

The gender gap in primary health care resource utilization in Central Asia

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There is a large gender gap in life expectancy in some countries of the former Soviet Union. Life expectancy of males is as much as 13 years less than that of females, and a significant portion of the excess male mortality is caused by cardiovascular disease. Although effective primary health care is necessary to manage cardiovascular disease and reduce acute episodes and mortality, the primary health care system is under-utilized by adult males in the region. This study combines disaggregated utilization data with cost data to analyze patterns of per capita primary care resource consumption in urban and rural regions of Kazakhstan and Uzbekistan. The results show that both in absolute and per capita terms, the principal users of primary health care are women of reproductive age and children under five. Based on a combination of utilization and cost of services, women of reproductive age consume approximately 1.5 times the average per capita primary health care resources, while men in the same age group consume approximately one-half of the average. Children under five consume about three to five times the average per capita primary care resources. Based on the results of the study, regional government health purchasers worked together with providers to develop a new per capita payment system with age/sex adjustments and incentives for outreach to bring adult men into the primary care system.

Key words: capitation, primary health care, provider payment, Central Asia

Introduction

Gender equity concerns in health care often centre on ensuring access to high-quality health care services for women. Although women consistently show higher rates of health care utilization and longer life expectancies, they tend to have higher reported morbidity rates, and the quality of care for services such as maternity and child health services can be poor. Primary health care (PHC) programmes are typically targeted specifically toward women of reproductive age and children to address these concerns.

The gender equity debate takes a different turn in many of the countries of the former Soviet Union, however, where male life expectancy has dropped precipitously in some cases, and the gap between male and female life expectancy is widening. In Russia, the gap between male and female life expectancy reached an unprecedented 13 years during the early 1990s, with male life expectancy at birth falling to 58.9 years, and female life expectancy falling less sharply to 71.9 years (WHO 2001). As shown in Figure 1, the life expectancy gap in Kazakhstan increased from 9 years in 1990 to 11.6 years by 1998, with life expectancy for males and females at 59.4 years and 71 years, respectively. The life expectancy gap has narrowed slightly in Uzbekistan since the early 1990s from 6.6 years to 5.1, with life expectancy for men and women at 66.1 years and 71.2 years in 1998, respectively.

Much of the excess mortality among adult males in countries of the former Soviet Union is caused by diseases of the circulatory system, including heart disease and strokes (WHO

1999). Effective PHC combined with appropriate drug therapy is necessary to manage chronic cardiovascular disease and reduce the occurrence of acute episodes and ultimately avoidable mortality. The PHC system in the region is notoriously under-resourced, however, and, as this study shows, under-utilized by adult males.

The present study provides disaggregated information about the mix of services that is currently being provided in the PHC sector in two regions of Central Asia, how PHC resources are being allocated across those services, and how utilization of PHC services varies by gender and age. Data on costs and utilization are combined to analyze PHC resource consumption across age and gender groups. The results of the study were used to develop a per capita payment system for PHC, which includes adjustment coefficients to compensate PHC facilities for cost variations related to differences in health care needs across demographic groups, and as a first step to provide incentives for outreach to bring adult men into the primary care system.

Primary health care development strategy

In the countries of former Soviet Central Asia, policies are being implemented to improve the cost-effectiveness, quality and sustainability of the health care system by strengthening PHC, and changing the incentives in the system to favour primary care over specialty care and hospitalization. Under the Soviet health care system, which was a national health service fully financed, owned and operated by the government, access to PHC was considered to be a high priority

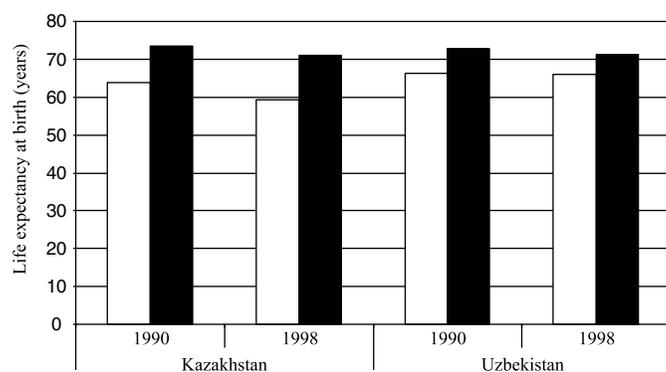


Figure 1. Change in male–female life expectancy gap in Kazakhstan and Uzbekistan between 1990 and 1998; white bars = males, black bars = females

(Field 2002). As a result there is an extensive network of PHC facilities in the countries of Central Asia, covering the entire population, even in the most remote rural areas. The clinical capabilities and the overall role of PHC in the health care system deteriorated over time, however, because in reality primary care providers were subordinate in every way to specialty care providers and hospitals. The structure of the health care delivery system, centrally regulated clinical protocols and the methods of financing all conspired to favour specialty care and fragment the PHC system (Borowitz et al. 1999).

