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BACKGROUND

The Tibetan region of the People's Republic of China, which includes the Tibetan Autonomous Region, Qinghai Province and parts of three other provinces, is among the most remote and poorest areas in China. Although health information is very limited for the ethnically Tibetan population, the health of this population appears to be generally poor, particularly in rural areas, where the majority of Tibetans live.[1,2,3,4] The governmental public health program started later in the Tibetan region and access to health services is limited in many areas.[1,5,6] The lack of basic information on the health status, knowledge, and practices of the Tibetan population is a significant impediment to progress in public health, health promotion, and the provision of health services. The goal of this report is to provide information on the lives and health status of the rural Tibetans in Qinghai Province which can be used to develop and expand programs to improve the health of the Tibetan population. To accomplish this goal, we provide a broad overview for this sample of sociodemographic characteristics, the health-related environment (drinking water, sanitation, hygiene, the availability of health care providers), children's health, women's health, fertility, and health-related practices (breastfeeding and immunization).

Qinghai Province

This report is based on a survey which was conducted in two Tibetan autonomous prefectures of Qinghai (Tibetan: Tso-ngon) Province. Qinghai Province is located in the northwestern part of the People's Republic of China on the Tibet/Qinghai plateau at an average elevation of 14,000 feet. The province is 720 square kilometers in land area and borders the Tibetan Autonomous Region (TAR) and Gansu, Xinjiang, and Sichuan Provinces. The 2000 Chinese census recorded a total population of 5.18 million inhabitants in Qinghai Province.

Qinghai Province is rich in natural resources of many types, including oil, natural gas, potassium, table salt, nonferrous metals, coal, and iron. It also has extensive hydroelectrical power, salt lakes, farmlands and grasslands, agricultural and animal products, and areas attractive for tourists. The annual gross domestic product (GDP) in 2000 was reported to be 26.312 billion RMB[a] and the per capita GDP was 5,068 RMB, equivalent to approximately $618 US dollar per year. Annual per capita family

[a] RMB stands for "ren min bi" (人民币), the national currency of China. One RMB equals roughly 13 cents of a US dollar.

income was 5,170 RMB (or about $630 US) in urban areas and 1,490 RMB (or about $182 US) in rural areas.

In Qinghai Province as a whole, 94.2% of school age children were enrolled in school in 2000. Approximately 31% of the total Qinghai population had a primary school education, 22% had a junior secondary education, and 10% had a senior secondary education. Another 18% were reported to be illiterate.[7] For 2000, life expectancy at birth was reported to be 59.3 years for males and 62.0 years for females and the crude death rate was 6.15 deaths per 1,000 population.[7] Data from the fourth national Chinese census in 1990 showed that women of reproductive age were 27% of the total population and the Crude Birth Rate was 23.7 births per 1,000 population. Among married women in 2000, the vast majority (86.9%) were using contraception.[7] The Maternal Mortality Ratio was reported to be 142 deaths per 100,000 live births. The Infant Mortality Rate was 41.0 deaths in the first year of life per 1,000 live births and under-five mortality rate was 51.9 deaths per 1,000 children ages 0 to 4 in 2001. In recent years, the national government has promoted the construction of latrines and, as a result of this program, 5,400 public latrines have been built. Because of recent improvements in the availability of water supplies, approximately 71.3% of the total population has access to clean drinking water.[8]

The Tibetan Population

The Tibetan population of Qinghai Province is estimated to be about 2 million people. Combined with the Tibetan population of the Tibetan Autonomous Region (TAR) (approximately 2.62 million people in 2000) and the Tibetan population of Gansu, Sichuan, and Yunnan Provinces (perhaps an additional 2 million people), the current Tibetan population in China may equal its historical description — the Tibetan population has traditionally been known as the “six million.”

