Poverty and Access to Maternal Health Care in Tajikistan

Jane Falkingham

Abstract

Using recently available survey data for Tajikistan, this paper investigates changes in the pattern of maternal health care over the last decade, and the extent to which inequalities in access to that care have emerged. In particular, the link between poverty, women's education status and the utilisation of maternal health services is investigated. The results demonstrate a significant decline in the use of maternal health services in Tajikistan since independence, as well as changes in the location of delivery and type of person providing assistance, with a clear shift away from giving birth in a health facility toward giving birth at home. Over two-fifths of all women who gave birth in the year prior to the survey in 1999 had a home delivery. There are clear differences in access by socio-economic status with women from the poorest quintile being three times more likely to experience a home delivery with no trained assistance than women from the richest quintile.

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1. Introduction

At Independence in 1991, Tajikistan – located in the south-eastern corner of Central Asia, just north of Afghanistan – was the poorest of all the Soviet Republics, with a GDP per capita of just over USD$ 2,000. Despite this, the country had relatively high human development indicators, reflecting the legacy of social development achieved during the Soviet period. Life expectancy at birth averaged 70 years and adult literacy was almost universal (UNDP, 1994). In common with other countries of the Soviet Union, the health care system was characterised by universal entitlement to a comprehensive and free, but inefficient, health care with excess human and physical infrastructure. Health care utilisation rates were high and differences across groups in terms of access to health services were negligible (World Bank, 2000).

Since independence, Tajikistan has experienced a major reversal in both economic and social development. The economic upheaval accompanying transition from a planned to market-led economy, the disruption of traditional trading partnerships and the withdrawal of subsidies from Moscow following the break-up of the Soviet Union, has resulted in a dramatic drop in GDP and central government expenditures. In addition the country has also experienced a civil war in 1992-3, followed by a long period of civil unrest that only ended with the signing

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of a peace agreement in 1997. During this time extensive damage was inflicted upon the country's economy and infrastructure. In 1996 real GDP constituted less than 40 percent of its value in 1989, and by 2000 GDP per capita was estimated to be just US$1,152 (PPP) - making Tajikistan one of the poorest countries in the world (UNDP, 2002). Recent estimates suggest that over 95 percent of the population are living below the official minimum subsistence level, four out of five are 'poor', a third are 'very poor' and nearly 20 percent 'extremely poor' (living below $1 PPP a day) (Falkingham, 2000).

Health services have deteriorated rapidly in the face of severe financial constraints, exacerbated by extensive damage to infrastructure during the civil war. Health care expenditure as a percentage of GDP in Tajikistan has dropped from 6.4 percent in 1994 to 1.5 percent in 1999, and real spending on health care is now less than a *tenth* of its pre-independence level (WHO, 2000). The precipitous decline in real government expenditures has eroded the capacity of the health care system to provide effective and accessible medical care to the public. After salaries have been met, there are few resources left over for drugs and food, let alone maintenance or reconstruction. A facility survey in two raions (districts) in Spring 1999 found that half of all FAPs (physician assistant/midwife posts) and SVAs (rural physician clinics) did not have adequate functioning cold-chain equipment, two-thirds were unable to conduct growth monitoring due to lack of equipment, and over half had no oral rehydration salt in stock at the time of the survey. Two-thirds of maternity homes are now without heating and water (World Bank, 1999). The widening gap between the health care budget and the actual costs of care has resulted in an increased burden on the household both in terms of official charges and, more commonly, under-the-counter or informal payments (Falkingham, 2002).

The decline in the quality of services, the deterioration in the infrastructure and the increased cost to the patient may all be expected to impact negatively on health care utilisation rates. However, virtually nothing is known about how the use of health services has changed over time and whether sub-groups of the population have been differentially affected. This paper uses recently available data from the 1999 Tajikistan Living Standard Survey (TLSS) to investigate patterns of maternal health service use in Tajikistan over the last 10 years. The extent to which utilisation varies by region, household income and women's education will shed light on whether, and to what extent, inequalities in the use of health care are emerging in Tajikistan.

A greater understanding of the factors affecting the use of maternal health care is also of importance for improving women's reproductive health status and reducing infant and maternal mortality rates. According to official data, Tajikistan has the highest rate of maternal mortality amongst the Central Asian Republics at 65.5 maternal deaths per 100,000 live births in 1998 (Table 1). It is likely however that this figure is an underestimate. Recent research by the World Bank using survey data to estimate levels of infant and child mortality suggests that the real levels are nearly three times the official rate, pointing to deficiencies within the vital registration system. This is confirmed by analysis of the recent Tajikistan Multiple Indicator Cluster Survey (MICs) (UNICEF, 2002), which estimated infant mortality to be in the region of 89/1,000 and under-five mortality to be 126/1,000. If similar levels of under-reporting apply to maternal mortality, then the true level of maternal mortality in Tajikistan of around 200/100,000 is akin to rates found in parts of Latin America and North Africa.

Table 1 Indicators of Reproductive Health in Central Asia, 1998

	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Infant mortality rate[1]	21.6	26.2	23.4 [2]	31.7	22.3
Maternal mortality rate	54.9	35.5	65.5	16.3	9.6
Total fertility rate	2.01	2.80	2.90	2.50	2.82
Mean age at birth of first child	22.6	22.3	21.8	23.6	23.0
Abortion rate (abortions per 100 live births)	67.1	27.0	19.1	25.7	13.5
Low-birth-weight rate (births under 2,500 grams as per cent of total live births)	5.5	n/a	5.1	3.9	5.1

Source: UNICEF MONEE Project database 2001.
Notes: [1] Infant mortality rates are calculated according to the Soviet concept.
[2] This figure refers to official data published by the state statistical agency based on vital registration data. Work by the World Bank using recent survey data suggests that the real IMR in Tajikistan is three times this rate at 82.4 per 1,000 live births.