All of the Central Asian Republics have initiated new policies to restructure the system and strengthen PHC (Gedik et al. 2002). The Semipalatinsk region of East Kazakhstan Oblast (province) in the Republic of Kazakhstan has been implementing a comprehensive agenda to strengthen urban and rural PHC since 1995. The Republic of Uzbekistan began a PHC development programme for three rural districts in Ferghana Oblast in 1998. In these sites, the health services delivery system is being restructured and decentralized to form independent PHC practices. The new decentralized structure gives primary care providers financial and administrative independence from higher level facilities and the opportunity to increase their scope of clinical services.

Primary health care per capita payment system

As part of the PHC development strategy, a per capita payment system for primary care has been introduced to shift resources to PHC, give providers greater control over their own resources and create financial incentives to improve efficiency and increase preventive care. Changing from the former line-item budget system, which was linked to physical facilities and inputs, to per capita payment for PHC services, which is linked to the population, has allowed the health purchasers (the Ministry of Health in Uzbekistan and the former Mandatory Health Insurance Fund in Kazakhstan) to administratively shift resources to PHC in the process of setting the per-capita rate paid to primary care providers. In Ferghana, Uzbekistan, for example, the allocation of oblast health care resources to rural PHC nearly doubled between

1997 and 1999, increasing from 11 to 20% of the oblast health care budget.

Because the per capita payment system is not tied to fixed line items, the providers have greater autonomy in deciding how to allocate their expenditures. For example, the primary care providers in both sites have been able to hire practice managers, and some have purchased computers, expenditures that were not authorized under the previous payment system. The per capita payment system also introduces incentives for efficiency and to increase preventive care, because, unlike under the line-item budget system, providers are able to retain and re-invest any savings from their per capita payment. In Semipalatinsk, several PHC providers moved their practices to smaller buildings to reduce utility costs. Under the line-item budget system, reducing utility costs would have simply resulted in a smaller budget for the practice. Thus, under the per capita payment system, PHC providers have greater flexibility to develop services and programmes that meet the specific needs of their populations, and to reorganize their space and schedules to be more comfortable for patients. Providers also have the incentive to focus on strategies to keep their populations healthy in order to reduce visits for more expensive diagnosis and treatment.

In both Semipalatinsk and Ferghana, the health purchasers are concerned that the incentives for efficiency are balanced by incentives for quality of care and patient satisfaction. In urban Semipalatinsk, the population has free choice of their primary care provider through open enrollment, so PHC practices that can attract more patients are rewarded with more financing, as the money follows the patient in a per capita payment system. In the rural sites, where effective choice of provider is limited, PHC providers are held accountable for quality and patient satisfaction through a quality assurance system based on a quarterly review of a set of quality indicators, which in rural Semipalatinsk was linked to a financial bonus/penalty system.

In Semipalatinsk and Ferghana, the PHC per capita payment system is being further refined to introduce age/sex adjustments to the capitated rate. Ideally, capitated rate adjustments reflect true variations in the health care needs of different population groups and the actual costs of meeting those needs. Variations in health care needs and resource consumption are most accurately predicted by patterns of disease and mortality by age and sex (Fowles et al. 1996; Hornbrook and Goodman 1996). The resources required to meet those needs include the full costs of adequate diagnosis and treatment, including outreach and preventive services. To analyze variations in true health care needs, therefore, data are required from the entire population, including both users and non-users of the health care system. Such data can only be obtained from population-based surveys. When resources are limited, however, health services utilization is a possible proxy to predict health care resource needs.

