stratification involves regional stratification to socio-economic regions including: (1) the capital Dushanbe, the second wealthiest and most economically and socially developed part of the country; (2) the Khatlon region, which is the most populous among the country's regions, and is specialized in cotton monoculture; (3) the Rayons of Republican Subordination (abbreviated as RRS) region which is the wealthiest part of the country, and is located around the capital. It is home to a giant aluminum smelter, and has fertile agricultural valleys which produce crops other than cotton; (4) the Sogdian region, which is the most industrialized part of the country; and (5) the Gorno-Badakhshan Administrative Oblast (abbreviated as GBAO) region, which is a remote and mountainous region with a small population, and is located in the Pamir range. GBAO is the poorest region of Tajikistan. The second level of stratification includes the rural–urban strata. As a result, the TLSS is representative both at the regional and at the urban/rural level. After stratification, 208 primary sampling units (PSUs) were selected within each strata based on the probability proportional to size. Each PSU represents well-defined geographical areas such as population points or communities for which a detailed list of households is available. At the last stage of the sampling, 4,156 households were selected for face-to-face interviews. Each member of the selected households was interviewed, with the total sample of the TLSS comprising 26,141 individuals.

The main advantage of the TLSS for studying OPE is that it is one among a very few nationally representative surveys in low-income transitional countries that collects rich and detailed information about a wide range of OPE. More specifically, the TLSS asked about 12 types of OPE payments, grouped into 3 broader categories. The first category, outpatient services, encompasses OPE paid for transportation to and from outpatient services, payment for services including consultations and laboratory tests, both in cash and in-kind, including such things as gifts, food, flowers, chocolate, services and others. The second category, OPE payments for medications, comprises of medications that was both prescribed by a healthcare professional and medications that were non-prescribed. The third category, OPE for hospitalization, encompasses a wide range of payments including food, medicine, other supplies, laboratory charges, physician charges, ancillary

staff (nurses and lab technician) charges, and all other charges related to hospitalization not mentioned above.

The TLSS does not clearly differentiate between formal and informal OPE, since this subdivision is not clear in the overall context of Tajikistan. Although, as discussed above, limited official fees are allowed, most of the fees reported in the survey were likely unofficial (Falkingham 2004). Consequently, despite the above-discussed limitation, the TLSS has already been utilized in several studies of OPE in Tajikistan (Habibov 2009a, b, 2010).

Analytic procedure

To answer the questions regarding inequity in the OPE burden on healthcare discussed above, we use several methods suggested by previous studies (Gaal et al. 2006; Gaal and McKee 2006). We commence with a concentration curve, which plots the cumulative percentage of OPE payment on the *y*-axis, against a cumulative percentage of the population, ranked by a welfare indicator, from the poorest to the wealthiest, on the *x*-axis. The welfare indicator is household total consumption per capita per month, an indicator which has traditionally been used to assess poverty in Tajikistan (Habibov 2009a). If everyone, irrespective of the welfare indicator variable, paid exactly the same amount of OPE, then the burden of private expenditures would be distributed equally. In this case, the concentration curve will coincide with a 45° line, the so-called line of equality. In contrast, in the case that OPE would take lower values for poorer people, the concentration curve would lie below the line of equality, signaling a progressivity of the OPE burden.

Although the concentration curve and quintile analysis provide a vivid graphical illustration of the existing inequality in OPE, they lack the option of precise and convenient interpretation. Therefore, the main tool for assessing inequality in the OPE burden is the concentration index, which is perhaps the most widely used measure to gauge inequity in healthcare (Konings et al. 2010; van Doorslaer et al. 2006; Kakwani 1977). The index is directly related to the concentration curve, and is defined as twice the area between OPE and the 45° equality line. The index is bounded between -1 and 1 . A negative direction of the index from 0 to -1 demonstrates to what extent degree OPE are regressive, by indicating to what extent the poorer people have a larger burden in paying OPE. A positive direction from 0 to 1 demonstrates to what degree OPE are progressive, by indicating to what extent the wealthier hold a larger burden of OPE.