Most maternal deaths in Tajikistan are directly related to pregnancy: 38 percent haemorrhages, 27 percent toxaemia, 11 percent sepsis and 8 percent unsafe abortion (UNFPA, 1999). Many of the maternal deaths from these causes are preventable with ready access to skilled birth attendants in a clean environment. It is important therefore to understand what has happened to the use of maternal health services since independence and which groups of women have been differentially affected.

2. Data

The research in this paper is based upon preliminary analysis of the 1999 Tajikistan Living Standards Survey (TLSS). The survey was funded by the World Bank and the United Nations Development Programme and executed by the Tajik State Statistical Agency in collaboration with the Centre for Strategic Research under the Office of the President. International technical assistance was provided by a team from the London School of Economics, led by the author. The survey is a landmark in that it is the first survey in Tajikistan to collect nationally representative data at the household level using internationally recognised sampling techniques[2].

The TLSS was carried out between May-June 1999. A total of 2,000 households containing 14,142 individuals were interviewed. Households were selected using two-stage probability random sampling, with 125 primary sampling units stratified across urban and rural areas within oblasts to ensure a nationally representative sample. Detailed information on the sample design and fieldwork operations is presented in Namazie (2000).

The questionnaire for the TLSS was based on the standard Living Standard Measurement Survey (LSMS) for the countries of the FSU (Oliver, 1997) adapted for Tajikistan. In particular the health section was extended and a specific questionnaire focusing on women's reproductive histories and health care use was administered to all ever-married women aged 16-49 (2,339). The women's health module included questions on the number of children ever born and surviving, use of health services in relation to the women's last pregnancy -

[2] Although the countries of the Former Soviet Union (FSU) have a long history of conducting sample surveys, their use of quota based samples meant that survey such as the Family Budget Survey were not representative. For a discussion on this and related issues see Falkingham and Micklewright, 1997.

and if currently pregnant, to the current pregnancy. A community questionnaire was also administered to key respondents at the community level to gather information about the community. Questions included the availability of various health facilities within the locality. Table 2 presents a description of the sub-sample of women who answered the women's health module, including their distribution by place of residence, educational attainment and household economic status.

Table 2 Individual, household and community characteristics of ever-married women aged 15-49 who answered the women's health module of the TLSS.

Characteristic	Category	Percent	(N)
Total sample size			**2339**
Age	15-19	4.2	98
	20-24	18.2	426
	25-29	20.0	468
	30-34	17.4	406
	35-39	18.2	426
	40-44	11.9	277
	45+	10.2	238
Number of children ever born	None	8.1	189
	1	13.0	303
	2	16.2	378
	3	15.7	368
	4	14.7	343
	5	10.3	242
	6	8.4	196
	7 or more	13.9	320
Highest educational level completed	None	1.3	28
	$8^{th}/9^{th}$ class	15.4	345
	Secondary	66.9	1499
	Technical	12.1	271
	Higher	4.3	96
Household economic status [1]	Poorest 20%	21.7	507
	2	21.1	494
	3	20.3	474
	4	19.4	453
	Richest 20%	17.6	411
Region	Dushanbe	7.4	173
	GBAO	3.7	86
	RRS	23.5	549
	Leninabad	30.0	701
	Khatlon	35.5	830
Settlement	Urban	24.3	569
	Rural	75.7	1770
Women's health facility in community	Yes	58.2	1362
	No	41.8	977
Polyclinic in community	Yes	53.6	1253
	No	46.4	1086
Of those who have ever given birth:			
Sub-sample size			**2133**

Consulted a health professional during last pregnancy	Yes	84.7	1815
	No	15.3	329
Site of last birth	City Hospital	9.3	199
	SUB/SVA [2]	6.3	136
	Maternity home	50.5	1078
	At home	29.0	619
	Other (including midwife's home)	4.7	101
Type of assistance at birth	Doctor	37.8	718
	Nurse	7.6	144
	Midwife/ feldscher [3]	43.9	835
	Unskilled other	10.6	202
Time since last birth	Within last year	22.2	462
	13-24 months	17.2	358
	2-5 years	25.2	526
	5-10 years	20.7	432
	Over 10 years ago	14.7	307

Notes [1] based on quintile group of per capita household expenditure; [2] rural health clinics; [3] physician assistants.
Source: TLSS 1999.

The LSMS are multi-purpose surveys which collect detailed information on a range of topics, including income, expenditure and consumption as well as education, health and employment. The strength of such surveys is that they allow detailed analysis of the determinants of various outcomes as well as the measurement of living standards (Grosh and Glewwe, 1995). This paper is concerned to explore the link between poverty, women's education status and the utilisation of maternal health services in Tajikistan. Although the TLSS is a cross-sectional survey, it is possible to introduce a temporal dimension into the analysis by using the retrospective information regarding the use of health services at a woman's last pregnancy. Analysing maternal health care use according to the year of the last birth allows us to build up a detailed picture of women's utilisation of maternal health services in Tajikistan over the last ten years. It is important, however, to bear in mind that the reported use of maternity care may be affected by recall bias associated with time since event.

Three main questions are investigated:

- How do patterns of maternal health care use vary across the population?
- Has use of maternal health care deteriorated over time?

- If so, has this trend been accompanied by widening inequality in access?

Two dimensions of maternal health services are examined:

- Whether a women consulted a doctor in connection with her last pregnancy (taken to be an indicator of pre-natal service use);
- The place of delivery of last child, i.e. whether the woman gave birth in a health facility or at home and, if at home, whether the woman was assisted by a doctor/nurse, midwife or by an unskilled person such as a relative, friend or neighbour.