In the Semipalatinsk and Ferghana regions, PHC capitated rate adjustment coefficients were developed using a detailed survey of per capita utilization of health care services as a first approximation to estimating variations in the actual health

Table 1. Structure of the sample

	Urban Semipalatinsk n (%)	Rural Semipalatinsk n (%)	Rural Ferghana n (%)	Total n (%)
No. of PHC facilities	8	5	24	37
No. of visits	15 699	3 782	16 797	36 278
Enrolled population	89 756	8 961	153 535	252 252
Children <5 years	4 542 (5.1)	871 (9.7)	18 966 (12.4)	24 379 (9.7)
Children 5–14 years	15 273 (17.0)	1 940 (21.6)	40 159 (26.2)	57 372 (22.7)
Females 15–49 years	25 620 (28.5)	2 287 (25.5)	37 893 (24.7)	65 800 (26.1)
Males 15–49 years	22 005 (24.5)	2 258 (25.2)	36 768 (23.9)	61 031 (24.2)
Females ≥50 years	12 190 (13.6)	874 (9.8)	10 283 (6.7)	23 347 (9.3)
Males ≥50 years	10 126 (11.3)	731 (8.2)	9 466 (6.2)	20 323 (8.1)
Study period	1 month	1 month	2 weeks	

care needs of the population. More importantly, however, the survey and analysis were used as part of a process for government health purchasers to begin working with PHC providers to understand and improve their allocation of resources, both across inputs and across services and population groups.

Data and methodology

The PHC surveys were carried out by the regional health departments of Semipalatinsk and Ferghana Oblasts, with technical assistance from the USAID-funded ZdravReform Program. The combined sample consists of more than 36 000 PHC visits: 15 699 in urban and 3782 in rural Semipalatinsk, Kazakhstan, and 16 797 in rural Ferghana, Uzbekistan. Data were collected on all health facility and home visits over a 1-month period in February 1998 from five rural primary care facilities in Semipalatinsk serving a combined enrolled population of 8961, and for a 1-month period in October 1998 from eight urban facilities in Semipalatinsk serving a combined population of 89 756. Data were collected over a 2-week period in September 1998 from 24 rural primary care facilities in Ferghana serving a population of 153 535. Data were collected on all visits during the sample period, so that the costing methodology could be used to fully allocate expenditures to services and population groups. Thus, the sample consists of a census of health care visits during a specific time period from a convenience sample of health facilities in the study site. Table 1 summarizes the sample in the two study sites.

Both patient level and health facility data were collected from each PHC facility included in the surveys. For each visit, a detailed questionnaire was completed by all primary care providers who had contact with the patient. The questionnaire, which was developed in close collaboration with PHC physicians, included information on the age and gender of the patient, diagnosis, drugs prescribed and dispensed, transportation and travel time, and the time spent by medical personnel on all consultations, procedures and analyses completed during the visit. Health facility level data were collected on budgets, the size and demographic structure of the population served, and the utilization of space and available equipment. The questionnaires were pre-tested in a

sub-set of health facilities participating in the survey. During the pre-test, some problems with data collection compliance were identified, and it was found that a significant number of PHC visits were not being recorded. The regional health departments increased supervision of the data collection and worked with providers to improve the logistics of data collection. Although it is likely that some visits were nevertheless missed during data collection, the increased supervision improved the quality of the data, and the missed visits were not omitted in a systematic way.

The relative resource consumption by population group and age/sex adjustment coefficients were developed by first calculating the average unit cost of a set of 40 basic primary care services defined by local physicians. PHC physicians were asked in an interview to contribute to a list of all of the services that were provided at the level of primary care. The list was finalized after two iterations of review and revision by PHC physicians in each site. After the analysis was completed, the set of 40 basic services was aggregated into eight broader categories for presentation purposes: (1) consultations in the health facility; (2) gynaecology/family planning services; (3) laboratory tests; (4) functional diagnostics; (5) primary surgery, injections and other procedures; (6) physiotherapy; (7) preventive visits; and (8) home visits.

A step-down cost-accounting method was used to allocate indirect and direct costs to the 40 services based on the health facility budgets, which were the only source of official PHC revenue at the time of the survey. Data on out-of-pocket payments by patients were not available, so they are not included in the cost estimates. As no official fees were being charged for PHC services in the study sites, out-of-pocket payments are likely to be mainly for prescribed drugs, but may also include unofficial payments or gifts given to providers.