Further analysis was performed by estimating concentration indices by spatial dimensions, by type of providers, by condition or disease, by place of medication purchase, and by type of facility and treatment received. Following

this, we compared the amount of OPE across quintiles of the welfare indicator by which population was ranked. The objective of such an analysis is to explore inequality of OPE by quintiles of household consumption in Tajikistan.

All analysis has been conducted by Distributive Analysis Stata Package (DASP) especially designed to perform distributive analysis in Stata software (Abdelkrim and Duclos 2009). Using DASP permits computation of concentration indices and confidence intervals with adjustment of estimation results to national sampling weights, clustering and stratification via Taylor's linearization procedure.

It must be noticed that the results of estimations presented in this paper is rather suggestive and indicative since no formal test of statistically significant difference between concentration indices was performed.

Results

Concentration curve and concentration index

The distribution of OPE for inpatient and outpatient services, and for medicine purchases across the total population is graphically illustrated in Fig. 1. The OPE payment concentration curve rests below the 45° line of equality. It signals the progressivity of payments by demonstrating that the OPE takes lower values for poorer people and higher values for wealthier people.

Concentration indices are reported in Table 1. The positive values of the indices for all OPE confirm the overall progressive nature of OPE in Tajikistan. However, it is important to note that there is large variation between the degrees of progressivity, and inpatient expenditures are less progressive than are outpatient and medication expenditures. With regard to inpatient expenditures, expenditures on

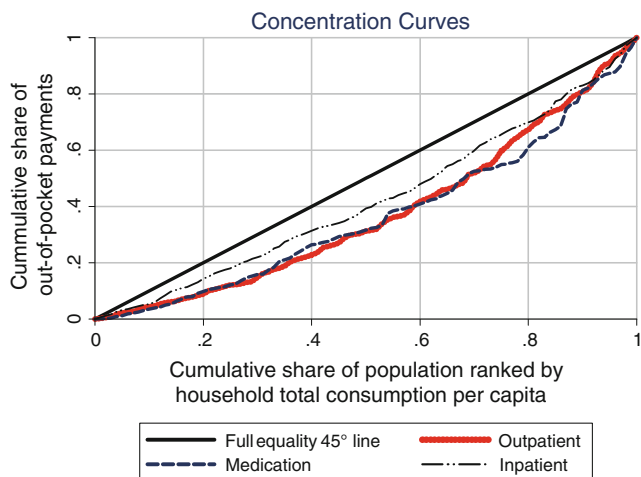


Fig. 1 Distribution of the out-of-pocket expenditure burden across population by wealth

medicine and other supplies have been found to be the least progressive, followed by expenditures for laboratory and ancillary staff. Among outpatient expenditures, in-kind payments constitute a higher burden for the poorer parts of the population than do expenditures on transportation or cash fees.

Spatial variation

The spatial variation in concentration indices is reported in Table 2. Overall, there is more variation between the different regions of the country than between rural and urban areas. From the regional perspective, the highest burden of OPE among the poor can be seen in the capital Dushanbe, and in the RRS regions, and for outpatient services it can be seen in the Sogdian region as well. In contrast, the lowest level of burden can be observed for the GBAO region.

From a rural–urban perspective, the variation in progressivity is relatively small for both medicine purchase and outpatient services. The variation is more considerable for outpatient services, where the burden of OPE for the poor is much higher in rural areas than in urban ones.

Other variations

The variation in concentration indices, grouped by outpatient services and place of medicine purchase, is reported in Table 3. The first panel illustrates disaggregation by outpatient services according to type of provider and condition of disease. Although most concentration indices are positive, confirming the country's overall trend, several indices are negative, signaling a high burden of OPE for the poor. Using the services of a dentist or a nurse, and having hepatitis and diarrhea will cost relatively more for the poor than for the wealthier. Substantial differences can be observed even among positive concentration indices. For instance, the poor experience a relatively lower level of burden if they use a private doctor rather than a state doctor, or if they have an injury rather than a heart, or a maternity-related condition. Likewise, as indicated in the last panel, having access to a state pharmacy decreases the burden for the poor as compared to purchasing medication from a private pharmacy or the market.