In addition three dimensions of inequality are investigated:

- ***Region***. Place of residence may be expected to be important as areas of the country were differentially affected during the civil war between 1992 and 1997. Spatial differences in utilisation of maternal health care services are explored using administrative region.
- ***Educational status***. Educational differentials in the use of obstetric services have been shown to be significant in a large number of studies (Elo, 1992, Pebley et al, 1996, Raghupathy, 1996). This paper examines whether this is also the case in Tajikistan and whether these differentials have widened over time. The measure of educational status used is highest educational qualification.
- ***Economic status***. One of the main macroeconomic consequences of the movement from a planned to market economy has been an increase in inequality in material resources. It is important therefore to investigate whether rising income inequality is associated with inequality in maternal

health service use. The measure of economic status used is per capita household expenditure, which includes the imputed value of the consumption of home produced goods. Individuals are assigned to quintile groups based upon the ranking of their household. Thus women in the bottom quintile may be thought of as living in the poorest 20% of households and women in the top quintile as living in the richest 20% of households. Household expenditure is used in preference to household income as expenditure is thought to be a better indicator of living standards, being less prone to undereporting.

3. Results

3.1 Patterns of maternal health care utilization

There are significant differences in the utilisation of maternal health services amongst various sub-groups of the population within Tajikistan (Table 3). Administratively Tajikistan is divided into four regions: Gorno-Badakhshan Autonomous Oblast (GBAO) in the east, Khatlon Oblast in the south, Leninabad Oblast in the north and the Region of Republican Subdordination (RSS) in the centre. The capital, Dushanbe, is also an administrative district. The regions are geographically isolated from each other and from the capital city (se Figure 1). Women in the regions of Khatlon and RRS experience significantly lower consultation rates than elsewhere in the country (χ^2=130.7; p<0.000). There are also marked differences between urban and rural areas, with women living in urban areas being much more likely to report ante-natal visits (91% v 83%) and to give birth in a medical facility (89% v 69%).

Figure 1 Map of Tajikistan

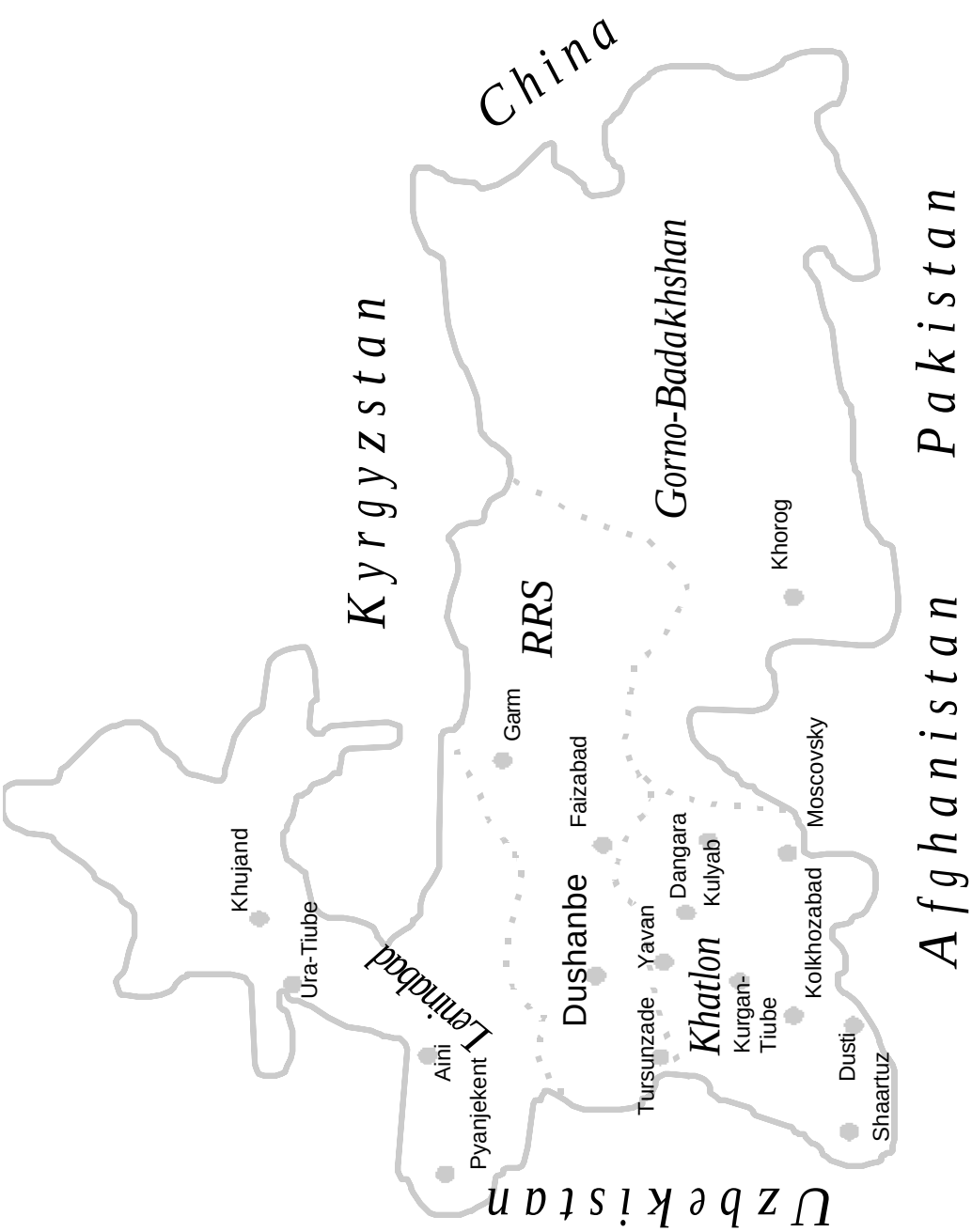


Table 3 Differentials in the use of maternal health care services for last pregnancy amongst ever-married women aged 15-49, Tajikistan