Personnel costs were allocated based on the time PHC staff spent on each service recorded by the providers on the patient questionnaires at the time of contact. This measure of clinician time use, patient flow analysis, has been found to be reasonably accurate for measuring patient contact time (Bratt et al. 1999). The use of non-contact time was not

Table 2. Primary care utilization patterns by gender and age

Gender/age category	% of all visits			
	Urban Semipalatinsk	Rural Semipalatinsk	Rural Ferghana	Total
Children				
<5 years	11.9	10.4	24.5	17.6
5–14 years	16.4	17.5	18.1	17.4
Total	28.3	27.9	42.6	35.0
Adult females				
15–49 years	32.0	38.2	42.6	37.6
≥50 years	16.2	15.1	2.9	9.8
Total	48.2	53.3	45.5	47.4
Adult males				
15–49 years	15.5	11.4	9.4	12.3
≥50 years	8.0	7.5	2.4	5.3
Total	23.5	18.9	11.8	17.6
Total	100.0	100.0	100.0	100.0

recorded, so the issue of excess capacity or under-utilized staff time, which may be an important source of inefficiency in PHC resource allocation, is not adequately addressed.

Utilization of PHC services was recorded by population subgroup, and population-based utilization rates were combined with unit cost estimates to determine the relative expenditure on PHC services for each population group. Thus, the analysis involved three stages: (1) computation of the unit cost of each of 40 primary care services using step-down cost accounting; (2) analysis of per capita service utilization patterns by population subgroup; and (3) combining the cost and utilization data to determine the relative cost of providing primary care services to each population subgroup.

Results

Absolute utilization

The analysis of absolute utilization shows that women and children are the principal users of PHC in both the urban and rural areas studied. As shown in Table 2 and Figure 2, approximately half of all primary care visits are made by adult women, and more than 80% of all visits are made by women and children, with a slight difference between urban and rural areas. Adult males account for fewer than 25% of all visits in urban Semipalatinsk, and 18.9 and 11.8% of visits in rural Semipalatinsk and Ferghana, respectively. Although utilization patterns may vary seasonally, which is not captured by the data used in this study, PHC providers confirmed that the relative utilization patterns were consistent with annual aggregate utilization patterns.

Table 3 shows that the vast majority of primary care visits in all three sites are for consultations with a provider in the health facility, followed by visits for diagnostic tests, including both laboratory and functional diagnostic tests. Preventive care accounts for less than 10% of visits on average, though preventive visits account for more than 15% of visits in urban

Semipalatinsk. There is another principal difference between the structure of urban and rural PHC services. In the rural sites where access to specialists is limited, the PHC providers offer a wider range of services. The urban PHC facilities are often located within specialty polyclinics and therefore tend to refer patients onward for diagnostic tests, minor surgeries and other procedures. In the rural sites, diagnostic tests and simple procedures account for about 38% of visits, whereas these services account for only about 21% of visits in the urban site. Home visits also account for a higher proportion of visits among the rural PHC providers, which is probably driven by higher fertility rates in rural areas,¹ as proactive home visits for prenatal and well-child care are mandated and tightly controlled by central MOH directives.

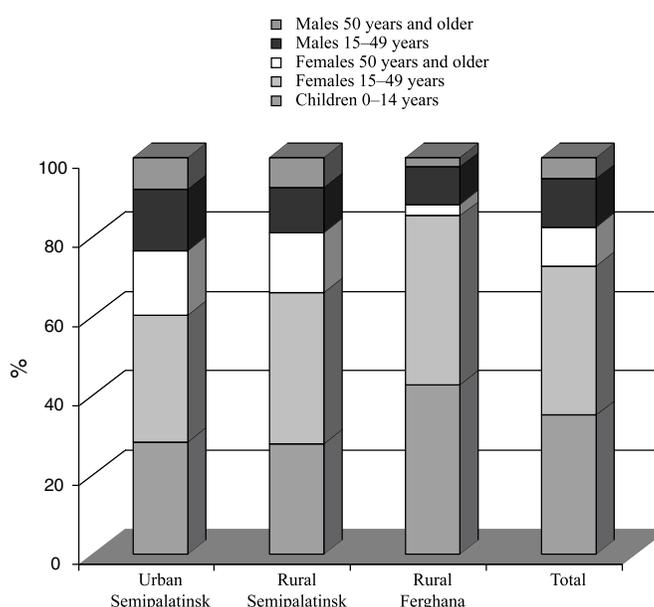
**Figure 2.** Distribution of PHC visits by gender and age