The variation in concentration indices, grouped by inpatient services is reported in Table 4. Again, overall, OPE payments were found to be progressive. Despite this, the poor did pay more than did the wealthier when hospitalized with hepatitis. When compared with other conditions, providers and treatments, the poor did pay relatively higher OPE if they were hospitalized with cancer, used SUB, CHR, or oblast hospitals, and if they were hospitalized for observation and consultancy only.

Table 1 Inequality by types of payments

Variable	Concentration index	STD	LB	UB
Outpatient	0.25	0.03	0.19	0.32
Travel	0.27	0.06	0.15	0.39
Payment for consultation and tests in cash	0.26	0.04	0.18	0.35
Payment for consultation and tests in kind	0.18	0.06	0.07	0.30
Medication	0.27	0.04	0.18	0.35
Prescribed	0.46	0.02	0.42	0.50
Not prescribed	0.19	0.06	0.07	0.31
Inpatient	0.16	0.02	0.10	0.20
Food	0.23	0.05	0.14	0.33
Medicine	0.12	0.03	0.06	0.18
Other supplies	0.09	0.03	0.03	0.15
Laboratory charges	0.17	0.03	0.11	0.24
Physician charges	0.20	0.04	0.11	0.29
Ancillary staff	0.17	0.04	0.09	0.25
Other inpatient charges not mentioned above	0.01	0.01	0.00	0.03

Data are rounded up
 STD standard deviation, LB and UB 95% lower and upper bound confidence intervals
 Source: TLSS (2003)

Table 2 Spatial dimensions of inequality

Spatial dimensions	Outpatient				Medicine				Outpatient			
	Concentration index	STD	LB	UB	Concentration index	STD	LB	UB	Concentration index	STD	LB	UB
Regions												
GBAO	0.45	0.07	0.31	0.60	0.47	0.13	0.20	0.73	0.30	0.11	0.08	0.51
Sogdian	0.25	0.07	0.12	0.39	0.33	0.06	0.20	0.45	0.11	0.02	0.06	0.15
Kahtlon	0.40	0.06	0.28	0.52	0.43	0.08	0.26	0.59	0.11	0.06	-0.02	0.23
Dushanbe	0.21	0.09	0.03	0.39	0.11	0.06	0.00	0.22	0.19	0.05	0.10	0.28
RRS	0.22	0.04	0.14	0.31	0.21	0.08	0.05	0.37	0.11	0.06	0.00	0.23
Rural-urban												
Urban	0.21	0.04	0.14	0.28	0.25	0.05	0.15	0.36	0.27	0.05	0.16	0.38
Rural	0.13	0.03	0.07	0.19	0.27	0.07	0.14	0.40	0.24	0.04	0.16	0.32

Data are rounded up
 STD standard deviation, LB and UB 95% lower and upper bound confidence intervals
 Source: TLSS (2003)

A quintile analysis

The amount of OPE payment across quintiles is reported in Table 5. The quintile analysis demonstrates the significant variation in amount of OPE by quintiles, One of the most important findings of the quintile analysis is that the single most expensive OPE item for all quintiles was medication in inpatient services, followed by physician charges and other supplies. Another important finding is that in all cases, the distribution of expenditures was found to be progressive, confirming that the relative burden of OPE is higher for the wealthier groups than for the poorer groups in the country.

Mean out-of-pocket payment for healthcare as percentage of mean household total consumption per capita is reported in Table 6. On the one hand, the results confirm

that the single most expensive OPE item for all quintiles was medication in inpatient services, followed by physician charges and other supplies. On the other hand, it shows that distribution of OPE is regressive in relative terms. For instance, in inpatient service, the poorest quintile in average spend 41% of their total consumption for food and 33% for laboratory charges, while the wealthiest quintile in average spend for these services only 27 and 11%, respectively.