	Consulted a doctor (%)	Place of delivery (%)			(N)
	Yes	In a Medical Facility	At Home with Skilled assistance	At Home with Unskilled assistance	
All women	84.7	74.3	15.2	10.6	(2144)
Region:					
Dushanbe	85.8	85.4	11.5	3.2	(162)
GBAO	98.8	76.3	22.5	1.3	(83)
RRS	78.3	70.0	13.4	16.6	(508)
Leninabad	96.8	92.3	5.4	2.3	(620)
Khatlon	77.3	57.1	25.7	17.2	(771)
Settlement:					
Urban	91.3	88.9	8.3	2.8	(517)
Rural	82.5	69.1	17.6	13.3	(1627)
Education:					
$8^{th}/9^{th}$ class	80.6	72.2	13.2	14.7	(304)
Secondary	83.9	71.3	17.2	11.4	(1378)
Technical	94.0	86.3	10.7	2.5	(252)
Higher	97.8	87.8	10.0	2.2	(92)
Economic Status:					
Poorest 20%	79.9	68.0	16.8	15.3	(467)
2	86.9	72.5	17.2	10.3	(465)
3	86.4	76.5	11.5	12.0	(441)
4	84.6	73.5	17.6	8.9	(415)
Richest 20%	86.0	82.4	12.3	5.2	(356)
Women's health facility in community					
Yes	89.6	80.4	10.8	8.8	(1242)
No	77.8	65.0	21.8	13.2	(902)
Polyclinic in community					
Yes	90.3	82.6	10.2	7.3	(1139)
No	78.3	64.4	21.1	14.5	(1005)

Note: chi-square statistically significant at ($p<0.001$) for all characteristics for both consultation and Place of delivery. Source: author's own analysis of the TLSS, May 1999.

It is widely recognised that women's educational status is positively associated with health and health care use (WHO, 1998). Tajikistan is no exception, with a clear gradient by women's educational level evident for both ante natal consultations ($\chi^2=45.0$; $p<0.000$) and the place of delivery ($\chi^2=130.7$; $p<0.000$). The economic status of the woman's household is also significant, with twenty percent of women living in the poorest fifth of households reporting no use of ante natal care during their last pregnancy compared to 14 percent of those in the richest fifth. Finally, utilisation rates and home deliveries are not surprisingly

related to the presence or absence of a women's health facility or polyclinic within the community. Of course, the data in Table 3 is complicated by the fact that women may have given birth to their last child over a wide time period. These effects are examined below.

3.2 Deteriorating use of maternal health care and widening inequalities

During the Soviet period comprehensive pre-natal care included at least 15 health facility visits, and 90 percent of all births were delivered in maternity wards (World Bank, 1999). However, as Table 4 illustrates, there is clear evidence of a significant decline in the use of maternity services over a ten-year period since independence in Tajikistan. Only 77 percent of women who gave birth in the 12 months prior to the survey (June 1998-May 1999) reported that they had consulted a doctor in relation to their pregnancy compared with 92 percent who gave birth 10 years ago, i.e. prior to May 1989, when Tajikistan was part of the Soviet Union (χ^2=49.3; p<0.000). This trend is confirmed by analysis of the 2000 MICs Survey, where 24.5 percent of women aged 15-49 with a birth in the last year reported receiving no antenatal care (UNICEF, 2002).

Table 4 Use of maternal health care services by time of last birth in relation to survey in May 1999.

	Time of last birth in relation to survey					
	Within last 12 months (1998-99)	13-24 months (1997-98)	2-5 years ago (1994-97)	5-10 years ago (1989-94)	Over 10 years ago (to 1989)	All last births
Consulted a doctor	77	82	84	88	95	85
Place of delivery						
In a medical Facility	58	63	72	86	94	74
At Home w/skilled assistance	26	19	17	8	3	15
At Home w/unskilled assistance	15	17	11	7	2	11
(N)	(461)	(356)	(522)	(430)	(307)	(2076)

Note: chi-square statistically significant at (p<0.001) for both consultation and Place of delivery.
Source: author's own analysis of the TLSS, May 1999.

There have also been significant changes in the place of delivery, with a clear shift away from giving birth in a health facility toward giving birth at home (χ^2=163.7; p<0.000). Over two-fifths of the women who gave birth in the year immediately prior to the survey had given birth at home, compared to just one-in-twenty 10 years earlier. More worryingly, there has also been a dramatic increase in the proportion of women delivering at home with no skilled assistance, from less than two percent ten years prior to the survey (pre May 1989) to one in six in the two years prior to the survey (June 1997-May 1999). Although the point estimates of utilisation rates may be affected by recall bias, such biases are unlikely to be of sufficient magnitude to account for the clear trends in utilisation over the last 10 years.

These trends represent a significant break from past practices, and have direct implications for maternal and child health. It is well known that prenatal care is an important determinant of improved health outcomes among infants (Ahmad *et al*, 1991; Panis and Lillard, 1994, 1995) and that assistance at delivery from a trained and well-equipped provider is an important determinant of reduced maternal mortality (Maine and Rosenfeld, 1999; Shiffman, 2000; Sloan *et al*, 2001).

A key question is whether some groups have suffered disproportionate declines in maternal health care utilisation relative to others. Tables 5 and 6 present differentials in health care use according to the timing of the woman's last birth. Reading across the rows shows how health care use within any particular group has changed over time, whilst reading down the columns shows how health care use varies across groups at any one time period.