Traditionally, the area of the TAR, Qinghai, and parts of Gansu, Sichuan, and Yunnan which comprised Tibet was divided into three major regions called U-tsang, Kham, and

Amdo. Despite minor differences in accent and local customs, all Tibetans share the same language and culture. The majority of Tibetans (approximately 80%) live in the remote, rural areas and make their living by farming and herding.[9]

Obtaining information on the health status of the Tibetan population is difficult. A recent study reported very high maternal and child mortality rates for Tibetans: a Maternal Mortality Rate MMR) as high as 400 to 500 deaths per 100,000 live births in some areas and an infant mortality rate of 20% to 30% live births (equivalent to an IMR of 200-300 deaths per 1000 live births) in some areas of rural TAR.[10] A second study reported an MMR of 352 maternal deaths per 100,000 live births and an IMR of 92 deaths per 1,000 live births in the TAR in 2003. This study also found that Tibetan children have high rates of undernutrition (for example, 51% of 7 year olds were reported to have severe stunting) and that about two-thirds of Tibetan children had rickets.[11] One article indicated that "Tibetan women are 6 to 10 times more likely to die in childbirth than Chinese women. Their infants are up to 3 times less likely to survive."[12] A study of Tibetan nomadic herders in Zhuduo County, Qinghai Province reported high levels of morbidity for adults, children, and pregnant women.[13] Among children, respiratory and diarrheal infections (including tuberculosis) were the most common forms of morbidity as is true in many poor and undernourished populations in other countries. During pregnancy and delivery, the most common problems were related to swelling of ankles and legs (a possible sign of pre-eclampsia), miscarriage, obstructed labor and post-partum hemorrhage.

Study Site Profile

The study was conducted in sites located in two of Qinghai's Tibetan autonomous prefectures. These two prefectures have a population of approximately 200,000 to 400,000 people of whom 70 to 90 percent are ethnically Tibetan. We chose the two prefectures because they are fairly typical of the Tibetan areas in Qinghai Province and because of our knowledge of the area.

Prefectures are geopolitical units intermediate between provinces and counties. Each prefecture generally contains several counties. Counties, in turn, are subdivided into townships and townships into administrative villages. After selecting the two prefectures, one county was selected from each prefecture. Within each county, we selected one township. The sample is the population of the two selected townships. The specific counties and townships included in the sample were chosen, in part, because we had permission from the local government to work in these areas. To protect the study participants' privacy, we will refer to the two townships as sites A and B in this report. One of the townships (Site A) had had a basic health care program run by Tibetan Healing Fund (THF), a non-profit organization which works to improve health and health care for the Tibetan population in western China.[b]

The two selected counties have relatively high mortality compared with China as a whole. Official statistics report Crude Death Rates of 5 per 1,000 population (lower than might be expected because of the Tibetan population's young age structure) and infant mortality rates of 35 per 1,000 live births -- higher than China's overall IMR of 27 (PRB, 2006). Unpublished government data report maternal mortality rates of approximately 180 maternal deaths per 100,000 live births. However, deaths are often underreported in remote rural areas and mortality rates in this area may actually be considerably higher.

Each of the two counties is served by at least one comprehensive hospital and a disease control center or station. Almost all of the administrative villages in the selected areas have village health clinics and are also served by township health centers. The villages also generally have village doctors. Doctors, nurses and health workers at the county level health facilities have at least an undergraduate-level education, but village health workers do not have formal education. Their training is generally limited to the completion of a three to six month health care course at some point during their career.

The two areas are mountainous and rural. Residents generally make their living from agriculture and animal husbandry. For example, in one county, there is an average of 1.4 *mu*[c] of agricultural land and 3.5 heads of livestock per person. The population

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[b] *See http://www.tibetanhealingfund.org/.*

[c] *Mu is a Chinese measure of land area equal to 0.16466 acres or 0.066 hectares.*

produces an average of 400 *jin*[d] of agricultural crops annually. Aside from Tibetans, the population of the two sampled areas includes Mongolians, Han Chinese and members of the Salar, Hui, and Tu ethnic minorities.