Discussion

Out-of-pocket expenditures payments for healthcare are a widespread and enduring phenomenon in transitional countries. However, evidence regarding the impacts of

Table 3 Inequality by type of providers, condition or disease

	Concentration index	STD	LB	UB
Type of provider				
Private doctor	0.34	0.08	0.18	0.49
State doctor	0.24	0.04	0.17	0.31
Nurse	-0.18	0.21	-0.59	0.23
Feldsher	0.36	0.24	-0.10	0.83
Dentists	-0.42	0.13	-0.68	-0.16
Midwife	0.35	0.13	0.10	0.61
Other	0.17	0.04	0.09	0.24
Condition or disease				
Heart	0.08	0.09	-0.1	0.26
Respiratory	0.33	0.09	0.15	0.51
Digestive	0.22	0.1	0.03	0.4
Diarrhea	-0.26	0.16	-0.58	0.06
Malaria	0.24	0.12	0.00	0.47
TB	0.38	0.22	-0.05	0.82
Injury	0.44	0.1	0.25	0.64
Maternity	0.12	0.09	-0.06	0.3
Abortion	0.33	0.33	-0.32	0.99
Cancer	0.27	0.13	0.00	0.53
Blood pressure	0.31	0.1	0.12	0.5
Hepatitis	-0.05	0.15	-0.35	0.26
Typhoid	0.40	0.13	0.14	0.66
Rheumatism	0.08	0.12	-0.16	0.32
Other	0.27	0.07	0.13	0.4

Data are rounded up

STD standard deviation, LB and UB 95% lower and upper bound confidence intervals

Source: TLSS (2003)

OPE on health equity in these countries is inadequate, and when available, is often conflicting. This study advances our understanding of both the theoretical and practical dimensions of OPE by providing a comprehensive assessment of OPE expenditures in Tajikistan, a low-income transitional country. The findings of this study provide us with several interesting insights.

First of all, overall, OPE payments are progressive in Tajikistan, and are equally distributed across the population, with the poorest and the wealthiest, in most cases, bearing a similar level of burden. Thus, the results of this study seem to confirm the so-called “Robin Hood” hypothesis (Ensor and Savelyeva 1998). This result is in line with previous studies conducted in low-income transitional countries (Gotsadze et al. 2005; Falkingham 2004), but contradict the studies that have been done in the middle-income countries of Eastern Europe which have rejected the “Robin Hood” hypothesis by demonstrating that OPE were, in their cases, regressive (Gaal et al. 2006;

Gaal and McKee 2006). However, the “Robin Hood” hypothesis seems to be supported only in absolute terms, while distribution of OPE in relative terms in comparison with total household consumption by quintiles is still regressive.

Likewise, this study found that the poor bear the heaviest burden with regard to OPE for medication and other supplies in inpatient service. A similar strong negative effect of OPE for supplies has also been reported in other low-income transitional countries where this phenomenon seems to be much more pronounced than in the middle-income transitional countries (Habibov 2010; O'Donnell et al. 2008; Thompson and Witter 2000).

Taken together, these findings suggest the existence of two different models of OPE for low- and middle-income transitional countries. The OPE in low-income transitional countries are characterized by a progressive distribution and a higher share of payments for medication and supplies. In contrast, OPE in middle-income countries are characterized by a regressive distribution in absolute terms progressive distribution in relative terms and a higher share of payments to personnel. This finding is worthy of further investigation through a cross-national comparative study.

Second, we found that buying medications in state pharmacies placed less of a financial burden on the poor than did buying them from private pharmacies or the market. However, most Tajik have no choice but to buy medication from private pharmacies or from the market. Furthermore, many population points suffer from the monopoly of a single, often private, pharmacy provider and experience shortages, or a limited availability of medications, from these pharmacies (Habibov 2009a). Having monopoly in population points, and experiencing shortages of specific medications, such pharmacies frequently increase the prices for consumers, thus creating considerable obstacles for the populace with regard to the affordability of medication. Additionally, the search for medications incurred considerable expenses for those who lived in remote, rural and mountain population points.

