

# Health Indicators for Mothers and Children in Rural Herat Province, Afghanistan

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**Keywords:** Afghanistan; child health; community health; immunization; maternal health; nutritional status

## Abbreviations:

ARI = acute-respiratory infection  
IAM = International Assistance Mission  
MICS = Multiple Indicator Cluster Survey  
MoH = Ministry of Health  
MUAC = mid-upper-arm circumference  
NGO = non-governmental organization  
OPV3 = oral polio vaccine  
ORS = oral rehydration solution  
PPA = Performance-based Partnership Agreements  
TBA = traditional birth attendant  
UN = United Nations  
UNICEF = United Nations Children's Fund  
USAID = United States Agency for International Development

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## Abstract

**Introduction:** Following years of conflict and neglect, major efforts now are underway to develop health policy and rehabilitate the health facilities in Afghanistan. As part of these efforts, there is a need to better understand the health status and health-seeking behaviors. As part of an effort to assist local non-governmental organizations (NGOs), a household survey of mothers with children under the age of five years was conducted in two rural districts of Herat Province, Karokh and Chesht-e-Sharif.

**Methods:** A two-stage, 30-cluster approach was used for each district. This included 622 mothers of 926 children under the age of five years living in the two districts. Outcome measures included demographic characteristics, antenatal services, immunization coverage, hemoglobin levels of the mothers, nutritional status and practices, environmental health indicators, recent illness, and health seeking behaviors.

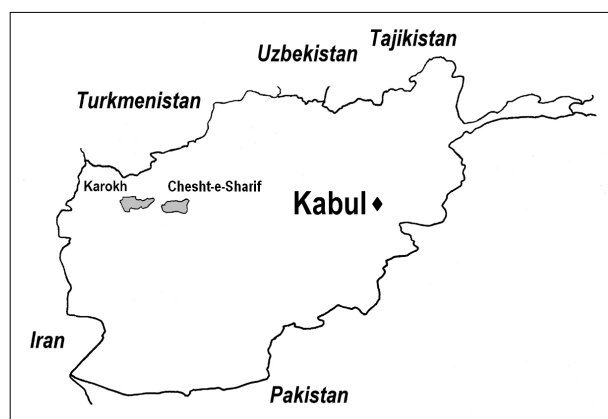
**Results:** The mean value of ages of the mothers was 27 years with an average parity of 6.1. Less than 5% of mothers ever had attended school. Half of women had lost at least one child before the child reached the age of five years. Under-five-year mortality was estimated at 325. Only 29% of the women had attended an antenatal clinic during their last pregnancy. Virtually all deliveries occurred at home. Only 7.6% of women had received three doses of tetanus toxoid. Less than 9% of the children 12–59 months of age were fully immunized. According to the measurements of mid-upper-arm circumference (MUAC), 11% of children were malnourished. Although breastfeeding almost was universal, greater than one-third of the women did not start breastfeeding until the second day after delivery. Protected water sources and appropriate control of feces were lacking in both districts. In the previous two weeks, 45.7% of children had experienced diarrhea, and dysentery had occurred in 10%. Fever had been present in one-quarter of the children.

**Conclusions:** Household health indicators indicate serious maternal and child health concerns in these two districts. Of particular concern is the poor immunization coverage, lack of reproductive health service, and the prevalence of common childhood illness in these populations. The feeding practices for children and the anemia among mothers also raised concerns. Poor environmental health contributes substantially to childhood illness. Without special emphasis, efforts to rebuild the health sector are likely to reach the household level only late in the process. An aggressive program to integrate community development and promotion of sound health practices is needed to improve the health of the Afghanistan people.