Site A Township:

In the Site A township, approximately half of the villages are Tibetan and the rest are (Han) Chinese. Some of the Chinese villages are similar to Tibetan villages and their inhabitants spoke the Tibetan language before 1952. Other Han villages are newly settled. Most of the villages are located in mountainous areas and are primarily agricultural. Household income per capita averages approximately 1,500 RMB. In 2003, Tibetan Healing Fund (THF), a non-profit social and health service organization, trained a Community Midwife from each of five villages. Prior to and during this study, the Community Midwives provided basic antenatal care and health information to reproductive-aged women in this township.

Site B Township:

The Site B township includes a dozen traditional villages for which the main economic activity is agriculture. The primary crops produced include wheat, barley, rape seed and flax seed. The average household annual income is less than 1,000 RMB. Neither THF nor other non-profit health organizations were active in these villages before or during the study.

METHODOLOGY

A cross sectional survey was conducted from September 16 to October 15, 2003. In each selected township, we sampled five ethnically Tibetan administrative villages. Although the villages selected were essentially a convenience sample, they are representative of the regions in which they are located. In each village, approximately 28 households were selected randomly and one reproductive aged woman in the household was chosen and interviewed. Households without reproductive-aged women were excluded from the study. A structured close-ended comprehensive questionnaire was used to interview a combined total of 280 women ages 15 to 49 years old from the two selected townships. The questionnaire was designed and written in English and then translated into Chinese. Two skilled local bilingual Tibetan doctors

[d] *Jin* is metric unit equal to exactly 500 grams (1.1023 pounds) in contemporary China.

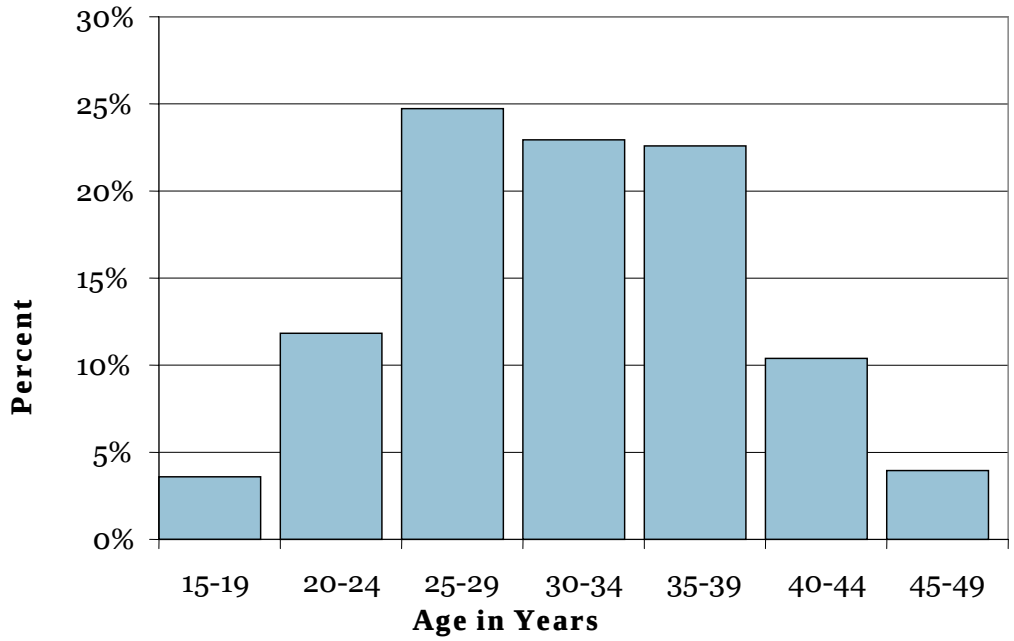
conducted the interviews in Tibetan, translating from Chinese into Tibetan during the interview using standard translations that had been practiced during interviewer training. The interviewers were both female, came from the regions in which they worked, and were very familiar with local culture and health issues. They both had medical degrees and experience in health care in rural areas. Both were completely bilingual in the Tibetan and Chinese languages. Interviewer training familiarized the interviewers with the use of the questionnaire and interviewing techniques. Interviewers conducted several trial interviews before beginning fieldwork. The questionnaire contained 12 sections, including household statistics, education, income, water supply/hygiene, sanitation, village health workers, health care use, child health, immunization, pregnancy, breastfeeding, and women's health.