A governmental response to this challenge could be twofold. On the one hand, to encourage price decreases, a new regulatory framework through which to stimulate competition between pharmacies, especially those in remote areas, should be developed. On the other hand, the government should utilize the National Center for centralized acquisition of pharmaceuticals, that is responsible for the centralized wholesale purchase and distribution of medications to pharmacies (Government of Tajikistan 2005). In addition to the current responsibilities, the government could assign the Center with ensuring the steady distribution of medicine and supplies to hospitals. This step could greatly alleviate the OPE burden on medication and supplies related to hospitalization (Habibov 2010).

Table 4 Inequality by condition or disease, type of provider, and type of treatment received

	Concentration index	STD	LB	UB
Condition or disease				
Heart	0.06	0.07	-0.07	0.2
Diarrhea	0.22	0.18	-0.14	0.58
Malaria	0.20	0.14	-0.06	0.47
TB	0.35	0.12	0.12	0.59
Injury	0.06	0.08	-0.1	0.22
Maternity	0.12	0.04	0.05	0.19
Cancer	0.01	0.11	-0.21	0.22
Blood pressure	0.10	0.07	-0.03	0.24
Hepatitis	-0.06	0.11	-0.28	0.16
Typhoid	0.12	0.1	-0.09	0.32
Rheumatism	0.32	0.15	0.02	0.61
Other	0.16	0.03	0.09	0.23
Type of facility				
SUB	0.02	0.06	-0.10	0.14
CHR	0.05	0.04	-0.02	0.12
City hospital	0.14	0.04	0.06	0.22
Medical-sanitary units	0.46	0.13	0.20	0.73
Maternal hospital	0.12	0.05	0.02	0.21
Dispensary	0.05	0.13	-0.20	0.29
Oblast hospital	0.08	0.06	-0.03	0.19
Republican hospital	0.21	0.06	0.08	0.33
Specialty hospital	0.27	0.11	0.05	0.48
Type of treatment				
Observation or consultation only	0.05	0.11	-0.16	0.27
Medication	0.12	0.04	0.05	0.2
Surgery	0.11	0.04	0.03	0.19
Intensive care	0.22	0.06	0.11	0.33
Rehab	0.26	0.07	0.11	0.4
Childbirth	0.10	0.04	0.01	0.18
Diagnostic testing	0.31	0.11	0.10	0.53

Data are rounded up

STD standard deviation, LB and UB 95% lower and upper bound confidence intervals

Source: TLSS (2003)

Third, we found considerable spatial variation in the OPE burden. Furthermore, regional variation was found to be more substantial than was rural–urban variation. This is an interesting finding since most of the previous studies on spatial variation in OPE have considered only rural–urban differences (Gaal et al. 2006; Lohlein et al. 2003; Sari et al. 2000), while regional variation has often been neglected. Yet, if left unaccounted for, regional inequalities in OPE further reinforce not only inequalities in other health domains, but also general socio-economic inequalities and hence, prevent effective economic growth and poverty reduction (O'Donnell et al. 2008).

Another interesting finding with regard to regional inequality is that the highest equality in OPE was observed in GBAO, the poorest region of the country. In contrast, the poor bore a higher burden of OPE for outpatient services and medication purchased in both the capital Dushanbe and

in RRS, the two wealthiest parts of the country, than they did in the rest of the country. Such differences can be explained by the variation in degrees of socio-economic development between the regions. Differences in a region's development status, in turn, affect both the supply side and demand-side factors' contribution to the existence of OPE.