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## Introduction

The challenges to rebuilding health services in Afghanistan have been well-documented.<sup>1–4</sup> The health infrastructure has been heavily damaged, there is



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**Figure 1**—Geographical locations of the Karokh and Chesht-e-Sharif districts in Afghanistan.

a critical shortage of health personnel, and the population only has limited access to preventive and curative services, particularly in rural areas. Further, landmines and unexploded ordnance litter the country.<sup>5</sup>

The population of Afghanistan is estimated at 22.4 million, of which 85% are engaged in agriculture. Infant mortality is estimated at 165 per 1,000 live births, while the under-five-years mortality rate is thought to be 257 per 1,000 live births.<sup>6</sup> A 2002 nutrition survey of children under five years of age in Badghis province (Figure 1) found acute malnutrition to be present in 6.5% of children and 57.5% of children to have chronic malnutrition.<sup>7</sup> The maternal mortality ratio in Herat province is estimated to be 593 per 100,000 live births.<sup>8</sup>

Little information is available on health at the household level in Afghanistan. This study sought to report findings from two household surveys carried out in September and October 2002 in Herat Province (Figure 1). These were conducted to provide baseline information of a proposed maternal-child health community program.

### Methods

The surveys were carried out among mothers of children aged 0–59 months in the rural districts of Chesht-e-Sharif and Karokh (Figure 1). The Ministry of Health (MoH) in Herat requested the International Assistance Mission (IAM), an Afghan non-governmental organization (NGO), and World Relief to establish a community-health program in these districts. Technical assistance in the conduct of these surveys was provided by the Johns Hopkins Bloomberg School of Public Health, and provided baseline information for the project design.

The population of Karokh is estimated by the MoH to be 60,316, and for the more remote Chesht-e-Sharif district the estimate was 17,300. Karokh is served by a recently rehabilitated, comprehensive health center. In Chesht-e-Sharif, the health center had been destroyed and temporary facilities were being used. In each district, much of the population lived 5–8 hours distant from the only health facility. For both districts, there were >9,000 persons per health worker.<sup>9</sup>

	Karokh		Chesht-e-Sharif	
	n	Percent (CI)	n	Percent (CI)
<b>Age of Mother (years)</b>	<b>n = 318</b>		<b>n = 304</b>	
<20	20	6.3 (4.0–9.7)	19	6.3 (3.9–9.7)
20–29	168	53.0 (47.3–58.5)	159	52.3 (46.5–58.0)
>30	130	40.8 (35.3–46.4)	126	41.4 (35.9–47.2)
<b>Age at 1<sup>st</sup> pregnancy (years)</b>	<b>n = 306</b>		<b>n = 300</b>	
<16	156	51.0 (45.2–56.7)	138	46.0 (40.3–51.8)
16–21	133	43.5 (37.9–49.2)	147	49.0 (43.2–54.8)
21–35	17	5.6 (3.4–8.9)	15	5.0 (2.8–8.1)
<b>Maternal care</b>	<b>n = 316</b>		<b>n = 300</b>	
Received any prenatal care	130 (n = 316)	41.1 (35.7–46.8)	53 (n = 300)	17.7 (13.5–22.5)
Received TT last pregnancy	92 (n = 316)	29.1 (24.2–34.5)	94 (n = 295)	31.9 (26.6–37.5)
Received at least 3 doses	29 (n = 316)	9.2 (6.0–12.4)	16 (n = 295)	5.4 (2.8–7.9)

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**Table 1**—Maternal indicators determined from the responses from 318 mothers of 493 children in Karokh, and 304 mothers of 433 children in Chesht-e-Sharif (CI = 95% confidence interval; n = number; TT = tetanus toxoid)

Maps were obtained from the United Nations (UN) Afghanistan Information Management Service and were updated by district leaders. Population data were obtained from the provincial government and the United Nations Children's Fund (UNICEF). Using this information, 30 clusters were chosen systematically in each district. Within each cluster, 10 households were selected using a random number table.

Survey questions were adapted from the KPC 2000 Child Survival Survey and the UNICEF Afghanistan Multiple Indicator Cluster Survey (MICS).<sup>10–11</sup> The questionnaire was translated into Dari and back into English before field testing. Ten survey teams were trained during four days. The teams were composed of doctors, nurses, and hospital staff. Each team contained both male and female interviewers. In the Karokh district, 318 women with 493 children under five years of age were interviewed; in the Chesht-e-Sharif district, 304 women with 433 children were interviewed. Blood hemoglobin levels were checked in 100 women from each district using the Hemocue method (Hemocue, Angelholm, Sweden). Mid-Upper-Arm-Circumference (MUAC) was measured