Table 5 Differentials in doctor consultation rates, by time of last birth in relation to survey

	Time of last birth in relation to survey					
	Within last 12 months (1998-99)	13-24 months (1997-98)	2-5 years ago (1994-97)	5-10 years ago (1989-94)	Over 10 years ago (to 1989)	Significance level of trend over time within group
Region:						
Dushanbe	71 (17)	72 (18)	91 (31)	93 (37)	94 (33)	**
GBAO	100 (16)	100 (8)	100 (21)	100 (15)	95 (19)	-
RRS	72 (89)	73 (61)	83 (105)	81 (86)	85 (45)	-
Leninabad	96 (89)	95 (98)	95 (137)	98 (122)	99 (136)	-
Khatlon	71 (146)	79 (107)	74 (144)	81 (117)	97 (59)	***
(significance level of group variation within time period)	***	***	***	***	***	
Settlement:						
Urban	85 (69)	86 (53)	91 (117)	93 (100)	97 (114)	**
Rural	76 (288)	81 (239)	82 (321)	86 (277)	94 (178)	***
(significance level of group variation within time period)	*	-	**	*	-	
Education:						
$8^{th}/9^{th}$ class	72 (52)	81 (30)	77 (49)	87 (65)	90 (45)	*
Secondary	77 (243)	82 (207)	84 (277)	87 (231)	96 (165)	***
Technical	88 (30)	91 (40)	94 (67)	98 (43)	98 (45)	-
Higher	100 (11)	100 (9)	94 (30)	100 (18)	100 (19)	-
(significance level of group variation within time period)	-	**	*	-	*	
Economic Status:						
Poorest 20%	77 (84)	76 (59)	78 (95)	84 (79)	90 (44)	
2	81 (93)	84 (64)	87 (102)	91 (76)	98 (58)	*
3	80 (74)	85 (71)	85 (88)	87 (70)	97 (63)	*
4	78 (71)	80 (52)	84 (87)	89 (72)	94 (59)	*
Richest 20%	66 (35)	87 (46)	87 (66)	88 (80)	96 (68)	***
(significance level of group variation within time period)	-	-	-	-	-	

Note: significance levels * p<0.05, ** p<0.01, ***p<0.001. Cell counts are shown in brackets.
Source: author's own analysis of the TLSS, May 1999.

There is a strong a regional dimension to the decline in use of pre-natal care (Table 5). Consultation rates have remained high in GBAO, and Leninabad but have fallen elsewhere in the Republic. The most significant declines have occurred amongst women living in Khatlon (χ^2=20.0; p<0.000) and Dushanbe (χ^2=12.9; p<0.012), whilst consultation rates in RRS appear to have been low historically. These regional patterns coincide with the areas that were most affected during the civil conflict between 1992 and 1997.

Table 6 Differentials in proportion delivering at home, by time of last birth in relation to survey

	Time of last birth in relation to survey					
	Within last 12 months (1998-99)	13-24 months (1997-98)	2-5 years ago (1994-97)	5-10 years ago (1989-94)	Over 10 years ago (to 1989)	Significance level of trend over time within group
Region:						
Dushanbe	38 (9)	32 (3)	20 (4)	8 (3)	-	***
GBAO	40 (6)	25 (2)	14 (2)	21 (3)	25 (5)	-
RRS	57 (59)	52 (36)	34 (30)	30 (27)	15 (8)	***
Leninabad	15 (14)	16 (17)	13 (17)	7 (8)	4 (5)	*
Khatlon	66 (199)	66 (79)	58 (99)	34 (39)	15 (9)	***
(significance level of group variation within time period)	***	***	***	***	***	
Settlement:						
Urban	24 (19)	24 (9)	19 (18)	6 (6)	4 (4)	***
Rural	57 (188)	50 (128)	41 (134)	28 (74)	13 (23)	***
(significance level of group variation within time period)	***	***	***	***	*	
Education:						
$8^{th}/9^{th}$ class	47 (29)	65 (19)	43 (20)	23 (15)	10 (4)	***
Secondary	56 (158)	46 (103)	38 (110)	25 (54)	10 (17)	***
Technical	21 (7)	27 (10)	18 (10)	9 (4)	4 (1)	*
Higher	36 (4)	11 (1)	16 (3)	-	-	-
(significance level of group variation within time period)	**	**	**	**	-	
Economic Status:						
Poorest 20%	57 (54)	55 (38)	39 (39)	29 (20)	20 (9)	***
2	51 (53)	46 (32)	36 (35)	20 (13)	7 (3)	***
3	43 (33)	45 (33)	36 (33)	19 (14)	8 (5)	***
4	51 (45)	42 (21)	38 (32)	24 (16)	8 (5)	***
Richest 20%	51 (22)	32 (13)	26 (13)	20 (17)	7 (5)	***
(significance level of group variation within time period)	-	-	-	-	-	

Note: significance levels * $p<0.05$, ** $p<0.01$, ***$p<0.001$. Cell counts are shown in brackets.
Source: author's own analysis of the TLSS, May 1999.

One of the most worrying trends is the rise in women giving birth and home and the concomitant rise in the proportion that are assisted in their delivery by unskilled personnel (including family, neighbours and friends). The rise in home births has been most marked in Khatlon, where two-thirds of women who gave birth in the 12 months prior to the survey in May 1999 have a home delivery (Table 6). In contrast, home births accounted for 'just' 15 percent of all births in Leninabad during the same 12 months. Although not shown here, there is also a distinct regional pattern to home deliveries with no skilled assistance. In the period since 1997, only 2-3 percent of deliveries in Dushanbe and Leninabad have been of this type,

compared to 14 percent Khatlon and 15 percent in RRS. Such deliveries are more common in Khatlon and RRS today than during the civil conflict (1992-1997), when they accounted for 10 percent of all deliveries; and prior to 1992 when they accounted for just 3-4 percent of deliveries.

Rural women appear to have been disproportionately affected by the deterioration of health services and increasing barriers to access. As might be expected, consultation rates are generally higher amongst women living in urban areas than in rural locations and the proportion consulting a doctor has fallen proportionately less in urban areas (Table 5). The proportion of women delivering at home has increased significantly over time amongst both urban and rural women; from 4 percent and 13 percent respectively prior to 1989 to 24 percent and 57 percent in the 12 months immediately prior to the survey in 1998-99 (Table 6).