From the perspective of the demand-side, healthcare personnel in the wealthier regions tend to have higher expectations for OPE payments, both in the form of explicit and implicit requirements for payment. At the same time, from the perspective of the supply side, patients who enjoy a relatively higher standard of living in the wealthier regions also have a higher level of willingness to pay OPE. Conversely, in the poorer regions, as a result of the population's general inability to pay OPE, the expectations of OPE payments from healthcare personnel are correspondingly lower.

Table 5 Quintile analysis of inequality in out-of-pocket payment for healthcare (amount of OPE by quintiles of household consumption)

Measures	Outpatient					Medication					Inpatient				
	Total	Travel	Cash	In-kind	Total	Prescribed	Not prescribed	Total	Food	Medication	Other supplies	Laboratory charges	Physician charges	Ancillary staff	Other charges
Quintile 1	5.599	2.418	2.675	0.54	4.783	0.252	4.511	88.683	7.669	42.308	8.98	6.134	17.057	5.154	1.379
Quintile 2	7.033	2.724	3.587	0.62	8.323	0.571	6.889	119.586	13.825	60.329	11.561	6.308	20.658	5.414	1.492
Quintile 3	10.169	2.091	5.036	1.522	10.797	1.089	5.903	113.004	12.308	55.198	9.676	5.802	23.007	5.592	1.422
Quintile 4	11.932	4.041	5.699	1.329	11.197	1.615	8.98	151.326	19.722	60.593	13.6	11.37	36.762	7.796	1.483
Quintile 5	21.049	7.07	10.416	1.719	19.577	3.412	10.988	191.355	26.898	83.625	13.727	11.431	44.574	9.594	1.506

Data are rounded up. Data reports average amount of OPE for healthcare in local currency (thousands of somoni) by quintiles of household total per capita consumption. For instance, the most expensive item for all quintiles is OPE for medication in inpatient services, 42,308 for the poorest quintile and 83,625 for the wealthiest quintile. The second most expensive item is physician charges in inpatient services, 17,057 for the poorest quintile and 44,574 for the wealthiest quintile

Source: TLSS (2003)

Table 6 Mean out-of-pocket payment for healthcare as percentage of mean household total consumption per capita

Quintile	Outpatient					Medication					Inpatient				
	Total	Travel	Cash	In-kind	Total	Prescribed	Not prescribed	Total	Food	Medication	Other supplies	Laboratory charges	Physician charges	Ancillary staff	Other charges
Quintile 1	30.53	13.19	14.59	2.94	26.08	1.37	24.60	483.54	41.81	230.68	29.42	33.45	93.00	28.10	483.54
Quintile 2	24.38	9.44	12.43	2.15	28.85	1.98	23.88	414.54	47.92	209.13	47.42	21.87	71.61	18.77	414.54
Quintile 3	26.20	5.39	12.97	3.92	27.81	2.80	15.21	291.11	31.71	142.19	36.93	14.95	59.27	14.41	291.11
Quintile 4	22.52	7.63	10.75	2.51	21.13	3.05	16.95	285.56	37.22	114.34	60.40	21.46	69.37	14.71	285.56
Quintile 5	21.72	7.29	10.75	1.77	20.20	3.52	11.34	197.43	27.75	86.28	63.21	11.79	45.99	9.90	197.43

Data are rounded up

Source: TLSS (2003)

Fourth, OPE payments for certain services, such as those for dentistry services, are still extremely regressive in Tajikistan. More importantly, the poor experience a larger proportion of the burden of OPE in vital areas such as those of infectious diseases and maternal health. Furthermore, the progressivity of OPE is relatively smaller in primary healthcare settings such as in small rural hospitals and in rural physician's laboratories. This finding is especially alarming inasmuch as in transitional countries, these facilities are predominantly utilized by the poor who cannot afford access to more specialized facilities (Gotsadze et al. 2005; Falkingham 2004).