I. SOCIO-DEMOGRAPHIC CHARACTERISTICS

Respondents' Age and Characteristics

Two hundred seventy-nine women participated in this study. Respondents were between 15 and 49 years old, with the median age of 32 years. Figure 1 shows the age distribution for the sample.

Figure 1. Respondent age distribution



In Table 1, we examine respondents' educational attainment. As described above, a majority (62%) of the residents of Qinghai Province had been to primary school. In contrast, in these rural predominantly Tibetan villages, only one third of respondents had attended school at all. Those who did go to school completed an average of 4 years with a range of 1 to 10 years. Although all respondents spoke Tibetan, only 20% reported that they could read and write the language. Only 5% of the sample report being able to read and write in Chinese and only 3% said that they could speak Chinese.

Table 1. Respondent characteristics

Respondent characteristics	Percent or mean (SD)	Number of Cases
Attended school	32%	276
Mean number of school years (for those attending school, n=90)	4(2)	271
Read and write Tibetan language	21%	272
Read and write Chinese language	5 %	272
Speak Chinese language	3%	272

The 279 households included a total of 1,362 individuals. Information on age and sex was available for only 1,356 and 1,359 household members, respectively. Among the 1,356 for whom age is available, adults age 18 and older made up 66% of the household members. For the sample with age and sex data, 48% of children (age 17 and younger) and 46% of adults (age 18 and older) were male. The age of household members ranged from 10 months to 86 years, with a mean age of 9 years for children (≤ 17) and 38 years for adults (≥18).

To examine the types of households in the study area, we categorize them according to the relationships among household members. As shown in Table 2, none of the respondents reported living by themselves, a pattern that is common in Tibetan populations where extended families are the norm. Single parent families were defined as households containing one parent (almost always the mother) and her children. Only about 4% of households were single parent families. Nuclear families included two parents and their children. All other families were classified as extended families. A majority of the study households (65%) were extended families which included relatives, e.g., the respondent's parents and parents-in-law, brothers, sisters, nieces, nephews, aunts, uncles, cousins and grandparents.

Table 2. Family types (n=279)

Family type	Percent of households
Single parent	4%
Nuclear family	31%
Extended family	65%

However, despite the frequency of extended family households, households were not as large as might be imagined. The average number of household residents was 5 with a standard deviation of 1.5 individuals. The number of children in each household averaged 2 with a standard deviation of 0.9. The average number of adults was greater – a mean of 3 adults per household with a standard deviation of 1.5.

As we will see later on in this report, the high prevalence of moderate size extended families in this population is consistent with their agricultural way of life. The larger the household size, the greater the land allocation that a family receives. Families receiving larger land allocations are likely to be able to take advantage of economies of scale in agricultural production which increase per capita production, whereas families with relatively few members are likely to find it harder to find efficiencies in production and to benefit from pooled resources.

Education

Village primary schools mainly teach language, math and art. Most Tibetan schools teach both Tibetan and Chinese, although some teach only Tibetan. At the same time, these schools use Chinese language to teach mathematics, although village children speak Tibetan language at home. Typically, students who complete six years of primary school learn basic reading and writing skills in Tibetan, basic mathematics, and limited Chinese (generally recognition and writing of some Chinese phrases and characters). Although the national government has promoted bilingual education, in practice most schools teach Tibetan with some Chinese added or Chinese with some Tibetan added. Although nine years of education is compulsory throughout China, many Tibetan children in rural Qinghai villages leave school before completing the five years of primary school.

One reason for low educational attainment is that many village schools offer only the first three years of primary school. To continue their education beyond the third year, students have to attend boarding schools outside the village. Boarding schools are usually located in the township centers which can be many miles away from home villages. For families, it is a considerable burden and expense to send their children to boarding school. They have to send food and pay expenses for the child while he/she is at school. Boarding schools generally offer 4th to 9th grade, but families are often forced to withdraw children from boarding schools when they are in 5th or 6th grade because they cannot afford the cost.