The differentials in consultation rates by women's education appears to have become stronger over time, largely as a result of the decline in utilisation amongst women with secondary or primary education only. For example, of those women who gave birth in the 12 months prior to the survey, only 72 percent of those with $8^{th}/9^{th}$ grade education (primary only) consulted a doctor compared to 77 percent of women with secondary education, 88 percent with technical and 100 percent with higher education (Table 5).

Differentials in deliveries by educational status were virtually non-existent during the soviet period. Over time the likelihood of a home birth has increased rapidly amongst women with lower educational status. It is important to note that there was a large increase in the proportion of women with higher education 'choosing' a home delivery in the year prior to

the survey. In the period June 1998 to May 1999, over a third of women with higher education delivered at home compared to none prior to May 1994. It is likely that this is associated with economic changes and the decline in quality of the infrastructure. It is estimated that two-thirds of maternity homes in 1999 were without heating and water and qualitative evidence suggests that many women with higher education now consider it safer to give birth at home than in an unheated maternity house with no running water. It may be that as the quality of maternal health services continue to deteriorate home births will become the 'norm' for all groups of women and the discriminating factor will not be location of birth but rather the type of health professional who assists at the birth.

Unsurprisingly, the likelihood of a home delivery with no skilled assistance was found to be inversely related to women's educational status. Of those women giving birth after 1997, only 2 percent of women with some technical or higher education have given birth at home without skilled assistance compared to 14 percent of deliveries to women with primary education.

Finally, turning to differences in utilization by household economic status. During the Soviet period, the distribution of household income was relatively flat with a Gini co-efficient of 0.308[3] (Atkinson and Micklewright, 1992). In 1989, the richest 10 percent of households had an income of just over *three times* that of the poorest 10 percent. One of the most significant changes since independence has been a dramatic increase in the level of inequality. By 1999, the richest 10 percent of households had an income over *ten times* that of the poorest 10 percent and the Gini coefficient had risen to 0.47 (Falkingham, 2000). *A priori*, one might

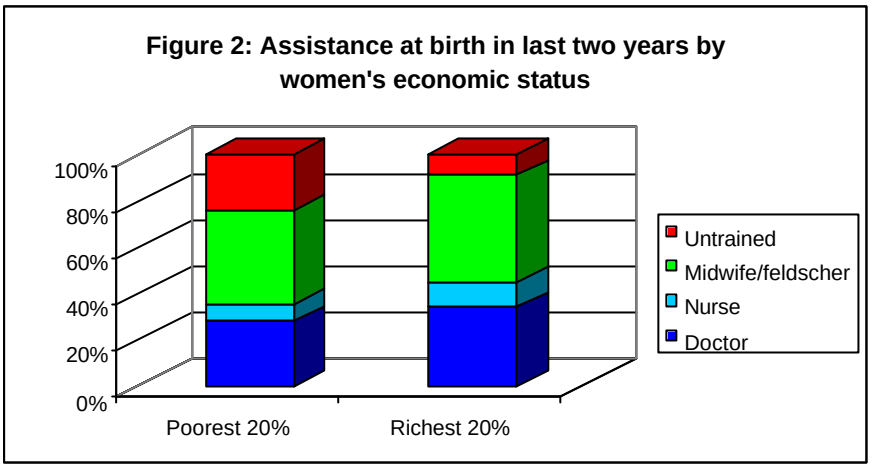
[3] The Gini coefficient provides a summary measure of inequality. If income is perfectly equally distributed, i.e. every one in the population enjoys the same income, the gini coefficient is equal to zero. If income is perfectly unequally distributed, i.e. one person has all the income and everyone else has none, the gini coefficient is equal to one.

expect that those women living in households that had suffered the greatest loss in real income would be amongst those most affected in terms of use of health care. This will be particularly true if out-of-pocket payments for health care services have increased over time (Falkingham, 2002)

Table 5 shows consultation rates for women by the current economic status of the household as measured by quintile of per capita household expenditure. From this it is clear that the likelihood of consulting a doctor during pregnancy has fallen for all women, regardless of economic status. But contrary to prior expectations the change over time is *not* significantly more marked amongst women living in the poorest households than amongst other groups, although the fall in consultation rates appears to have taken place slightly earlier amongst the poorest women.

There is also very little difference between economic status groups in the location of birth in the last year, although there does appear to be some gradient prior in earlier periods. Amongst women giving birth 13-24 months before the survey, women living in the poorest households were 50 percent more likely to give birth at home than women from the richest households. Thus, from Table 6 it appears that services worsened considerably in the 12-24 month period prior to the survey and by 1998/9 even a significant proportion of women in the richest fifth of households gave birth at home in the last year (51%)[4]. This is consistent with the previous finding that a higher proportion of women with further education are now 'choosing' a home birth.

[4] Interestingly, although the economic status variable reflects the women's current status at the time of the survey, there are still differences by this variable in the proportion giving birth at home over 10 years ago. One reason for this might be that women who gave birth at home during the Soviet period were particularly



There is, however, a strong association between economic status and the type of personnel who assisted with the birth (Figure 2). Amongst women giving birth in the two years prior to the survey, women from the richest households were more likely to be attended by a doctor or a nurse (45%) then women from the poorest households (35%). Conversely women more poorer households were much more likely to give birth with no skilled help (24%) than women from the richest households (9%). Qualitative evidence suggests that the level of unofficial fees imposed rises as the level of specialisation increases; surgeons and hospitals charge more than midwives and feldschers (physician assistants) who receive only nominal payments or gifts (World Bank, 1999), while unskilled relatives, neighbours and fiends represent the lowest cost option. Thus, it appears that economic status (and the ability to pay for services) may be an important factor in explaining some patterns of utilisation of maternal health services, particularly the 'choice' of giving birth at home without skilled assistance from a midwife or other health professional.