In conclusion, while both the current economic constraints and the ongoing health sector reform in Tajikistan support OPE for healthcare utilization, the lack of financial protection against the risks inherent in these circumstances should be of major concern to policy-makers. Based on the experiences of other low-income transitional countries, this current study has identified two possible approaches to alleviating the negative impacts of OPE (Habibov 2009b). The first would be the creation of a nation-wide Basic Benefits Package through which certain conditions and procedures would be either fully or partly subsidized by the state budget to protect the poorest groups within the population from high level of OPE.

Another would be the creation of a community-based health insurance that would be more successful in raising insurance contributions in areas with high social capital such as remote and rural areas (Polonsky et al. 2009; Poletti et al. 2007). The number of previous studies demonstrated effectiveness of community-based health insurance in developing countries (Bennett et al. 2004; Carrin et al. 2001; O'Donnell et al. 2008). Furthermore, in a systematic review of the existing literature, Ekman (2004) concluded that globally CHI schemes are effective at reducing out-of-pocket payment and increasing access to health care in low-income countries. Moreover, historical examples explained how developing countries were able to build up their national health insurance by incorporating community health insurance (Carrin and James 2005). In addition, recent evidence from countries of the former Soviet Union suggest that such schemes have achieved a high level of equity, according to socio-economic status, age and gender and levels of participation compares favorably with international experience, although problems persist with the lack of coverage for chronic diseases (Poletti et al. 2007). Likewise, Polonsky et al. (2009) demonstrated that that community-based health insurance is synergistic with major health sector reforms and high levels of social capital within the rural communities facilitate scaling it up to the national level.

Which approach, or combination of approaches, will be selected remains to be seen. Nevertheless, the problems

identified in this paper including those of spatial variations, place of medicine purchase, types of providers, conditions and diseases which have been identified as holding a higher percentage of the OPE burden for the poor should all be taken into consideration in any scenario of healthcare sector reform in Tajikistan. Considering these options help to address the existing problems and assist in improving the general affordability and accessibility of healthcare in Tajikistan. It also provides ways to create effective ways in which to channel the country's limited financial resources.

Finally, this study is not without limitations. One of these limitations is that differences in concentration indices between state doctors and nurse that cannot be explained. Another limitation is negative concentration index for hepatitis. The above-described limitations highlight the necessity for further investigations on the health equity in Tajikistan.

References

- Aarva P, Ilchenko I, Gorobets P, Rogacheva A (2009) Formal and informal payments in health care facilities in two Russian cities, Tyumen and Lipetsk. *Health Policy Plan* 24:395–405
- Abdelkrim A, Duclos J-Y (2009) User manual for stata package DASP: version 2.1. PEP, CIRPEE. World Bank and United Nations Development Programme, Montreal
- Balabanova D, McKee M, Pomerleau J et al (2004) Health service utilization in the Former Soviet Union: evidence from eight countries. *Health Serv Res* 39:1927–1950
- Belli P, Gotsadze G, Shahriari H (2004) Out-of-pocket and informal payments in health sector: evidence from Georgia. *Health Policy* 70:109–123
- Bennett S, Kelley AG, Silvers B et al (2004) 21 Questions on CBHF. An overview of community-based health financing. Partners for Health Reformplus, Bethesda
- Bonilla-Chacin M, Murrugarra E, Temourov M (2005) Health care during transition and health system reform: evidence from the poorest CIS countries. *Social Policy Admin* 39:381–408
- Carrin G, James C (2005) Social health insurance: key factors affecting the transition towards universal coverage. *Int Soc Sec Rev* 58:45–64
- Carrin G, Zeramdini G, Musgrove P et al (2001) The impact of the degree of risk-sharing in health financing on health system attainment. HPN Discussion Paper, World Bank, Washington, DC
- Cockcroft A, Andersson A, Paredes-Solis S et al (2008) An inter-country comparison of unofficial payments: results of a health sector social audit in the Baltic States. *BMC Health Serv Res* 8:1–12
- Ekman B (2004) Community-based health insurance in low-income countries: a systematic review of the evidence. *Health Policy Plan* 19:249–270
- Ensor T, Savelyeva L (1998) Informal payments for healthcare in the former Soviet Union: some evidence from Kazakhstan. *Health Policy Plan* 13:41–49
- Falkingham J (2004) Poverty, out-of-pocket payments and access to health care: evidence from Tajikistan. *Soc Sci Med* 58:247–258
- Fan L, Habibov N (2009a) Determinants of accessibility and affordability of health care in post-socialist Tajikistan: evidence and policy options. *Global Public Health* 4:561–574