Table 3. Primary care utilization patterns by type of services

Type of service	% of all visits			
	Urban Semipalatinsk	Rural Semipalatinsk	Rural Ferghana	Total
Consultation (in health facility)	44.6	25.1	31.8	36.6
Gynaecology/family planning	9.1	9.0	12.5	10.7
Laboratory tests	7.7	18.2	16.1	12.7
Functional diagnostic tests	2.0	0.0	0.1	0.9
Primary surgery, injections, other procedures	7.3	18.7	14.5	11.8
Physiotherapy	4.1	1.7	7.5	5.9
Preventive visits	15.3	1.0	4.2	8.7
Home visits	9.9	21.8	13.3	12.7
Total	100.0	100.0	100.0	100.0

Table 4. Utilization of types of PHC services by gender and age

Type of service	Total	% of visits within gender/age group					
		Children >5 years	Children 5–14 years	Women 15–49 years	Women ≥50 years	Men 15–49 years	Men ≥50 years
Consultation (in health facility)	36.6	39.0	48.8	27.3	34.7	45.5	38.2
Gynaecology/family planning	10.7	0.5	0.4	26.1	6.7	0.2	0.1
Laboratory tests	12.7	6.5	12.5	17.7	9.1	11.0	9.2
Functional diagnostic tests	0.9	0.0	0.4	0.7	0.8	3.6	0.9
Primary surgery, injections, other procedures	11.8	9.7	9.5	10.3	18.9	13.1	21.3
Physiotherapy	5.9	3.4	6.9	4.9	6.6	9.8	7.4
Preventive visits	8.7	16.0	10.9	5.1	5.7	9.3	6.8
Home visits	12.7	25.0	10.7	7.9	17.4	7.7	16.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Type of service	Total	% of visits within type of service					
		Children >5 years	Children 5–14 years	Women 15–49 years	Women ≥50 years	Men 15–49 years	Men ≥50 years
Consultation (in health facility)	100.0	18.8	23.1	28.1	9.3	15.3	5.5
Gynaecology/family planning	100.0	0.8	0.6	92.4	6.2	0.0	0.0
Laboratory tests	100.0	9.0	17.0	52.4	7.0	10.6	3.8
Functional diagnostic tests	100.0	0.6	7.4	28.5	8.6	49.7	5.2
Primary surgery, injections, other procedures	100.0	14.4	13.9	32.8	15.6	13.6	9.6
Physiotherapy	100.0	10.2	20.5	31.2	11.0	20.5	6.7
Preventive visits	100.0	32.5	21.7	22.0	6.4	13.2	4.2
Home visits	100.0	34.6	14.5	23.2	13.4	7.4	6.8
Total	100.0	17.6	17.4	37.6	9.8	12.3	5.3

The results of the study also show that reproductive health visits only partially explain the higher utilization of PHC services by women. As shown in Table 3, reproductive health visits account for only between 9 and 12.5% of all primary care visits in the study. Table 4 shows that even within the group of women of fertile age, reproductive health care visits account for only 26% of visits. Adult women account for a

greater share than men of all services, with the exception of functional diagnostics.

Relative costs of services

To analyze differences in primary care resource consumption across age and gender groups, absolute utilization data were

Table 5. Relative unit cost of services

Type of service	Relative unit costs		
	Urban Semipalatinsk	Rural Semipalatinsk	Rural Ferghana
Consultation (in health facility)	1.07	1.00	1.06
Gynaecology/family planning	0.81	1.14	0.96
Laboratory tests	1.16	0.41	1.18
Functional diagnostic tests	0.96	0.00	2.74
Primary surgery, injections, other procedures	0.77	0.44	0.95
Physiotherapy	1.05	0.61	1.11
Preventive visits	0.83	0.94	0.70
Home visits	1.26	2.02	0.67
Average	1.00	1.00	1.00

applied to population structure data to calculate per capita utilization rates within each group. Per capita utilization rates for each of the 40 services were then combined with unit costs to determine the per capita resource consumption within each age and gender group. A summary of unit costs by groups of services is presented in Table 5.