	Karokh		Chesht-e-Sharif	
	n	Percent (CI)	n	Percent (CI)
<b>Gender</b>	<b>n = 493</b>		<b>n = 432</b>	
Males	287	58.2 (53.7–62.6)	227	52.5 (47.7–57.3)
Females	206	41.8 (37.4–46.3)	205	47.5 (42.7–52.3)
<b>Immunization children U5</b>	<b>n = 493</b>		<b>n = 433</b>	
Presence of immunization card	75	15.2 (13.1–17.2)	210	49.0 (40.8–51.2)
BCG	43	11.0 (9.1–14.8)	174	47.0 (39.9–50.9)
OPV (3 doses)	25	6.0 (4.3–8.4)	124	34.0 (26.0–38.7)
DPT (3 doses)	20	5.0 (4.1–8.0)	33	9.0 (6.6–11.8)
	<b>n = 395</b>		<b>n = 433</b>	
Measles (12–59 months)	30	8.0 (6.0–11.4)	53	14.3 (10.2–16.4)
Fully Immunization (card + history)	30	7.9 (5.9–11.6)	31	8.5 (5.8–11.0)
<b>MUAC (6–59 months)</b>	<b>n = 446</b>		<b>n = 407</b>	
<124 cm	60	13.5 (10.5–17.1)	45	11.1 (8.3–14.6)
124–134 cm	102	22.9 (19.1–27.1)	91	22.4 (18.5–26.8)
≥135 cm	284	63.7 (59.0–68.1)	271	66.6 (61.7–71.1)
<b>Initiation of Breastfeeding</b>	<b>n = 460</b>		<b>n = 418</b>	
Within 6 hours of birth	190	41.3 (36.8–46.0)	191	45.7 (40.9–50.6)
6–24 hours	69	15.0 (11.9–18.9)	75	17.9 (14.5–22.0)
After 24 hours	201	43.7 (39.1–48.4)	152	36.4 (31.8–41.2)

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**Table 2**—Childhood indicators determined from the response of 318 mothers of 493 children in Karokh, and 304 mothers of 433 children in Chesht-e-Sharif (n = number; CI = 95% confidence interval; U5 = under 5 years; BCG = tuberculosis vaccine; OPV = polio vaccine; DPT = diphtheria, pertussis, tetanus vaccine; MUAC = mid-upper-arm circumference)

using the Teaching Aids at Low Cost (TALC) insertion strip (Teaching Aids at Low Cost ((TALC) Herts, UK). Data collected were entered and analyzed using standard statistical software. The study was approved by the MoH in Herat and the Committee on Human Research of the Johns Hopkins Bloomberg School of Public Health.

### Results

The principal results are summarized in Tables 1–3. The mean value for the ages of the mothers was 28 years in Karokh and 27 years in Chesht-e-Sharif, with only 6.3% of women in both districts being <20 years of age. In Karokh,

	Karokh		Chesht-e-Sharif	
	n	Percent (CI)	n	Percent (CI)
Water source protected	127 (n = 319)	39.8 (34.4–45.4)	44 (n = 299)	14.7 (10.9–19.2)
Presence of latrine in home	270 (n = 317)	85.2 (80.7–88.8)	83 (n = 292)	28.4 (23.3–34.0)
<b>Disposal of child's stools</b>	<b>n = 302</b>		<b>n = 256</b>	
Thrown into toilet or latrine	99	32.8 (27.6–36.4)	6	2.3 (0.9–5.0)
Thrown outside in the yard	157	52.0 (46.2–57.7)	229	89.5 (85.0–92.9)
Buried in the yard	15	5.0 (2.9–8.2)	2	0.8 (0.1–2.8)
Not disposed of or left in the yard	31	10.3 (7.2–14.4)	19	7.4 (4.5–11.3)

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**Table 3**—Environmental indicators determined from the responses from 318 mothers of 493 children in Karokh, and 304 mothers of 433 children in Chesht-e-Sharif (n = number; CI = 95% confidence interval)

only 4.7% of the mothers ever had attended school, and in Chesht-e-Sharif only 2.3% had attended school. Almost all of the mothers (99%) had been living in their villages for at least one year.