- Fan L, Habibov N (2009b) Determinants of maternity health care utilization in Tajikistan: learning from a national living standards survey. *Health Place* 16:952–960
- Gaal P, McKee M (2006) Informal payment for health care and the theory of “INXIT”. *Int J Health Plann Manage* 19:163–178
- Gaal P, Evetovits T, McKee M (2006) Informal payment for health care: evidence from Hungary. *Health Policy* 77:86–102
- Gotsadze G, Bennett S, Ranson K, Gzirishvili D (2005) Health care-seeking behaviour and out-of-pocket payments in Tbilisi, Georgia. *Health Policy Plan* 20:222–242
- Government of Tajikistan (2005) Poverty reduction strategy paper, Second Progress Report. Government of the Republic of Tajikistan, Dushanbe
- Habibov N (2009a) Determinants of out-of-pocket expenditures on prescribed medications in Tajikistan: implications for healthcare sector reform. *J Health Org Manage* 23:170–182
- Habibov N (2009b) What determines healthcare utilization and related out-of-pocket expenditures in Tajikistan? Lessons from a national survey. *Int J Public Health* 54:260–266
- Habibov N (2010) Hospitalization in Tajikistan: determinants of admission, length of stay, and out-of-pocket expenditures. Results of a national survey. *Int J Health Plan Manage* 25(3):251–269
- Kakwani N (1977) Application of Lorenz curves in economic analysis. *Econometrica* 32:77–91
- Konings P, Harper S, Lynch J, Berkvens D, Hosseinpoor A, Lorant V, Geckova A, Speybroeck N (2010) Analysis of socioeconomic health inequalities using the concentration index. *Int J Public Health* 55:71–74
- Lohlein D, Jütting J, Wehrheim P (2003) Rural Russia in transition: what determines access to health care services? *Post Sov Aff* 19:80–94
- McKee M, Figueras J, Laurent C (1998) Health sector reform in the former Soviet Republics of Central Asia. *Int J Health Plan Manage* 13:131–147
- Mirzoev T, Green A, Newell J (2007) Progress towards health reforms in Tajikistan. *J Health Organ Manage* 24:495–505
- O’Donnell O, van Doorslaer E, Wagstaff A, Lindelow M (2008) Analyzing health equity using household survey data. World Bank, Washington
- Parfitt B, Cornish F (2007) Implementing family health nursing in Tajikistan: from policy to practice in primary health care reform. *Soc Sci Med* 65:1720–1729
- Poletti T, Balabanova D, Ghazaryan O, Kocharyan H, Hakobyan M, Arakelyan K, Normand C (2007) The desirability and feasibility of scaling up community health insurance in low-income settings: lessons from Armenia. *Soc Sci Med* 64:509–520
- Polonsky J, Balabanova D, McPake B, Poletti T, Vyas S, Ghazaryan O, Yanni MK (2009) Equity in community health insurance schemes: evidence and lessons from Armenia. *Health Policy Plan* 24:209–216
- Sari N, Langenbrunner J, Lewis M (2000) Affording out-of-pocket payments for health services: evidence from Kazakhstan. *Eurohealth* 16:37–39
- Szende A, Culyer A (2006) The inequity of informal payments for health care: the case of Hungary. *Health Policy* 75:262–271
- Thompson R, Witter S (2000) Informal payments in transitional economies: implications for health sector reforms. *Int J Health Plan Manage* 15:169–187
- van Doorslaer C, Masseria C, Koolman X (2006) Inequalities in access to medical care by income in developed countries. *Can Med Assoc J* 174:177–183