The wide variation in relative unit costs across the study sites reflects different resource allocation patterns, as well as different underlying PHC cost structures in Kazakhstan and Uzbekistan. Because labour costs make up more than two-thirds of total costs in all of the sites, variations in unit costs are largely related to differences in the relative cost of labour and the time required to provide different services. In Kazakhstan, more labour-intensive services have higher unit costs. For example, home visits are the most costly PHC service in Kazakhstan, particularly in the rural region with low population densities and vast distances between villages. In rural Semipalatinsk, where the radius of a PHC catchment area can be as wide as 300 km, home visits are twice as costly as facility visits, because providers often spend a large percentage of their time travelling between visits. In Uzbekistan, where labour is relatively cheaper and populations are more compact, capital-intensive services have relatively higher unit costs. For example, in Ferghana, functional diagnostic and laboratory tests have the highest relative unit costs, and home visits have a unit cost only two-thirds of the average.

Per capita resource consumption by gender and age

Relative per capita resource consumption by gender and age group is presented in Table 6. The results show that based on a combination of utilization and cost of services, women of reproductive age consume approximately 1.5 times the average per capita PHC resources, while men in the same age group consume approximately one-half of the average per capita PHC resources. As shown by the analysis of utilization of services above, the difference is only partially explained by visits related to prenatal care and other reproductive health services. Women are also more likely than men to visit primary care facilities for general preventive services and to seek care in the event of an illness.

The overall gap between the primary care consumption of men and women is wider in rural than in urban areas. In urban Semipalatinsk women of reproductive age consume 60% more resources per capita than men of the same age group, while in rural Semipalatinsk and Ferghana, women in that age group consume 180 and 375% more than men, respectively. The difference between urban and rural areas is partially explained by higher fertility rates in rural areas, and partially by generally higher utilization of PHC among men in urban areas. The gap between the consumption of males and females narrows after the age of 50, but women continue to consume about 50% more per capita PHC resources than men.

Table 6. Relative per capita resource consumption by gender and age

Site	Overall average	Relative average per capita resource consumption					
		Children <5 years	Children 5–14 years	Women 15–49 years	Women ≥50 years	Men 15–49 years	Men ≥50 years
Urban Semipalatinsk	1.0	5.2	1.1	1.1	1.2	0.7	0.8
Rural Semipalatinsk	1.0	5.0	0.8	1.4	1.3	0.5	0.9
Rural Ferghana	1.0	2.7	0.8	1.9	0.6	0.4	0.4

In addition, the results show that although relative resource consumption is closely related to utilization patterns, absolute utilization alone is not an adequate proxy for relative PHC resource consumption across gender and age categories. Variations in the types of services used and the size of each demographic group lead to differences in relative resource consumption that do not correspond exactly to differences in absolute utilization. For example, although children under five account for fewer than 20% of the total number of PHC visits, their per capita utilization is between 1.1 and 2.3 times the average. When per capita utilization and unit costs of services are combined, however, this group consumes from 2.7 to 5.2 times the average primary care resources.

A 10% sample of visits in each site was drawn, and the samples showed that the differences in per capita resource consumption across age and gender groups were statistically significant at the 1% level (*p*-values are 0.004, 0.001 and 0.003 in rural Semipalatinsk, urban Semipalatinsk and Ferghana, respectively).

Policy implications

There are some limitations in the present study that must be taken into consideration when interpreting the results for policy purposes. Because the study is not based on a random sample of health facilities, it is difficult to draw statistically valid conclusions or to generalize the results beyond the three study sites. Furthermore, it is likely that some visits were missed during data collection, and that the information recorded may not have been complete, both of which may be sources of bias in the results. This potential bias was reduced, however, by close supervision and verification of data collection. Finally, the costs of PHC services exclude out-of-pocket payments for drugs and informal fees, which may vary systematically by age and gender group.

Even given these limitations, the main qualitative findings of the study were replicated in three sites in two countries, and across both urban and rural areas. The results show large variations in per capita primary care resource consumption across age and gender groups. These variations may be partially explained by differences in health care needs. Given the morbidity and mortality patterns of adult males in the region, however, it is unlikely that the health care utilization corresponds to health need in this context. Other factors, some of which can be influenced by health policy, are more likely explanations of the differences in utilization patterns. For example, there are characteristics of primary care service delivery inherited from the Soviet health care system that account for provider-induced utilization in some population groups. There are rigid bureaucratic protocols, such as the requirement that PHC providers make proactive home visits to infants several times during the first year of life, regardless of the health status of the infant. In addition, the Ministry of Health holds PHC providers strictly accountable for pregnancy outcomes and infant and child mortality in their enrolled populations, but PHC providers are held less accountable for adult morbidity and mortality. The strict policies mandating frequent home visits to infants and

pregnant women often leave PHC facilities unattended by a physician during operating hours. Some providers noted that ill patients often bypass PHC, because time is lost travelling to the PHC facility if the physician is likely to be out in the community conducting home visits.