Interviewers collected information on education and literacy for all household members ages 6 years and above. Approximately 91% of the individuals in the sample (N=1234) were in this age group. Information on whether they were enrolled in school at time of the study or had attended school in the past was available for approximately 97.5% individuals 6 years and older.

Among children ages 6 to 17, 88% were enrolled in school at the time of the survey (see Table 3). Those who had ever attended or were currently enrolled in school on average reached the 4th year of school. Among adults, 50% had attended school (Table 3). Among those who had attended or were enrolled in school, the average number of years of school ranged from 5 years with a standard deviation of 2.5 years.

Table 3. Educational characteristics at the community level

Age group	Percent or Mean (SD)	Number of Cases
School age children (n=343)		
Attended/Enrolled in school[1]	88%	278
Mean school years	4 (2)	278
Adults (n=891)		
Attended/Enrolled in school[1]	50%	276
Mean school years	5 (2.5)	269

[1]Only for those who had attended or enrolled in school

We also examined households by the educational attainment of their members, as shown in Table 4 below. In 95% (266 out of 279) of households, at least one person had attended school or was currently enrolled at the time of the study. Among school

age children living in respondents' households, most (95%) were enrolled in school. No information is available on whether children not currently attending school had ever attended. In contrast, many fewer adults had ever attended school. Only 55% of adults in respondents' households had ever attended school. For those households in which at least one adult attended school, the mean number of years in school was 5 years. We also classified households by the highest number of years of school completed for a household member. As shown in Table 4, the average across households for the highest number of school years for any household member was 6 years completed.

Table 4. Educational characteristics at the household level

Characteristic	Percent or Mean (SD)	Std Dev	N
Proportion of children (>= 6 years) in household enrolled in school	95%	0.1	209
Proportion of adults in household who attended school	55%	0.2	279
Mean number of years of school for adults who had attended school	5	2.1	246
Highest number of school years for any household member*	6	2.5	266

*only for those households with at least one person attended school

The fact that the proportion who ever attended school is substantially lower for adults than for children shows that education opportunities, at least at the early primary school level have increased. Despite this change, however, there are still a small proportion of children who are not attending school (5% of school age children in the sample) and the average number of years of school that children complete remains low.

Literacy

Given the education results shown above, it is not surprising that children are more likely to be able to read and write than adults. While 70% of the children ages 6 to 17 can read and write in Tibetan, only 45% of adults can do so (Figures 1A and B).[e] Literacy in Chinese is considerably lower: only 34% of children and 13% of adults could read and write in Chinese (Figures 2A and B).

[e] Note that the data presented in Table 1 is for respondents (women of reproductive age) while this information is for all adults (≥ 18) in the sampled household.

Figure 1A: Tibetan language literacy among children ages 6 years to 17 (n=339)

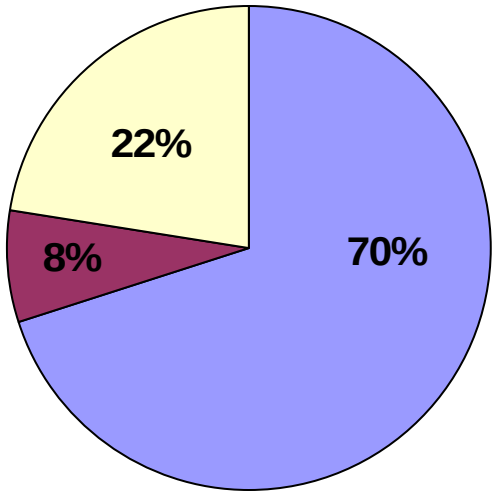
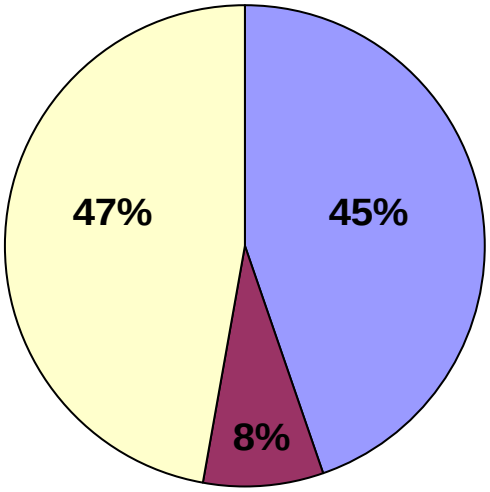