Forty-seven percent of women had become pregnant before the age of 16 years. Half of the women had lost at least one child before the child reached age five years, and one-quarter had lost two or more children <5 years of age. The estimate of under-five-year mortality using the Brass “West” method was 324.5/1,000 live births.<sup>12</sup> The average parity per woman was six children. The male: female gender ratio was 1.12. In Karokh, 41.5% of mothers wanted another child within the next two years, and 71% of mothers wanted another child in Chesht-e-Sharif.

Unprotected water sources supplied the majority of households in both districts. Sources included open springs, unprotected wells, rivers, canals, or streams. Latrines were used by 85.1% of households in Karokh, and 28.4% in Chesht-e-Sharif. The most common type of latrine was the open-back latrine from which night soil is removed for fertilizing crops. The main alternative to this type of latrine was using a field.

In Karokh, 40% of the women had received prenatal care during their last pregnancy, however, only 29.9% had made two or more visits for prenatal care. Of those making any visits, 32% went to a medical officer, 39% to a traditional birth attendant (TBA), and 24% to a midwife. In Chesht-e-Sharif, 17.7% of the women reported having sought prenatal care during their last pregnancy, but only 11.2% of women made two or more visits. Half of the 53

Illness	Karokh		Chesht-e-Sharif	
	n	(%)	n	(%)
Diarrhea	218	(44)	205	(47)
Blood in stool	51	(10)	53	(12)
Cough	96	(20)	100	(23)
Difficult breathing	30	(6)	61	(14)
Fast breathing/ short, quick breathing	6	(1)	16	(37)
Fever	119	(24)	109	(25)
Malaria	12	(2)	14	(3)
Convulsions	18	(4)	13	(3)

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**Table 4**—Reported illnesses in children under age five years during the last two weeks (n = number)

women receiving any prenatal care were attended by a medical officer, 32% were attended by a TBA, and 15% were attended by a midwife. Almost all of the women delivered their last child at home. A TBA delivered 66% of women during their last pregnancy in Karokh, and 56% in Chesht-e-Sharif. Relatives delivered almost all of the remaining women. Only 7.6% of women had received three doses of tetanus toxoid. More than 40% of the women in each district had a blood hemoglobin concentration of <12g/dl.

The intense emphasis on polio immunization in Afghanistan is not reflected in the number of children found to be fully immunized against polio. The repeated outbreaks of measles and recently of pertussis in Afghanistan are consistent with the low coverage identified in these two districts. Less than one in 10 children between the ages of 12 and 59 months were immunized fully.

In the two districts, 11% of children were malnourished as defined by a mid-upper-arm circumference (MUAC) of <125 mm. Breastfeeding almost was universal in the two districts, but in both districts, greater than one-third of the mothers did not initiate breastfeeding until the second day. The majority of mothers introduced weaning foods at 4–6 months post-partem.

During the two weeks preceding the interviews, diarrhea and dysentery, acute respiratory infection (ARI), and fever were the most common complaints (Table 2). In Karokh, oral rehydration solution (ORS) was used in 19% of diarrhea cases, and 10% in Chesht-e-Sharif. Care for diarrhea was sought from the formal health sector by one-third of the mothers in Karokh, and 14% in Chesht-e-Sharif. The figures for location of treatment were similar for ARI and fever. For fever, aspirin was the most common treatment given to children, even though this is a malarious area. For these conditions, the husband was most likely to make the decisions about treatment for the child. For all conditions, sick children tended to be fed the same or smaller amounts of food than usual.