Women from the poorest households are also more likely to have a delivery at home with no skilled assistance. Amongst all births in the period since 1997, such deliveries have made up 18 percent of all deliveries to women from the poorest fifth of households compared to just 4

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disadvantaged and amongst those least able to protect their living standards during transition – hence the

percent of those to women from the richest households. Prior to 1997 although there were slight differences between economic status groups, these differences were not significant.

So far the analysis has focussed on bi-variate relationships. However many of these characteristics are correlated with one another, i.e. women living in rural areas are also more likely to be less well educated, live in poorer households and have inferior access to facilities. In the next section, multi-variate analysis is used to distinguish the determinants of the utilisation of maternal health care in Tajikistan.

3.3 Determinants of maternal health care utilization

a) consulting a doctor in connection with last pregnancy

One of the major factors likely to influence whether a woman consults a doctor or not, that is the presence or absence of health facilities in her locality. The TLSS collected data at the community level, including the types of services located there. These included hospital, polyclinic, feldscher point, first aid point and women's health services. Table 7 presents the results of a forward stepwise logistic regression that includes these supply-side variables along with the socio-demographic characteristics investigated above.

association between current economic status and past behaviour.

Table 7 Odds ratios of a woman *not* consulting a doctor during her last pregnancy

	Odds ratio (95% CI)	N
Region ***		
Dushanbe	1.00	150
GBAO	0.10 (0.13-0.75)	79
RRS	2.00 (1.13-3.55)	469
Leninabad	0.31 (0.16-0.62)	588
Khatlon	1.51 (0.90-2.61)	703
Time of last birth ***		
Over 10 years ago (prior to 1989)	1.00	294
5-10 years ago (1989-94)	1.63 (0.87-3.05)	409
2-5 years ago (1994-97)	2.38 (1.30-4.36)	501
13-24 months ago (1997-98)	2.61 (1.40-4.84)	348
Within last year (1998-99)	3.33 (1.84-6.04)	437
Educational level **		
Higher	1.00	89
Technical	2.68 (0.58-12.34)	239
Secondary	5.20 (1.23-21.89)	1339
8th/9th class	5.96 (1.38-25.66)	298
None	15.7 (2.84-87.47)	24
Economic status *		
Top (richest)	1.00	337
4th quintile	1.02 (0.66-1.59)	391
3rd quintile	0.89 (0.57-1.40)	407
2nd quintile	0.75 (0.47-1.19)	425
Bottom (poorest)	1.39 (0.90-2.14)	429
Whether women's health service in community ***		
Yes	1.00	1148
No	1.84 (1.32-2.57)	841
Whether polyclinic in community ***		
Yes	1.00	1055
No	1.69 (1.25-2.31)	934

Note: Stepwise regression (PIN=0.1, POUT=0.05). The order in which the variables were entered is: region, whether women's health service in community, timing of last birth, educational level, polyclinic, and finally economic status. Type of settlement (urban or rural) was not significant once the service availability variables were included. Women's age was also not significant.
Significance levels * $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Source: author's own analysis of the TLSS, May 1999.

The dependent variable here is *not* consulting a doctor during the last pregnancy. Variables were entered step-wise into the model according to their level of significance as follows: region, whether women's health service in community, timing of last birth, educational level, polyclinic, and finally economic status. Type of settlement (urban or rural) was not significant once the service availability variables were included. Women's age was also not significant.

Region was the most important explanatory factor. Women in RRS were twice as likely not to consult as women in the capital of Dushanbe, whereas women in Leninabad and GBAO were significantly less likely not to have consulted a doctor in relation to their pregnancy. Interestingly, living in Khatlon – which was the region with the lowest consultation rates in the bi-variate analysis in Table 3 – is not significant after controlling for other factors. Perhaps not surprisingly, the variable on women's health services was the second variable to be entered into the stepwise conditional model. The results confirm that women living in areas without a polyclinic or without women's health services were significantly more likely not to have consulted a doctor during their last pregnancy than women living areas with these services. Time since the last birth was also highly significant, with women who gave birth in the 12 months prior to the survey (i.e. June 1998 – May 1999) being over three times more likely not to have consulted a doctor than women who gave birth prior to 1989.

Women's educational status also remained significant even after taking account of time period, region, local availability of maternal health services and household economic status. Women with only technical education were twice as likely not to see a doctor compared with women with higher education, and women with secondary or primary education were found to be five times more likely not to consult. Economic status was significant in the overall fit of the model but there were no significant differences between groups. Thus women's education appears to be a more important discriminator than economic status in determining whether or not a woman consults a health professional in connection with her pregnancy.

b) Home delivery

Although region is the most significant explanatory variable in terms of whether woman has a home delivery, only women in Khatlon show a significantly higher likelihood of home delivery than in the capital of Dushanbe (Table 8). Women living in rural areas are twice as likely to have a home birth than those in urban areas. There is a very strong gradient in the likelihood of a home delivery by time since last birth, confirming the deterioration in access over time. There is also a gradient by educational status, with women with secondary schooling only being twice as likely to deliver at home than women with higher education, other things being equal. Interestingly, economic status is not significant in the adjusted analyses pointing to cost not being a stand-alone factor in whether women give birth at home or in a health facility.