Gender variations in the characteristics of health problems faced by men and women may also provide some explanation for the differences in utilization patterns. Illnesses such as chronic cardiovascular disease, which are more likely to affect adult men, do not have easily observed symptoms or create immediate discomfort, so the need for treatment may be more easily ignored in the early stages. There are also differences in the opportunity cost of time and general attitudes of men and women toward health and the health care system, which may partially explain differences in care-seeking behaviour. Some of these factors may be addressed by changes in the way services are delivered, such as introducing fixed-time appointments or expanding operating hours, or by providing targeted information to the population.

Out-of-pocket payments for PHC, which were not captured by this study, also may be an important factor affecting PHC utilization patterns. Studies in the region show that the high cost of care deters some patients from seeking health care (Falkingham 2002), and expenditure for drugs is a significant share of the total cost of treatment (Sari et al. 2000; Cashin 2001; Sari and Langenbrunner 2001). The effect of out-of-pocket payments on utilization, particularly for drugs, may vary by age and gender. For example, one study shows that men in Russia are more likely than women to respond to higher drug prices with reduced health care demand (Cashin 2000). Given that chronic diseases, including cardiovascular diseases, are often associated with higher than average drug expenditures (Cashin 2000; Langenbrunner 2001), the high cost of prescription drugs may be a factor in the under-utilization of PHC by adult men in the region, particularly for chronic disease management.

In each of the study sites, the government health purchasers convened panels of PHC providers to validate and interpret the results of the study, and to make recommendations about how the results should be incorporated into the PHC per capita payment system. Based on the results of the study, all three of the provider panels recommended a close examination of the use of resources for home visits and creative approaches to increasing PHC utilization by adult males. It was decided that proactive home visits to pregnant women and infants are important for reducing infant mortality rates, but that in most cases these visits should be made by nurses and feldshers (physician's assistants), so doctors are available more often in the PHC facility to receive ill patients.

Given the variations in resource consumption by gender and age categories, the government health purchasers in the three sites were faced with the decision whether or not to compensate providers according to these differences. The health purchasers decided that health care resource consumption is not an adequate proxy for health care needs for PHC in the region, and therefore the age/sex coefficients should not be based only on observed relative resource consumption. A

decision was made jointly by the health purchasers and the PHC provider panels in each of the sites to use the age/sex adjustment coefficients as a tool to influence the provider-driven portion of primary care utilization patterns. Coefficients in all three sites were altered to compensate providers slightly more than the data suggest for adult men and slightly less for women of reproductive age and children. The additional primary care resources targeted to adult men are intended to make the resources available to providers to bring adult men into the PHC system through specific outreach programmes. In order to provide incentives to PHC providers to use the additional resources for this purpose, the purchasers in all three sites have discussed ways to hold the providers more accountable for the health of adult men in their populations, such as through outcome indicators and financing arrangements that hold PHC providers financially responsible for some referrals to higher level facilities.

Conclusions

This study provides a disaggregated analysis of PHC utilization patterns and per capita PHC resource consumption in two regions of former Soviet Central Asia. Unlike aggregated administrative utilization data, the data collected for this study provide a unique opportunity to link individual characteristics with service utilization and service costs. The results of the study show that children and adult women consume the overwhelming majority of PHC resources. Therefore, any programmes that strengthen the PHC system in Central Asia inherently target resources toward improving the health of children and women.

Given the excess morbidity and mortality among adult men in the region, however, there is a need to actively redirect some PHC resources to address their particular health concerns. For example, much more can be done in the primary care setting to manage cardiovascular and other chronic diseases. Policies aimed at increasing the primary care utilization of men will, in the long run, redirect resources away from hospitals to the PHC sector, which will further strengthen the part of the health care system relied on by women and children.

First, however, there is a need for more research to understand the reasons for the under-utilization of PHC by adult males. It is possible, for example, that the perceptions of illness, opportunity costs of time, and the attitudes of men toward the effectiveness of PHC may act together to reduce utilization of PHC. Furthermore, as some studies suggest, these factors may also increase the responsiveness of adult males to the out-of-pocket costs of PHC treatment, further reducing utilization as drug prices and formal and informal payments to PHC providers increase. The determinants of PHC utilization, and in particular the differential effect of out-of-pocket payments on the utilization by age and gender, would be an important extension of the present analysis.