## Discussion

This survey of two rural districts in western Afghanistan shows a pattern of poor health and poor health-seeking behaviors among mothers and children. Since the fall of the Taliban, considerable effort has gone into the development of a national health policy and the rehabilitation of health facilities. Most recently, with leadership from the World Bank, the MoH has signed Performance-based Partnership Agreements (PPAs) with a variety of domestic and International NGOs to provide health services.<sup>13</sup> The European Union and United States Agency for International Development (USAID) are financially supporting PPAs, which allows populations in all 32 provinces to receive medical care. These agreements mainly focus on restoring clinical services at the district level, although each agreement contains some component of community health activities. On average, these agreements provide US\$2–3 per capita for primary healthcare services. However, these arrangements only may have a limited impact at the household level, where most of the illnesses and deaths occur. Even the rapid reconstruction and re-equipping of facilities most likely will be affected by a shortage of qualified personnel. In both districts surveyed, the majority of the population lived at least one hour away from the only functioning district health facility. Some villages were 5–8 hours away by foot or donkey. This figure probably is representative for the country as a whole, as 78% of the population is rural. The number of midwives with any training is minimal in rural areas. In some communities, there are “village doctors” who may have had some association with the formal health services at some time, but these are few. In the principal towns, drug sellers commonly diagnose illness and dispense treatment.

The data from this study can be compared with the UNICEF Multiple Indicator Survey (MICS) report for 2000 that covered a smaller number of variables collected from parts of the east and southeast of Afghanistan.<sup>11</sup> In general, the results follow similar patterns. In a number of areas, the population of rural Herat appears to be in worse circumstances. The extensive 2003 national MICS survey may expand the picture when these data become available. Based upon the current study, several priority interventions at the household level can be identified. There is a major need to improve immunization coverage in the two districts. In spite of polio eradication campaigns, oral polio vaccine (OPV3) coverage is low. The same can be said for measles, which claims an estimated 35,000 lives in Afghanistan annually.<sup>14</sup> National measles campaigns carried out in Afghanistan seemed to have had little impact in the two districts reported in this study. The limiting factor for immunization campaigns is distance and access to transportation. In villages, the mosque serves as the center of activities, and its precincts commonly are used as an immunization site. In western Afghanistan, religious leaders usually are willing to promote immunization campaigns. Getting a high percentage of children fully immunized is an urgent objective. Equally important is addressing maternal health issues, particularly providing training to birth atten-

dants.<sup>15</sup> A goal of three or more antenatal visits for all pregnant women may be hard to achieve, given the distances and the terrain in rural districts. However, an aggressive program to develop health subunits in some rural districts may improve access for the future. The lack of transportation and the dominant male role in health decision-making makes referral for obstetrical complications difficult.

The importance of sanitation and protected water sources also is a major priority. The absence of latrines, particularly in Chesht-e-Sharif, is a concern, as is the management of the children's feces in both districts. This, with the paucity of protected water sources undoubtedly contributed to the high prevalence of diarrhea and dysentery among the children in the households sampled. Because of difficulties in access to health facilities, training in home-based treatment seems logical, provided simple medications are available in village shops. Both of these districts are on trade routes from Iran, a source of inexpensive pharmaceuticals. Now, UNICEF is taking a major role in ensuring adequate drug supplies at the national level.

These data show the importance of developing health services that will target the household level. Because of the limited mobility of women in the culture of Afghanistan, there are few alternatives for building community health resources. Community-based Integrated Management of Childhood Illnesses (IMCI) is one such approach. However, the health system of Afghanistan may not be strong enough to fully implement this approach. Establishment of formal community health programs in the sparsely populated districts in western Afghanistan may be take years. However, by building key maternal and child-health messages into general community development programs it may be possible to address some of the principal causes of illness and death. In fact, this was done in Chesht-e-Sharif where International Assistance Mission (IAM) integrated health activities into rural development programs before the Taliban forced this work to cease.

A study of this nature has many limitations. While the findings are broadly representative of neighboring districts in western Afghanistan, the results should not be extrapolated to other parts of the country. Recall of recent illnesses may have been faulty. Despite training, the interviewers may have influenced the response of mothers, and may have introduced bias. The large educational gap between the health professionals who were interviewers and the illiterate mothers may have made for difficult communication. The absence of accurate population figures may have distorted the sampling process. The sample size in this cluster survey likely was inadequate to accurately capture some of the information sought. A better picture of nutritional status could have been achieved had it been possible to measure weight-for-height.

### Conclusions

There are no easy solutions for health problems that have accrued during decades of conflict and suppression in Afghanistan. A brave start has been made to create a national health system in a land where most power has been at the local level. Effective methods to reach rural populations require both innovative thinking and a long-term commitment. Most of all, stability and long-term commitments by the international community are required.

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