Table 8 Odds ratios of a woman giving birth to her last child at home

	Odds ratio (95% CI)	N
Region ***		
Dushanbe	1.00	151
GBAO	1.06 (0.46-2.47)	77
RRS	1.06 (0.54-2.09)	467
Leninabad	0.33 (0.16-0.68)	584
Khatlon	2.13 (1.12-4.08)	703
Type of settlement ***		
Urban	1.00	476
Rural	2.67 (1.76-4.08)	1506
Time of last birth ***		
Over 10 years ago (prior to 1989)	1.00	294
5-10 years ago (1989-94)	1.63 (0.99-2.69)	405
2-5 years ago (1994-97)	3.02 (1.89-4.84)	497
13-24 months ago (1997-98)	4.54 (2.80-7.37)	349
Within last year (1998-99)	5.23 (3.30-8.44)	437
Educational level **		
Higher	1.00	89
Technical	1.12 (0.50-2.55)	237
Secondary	2.30 (1.11-4.80)	1336
8th/9th class	2.04 (0.94-4.43)	297
None	1.70 (0.48-6.02)	23
Whether polyclinic in community **		
Yes	1.00	1048
No	1.40 (1.10-1.78)	934

Note: Stepwise regression (PIN=0.1, POUT=0.05). The order in which the variables were entered is: region, time since last birth, type of settlement, educational level, polyclinic. Economic status was not significant, nor was availability of women's health service.
Significance levels * p<0.05, ** p<0.01, ***p<0.001.
Source: author's own analysis of the TLSS, May 1999.

c) Home delivery with unskilled assistance

Once again the odds ratios demonstrate the deterioration in maternal health services over time, with women who gave birth in the last two years being 2-3 times more likely to give birth at home with no skilled assistance compared to those women who gave birth more than ten years ago (Table 9). Women in rural areas were found to be over three times as likely as urban women to give birth at home with no skilled assistance. Importantly, economic status now emerges as a significant characteristic, with women from the poorest quintile being over three times more likely to give birth at home unattended by skilled personnel than women from the richest quintile.

Table 9 Odds ratios of a woman having a home delivery without skilled assistance

	Odds ratio (95% CI)	N
Region ***		
Dushanbe	1.00	152
GBAO	0.47 (0.03-8.52)	79
RRS	4.38 (0.51-37.68)	421
Leninabad	0.90 (0.10-8.02)	580
Khatlon	4.06 (0.48-34.47)	608
Type of settlement **		
Urban	1.00	477
Rural	3.48 (1.50-8.06)	1363
Time of last birth **		
Over 10 years ago (prior to 1989)	1.00	292
5-10 years ago (1989-94)	1.22 (0.50-3.08)	387
2-5 years ago (1994-97)	1.66 (0.71-3.87)	465
13-24 months ago (1997-98)	3.24 (1.41-7.48)	308
Within last year (1998-99)	2.09 (0.90-4.82)	388
Economic status *		
Top (richest)	1.00	311
4th quintile	2.09 (0.98-4.46)	360
3rd quintile	2.23 (1.06-4.72)	378
2nd quintile	2.36 (1.11-5.02)	406
Bottom (poorest)	3.41 (1.58-7.06)	385

Note: Comparison group, all other deliveries. Stepwise regression (PIN=0.1, POUT=0.05). The order in which the variables were entered is: region, time since last birth, type of settlement, economic status. Educational level and service availability variables were not significant, including an additional variable on hospital.
Significance levels * p<0.05, ** p<0.01, ***p<0.001.
Source: author's own analysis of the TLSS, May 1999.

Summary and discussion

The use of maternal health services in Tajikistan has fallen significantly since independence. The deterioration in the economy and quality of services, along with rising costs is associated with an increase in women giving birth at home and a higher proportion of births unattended by skilled personnel. Although the results may be affected to some extent by recall bias associated with time since event, the extent of this influence is unknown and is unlikely to account for most of the extreme differences observed. Compared to ten years ago, women are now three times more likely not to consult a doctor in connection with their last pregnancy, five times more likely to deliver at home and 3-5 times more likely to give birth with no skilled assistance. These trends have direct implications for maternal and child health. Women and neonates are more likely to die from complications if medical facilities and skilled personnel are not readily available.

There are significant differences between regions, with women living in Khatlon and RRS, the two regions most affected by the civil war, being more disadvantaged than elsewhere. Moreover the situation in these regions appears to have deteriorated in the last two years, despite the signing of the peace agreement and the subsequent cessation of hostilities and commencement of rehabilitation of infrastructure.

There are also differences in utilisation by women's educational status, with women with only secondary or primary education being less likely to consult a doctor in connection with their pregnancy, other things being equal. Women with less education are also more likely to deliver at home. However amongst women giving birth in the year prior to the survey, it appears that a greater proportion of women with higher education are starting to 'choose' a

home delivery. It is estimated that two-thirds of maternity homes are now without heating and water. Women may now consider it safer, more comfortable and more affordable to give birth at home than in an unheated maternity house with no running water. Given this, the discriminating factor may not be location of birth but the type of health professional who assists at the birth. Here there appear to be no differences by educational status, but there are significant differences according to the economic status of the household. Women from the poorest households are three times more likely than women from the richest households to give birth with no skilled assistance.

One explanation for this is that these women are least able to meet the financial costs of such assistance. Although in principle maternal health care was - and remains - free, there is growing evidence that informal user charges are being imposed to augment the minimal salaries of health workers (Falkingham,2002). Health workers are amongst the lowest paid in Tajikistan. In 1998 the average monthly salary amongst employees in the health sector was just US $4.80 compared to the workforce average of US $11 and $33 for workers in key enterprises, such as the state mining, electricity and manufacturing companies (WHO, 2000). As well as being low, salaries in the public sector are often paid late, with arrears of several months being common. Given this, informal payments and in-kind gifts from patients, which some cannot afford, constitute a source of income many physicians and nurses. Although a direct questions on payments relating to maternity care was not included in the TLSS, the results of the analysis point to the fact that the costs of such care may be deterring women from seeking professional assistance at delivery.

Urgent action is needed if Tajikistan is to reverse the negative trends in maternal health care and improve infant and maternal mortality rates. The first step should be to determine the

cause for declining use of maternity services. The quantitative data from the TLSS and MIC need to be supplemented with more in-depth information concerning women's decisions to use or not use maternity care services. This would help shed light on whether improving the infrastructure (and quality of care) increases utilisation. Ensuring that all maternity homes are well heated, with running water and sanitary conditions, might reverse the trend towards home births. In the longer term, Tajikistan must address the overall financing of its health system.

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