The government health purchasers in Kazakhstan and Uzbekistan used a novel participatory approach to improving PHC resource allocation by combining data analysis, qualitative provider input, and a new provider payment and incentive

system. The analysis convincingly showed the under-utilization of PHC resources by adult men, which inspired both purchasers and providers to re-examine the current priorities and policies in the PHC system. Together the purchasers and providers agreed on an approach to use the new per capita payment system as a tool to shift those priorities and work to address the enormous unmet health needs of adult men, while preserving or improving the quality and access to services relied on by women and children.

Endnotes

¹ In Kazakhstan, the total fertility rate is 2.00 in urban areas and 3.06 in rural areas (DHS 1995). In Uzbekistan, the total fertility rate is 2.71 in urban areas and 3.74 in rural areas (DHS 1996).

References

- Borowitz M, O'Dougherty S, Wickham Cashin C, Hafner G, Samidjyski J, Van Develde C, McEuen M. 1999. *Conceptual foundations for Central Asian Republics health reform model*. Bethesda, MD: Abt Associates Inc./USAID-Funded Zdrav-Reform Program.
- Bratt J, Foreit J, Chen P, West C, Janowitz M, Vargas T. 1999. A comparison of four approaches for measuring clinician time use. *Health Policy and Planning* **14**: 374–81.
- Cashin C. 2001. *Access to health care in rural Ferghana oblast, Uzbekistan*. Bethesda, MD: Abt Associates Inc./USAID-Funded ZdravPlus Program.
- Cashin C. 2000. *Government pharmaceutical subsidy policy and the demand for health care in Russia: evidence from the Russia Longitudinal Monitoring Survey*. Ph.D. Dissertation. Seattle: University of Washington, Department of Economics.
- Falkingham J. 2002. Poverty, affordability and access to health care. In: McKee M, Healy J, Falkingham J (eds). *Health care in Central Asia*. Buckingham: Open University Press.
- Field M. 2002. The Soviet legacy: the past as prologue. In: McKee M, Healy J, Falkingham J (eds). *Health care in Central Asia*. Buckingham: Open University Press.
- Fowles J, Weiner J, Knutson D, Fowler E, Tucker A, Ireland M. 1996. Taking health status into account when setting capitation rates. *Journal of the American Medical Association* **276**: 1316–21.
- Gekik G, Oztek Z, Lewis A. 2002. Modernizing primary health care. In: McKee M, Healy J, Falkingham J (eds). *Health care in Central Asia*. Buckingham: Open University Press.
- Giacomini M, Luft H, Robinson J. 1995. Risk adjusting community rated health plan premiums: a survey of risk assessment literature and policy applications. *American Review of Public Health* **16**: 401–30.
- Green C, Pope C. 1999. Gender, psychosocial factors and the use of medical services: a longitudinal analysis. *Social Science and Medicine* **48**: 1363–72.
- Hornbrook M, Goodman M. 1996. Chronic disease, functional health status, and demographics: a multi-dimensional approach to risk adjustment. *Health Services Research* **31**: 283–307.
- Hraba J, Lorenz F, Lee G, Pechacova Z. 1996. Gender differences in health: evidence from the Czech Republic. *Social Science and Medicine* **43**: 1443–51.
- Institute of Obstetrics and Gynecology, Ministry of Health of Uzbekistan, and Macro International Inc. 1996. *Uzbekistan Demographic and Health Survey*. Tashkent, Uzbekistan.
- National Institute of Nutrition, Academy of Preventive Medicine of Kazakhstan, and Macro International Inc. 1995. *Kazakhstan Demographic and Health Survey*. Almaty, Kazakhstan.
- Sari N, Langenbrunner J. 2001. Consumer out-of-pocket spending for pharmaceuticals in Kazakhstan: implications for sectoral reform. *Health Policy and Planning* **16**: 428–34.
- Sari N, Langenbrunner J, Lewis M. 2000. Affording out-of-pocket

payments for health services: evidence from Kazakhstan. *Euro-Health* 6: 37–9.

WHO. 2001. *Basic Health Indicators Database*. World Health Organization website: <http://www.who.int>.

WHO. 1999. *1997–1999 Health Statistics Annual*. Geneva: World Health Organization.

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