Figure 1B: Tibetan language literacy among adults age 18 and older (n=876)



Read and Write Read but not write Neither read nor write

Figure 2A: Chinese literacy among children ages 6 years to 17 (n=339)

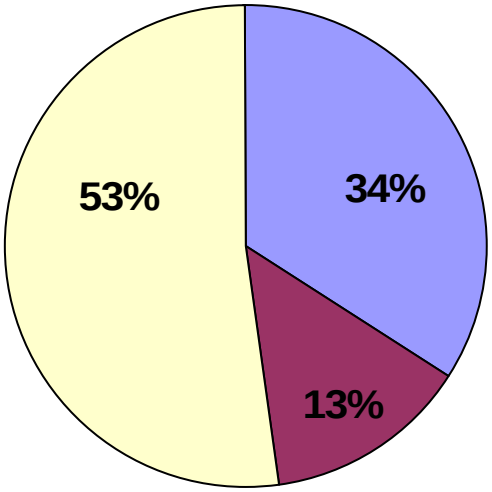
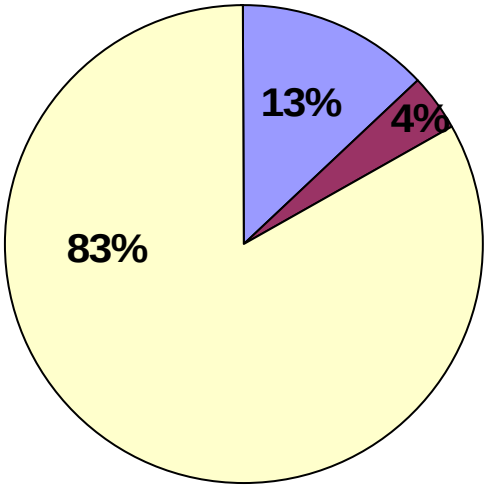


Figure 2B: Chinese literacy among adults (⩾18 years) (%) (n=876)



Read and Write Read but not write Neither read nor write

Household Assets and Income

Even though this region of Qinghai Province is rich in natural resources, residents of the region are relatively poor compared to those living in inland Chinese provinces. The difference between the two regions for Tibetan communities is particularly large for ethnic minorities. As described above, the primary source of income is agriculture and animal husbandry , both for household use and for sales on the market. Very little income is earned through wage labor or salary. As in other studies of rural agricultural areas, this economic system makes it difficult to assess household income and relative economic status. To measure economic status, we used two different strategies. First, the survey asked about ownership of farm animals, which are a key form of investment and savings for a Tibetan family, as well as a means by which many families make their living. Second, the questionnaire asked about the amount of different crops produced during the past year and how much money the family earned by wage labor or piecework (such as collecting medicinal plants in the wild for herbal medicines).

We constructed two indicators of economic status. First, we used information on annual crop production, sales of animals in the past year, the amount of money earned through wages or piecework, and information on the market value of agricultural products in these counties to produce an estimate of monetary value of annual income. Second, we estimated the market value of animals owned by each household, using information on the approximate market price of each animal in these counties. This indicator represents the value of animal assets that the family owns. For both indexes we used information that we collected independently from these villages on the prevailing market price of animals and crops (per *jin*) by type. For the first indicator, we calculated the value of

crops and animals sold using market values and summed the market value of income earned from these sources plus the amount of money earned from labor activities such as gathering medicinal plants and construction work. Crops harvested in the past year included wheat, barley, rapeseed, flax, beans, sesame seeds and potatoes. Any other crops grown were not included because they were not commonly grown and their market price was difficult to assess. For the second indicator, we summed the market value of each animal the family owned. Animals included yaks, sheep, goats, donkeys, cows, mules, pigs, chickens and horses. Although households usually owned a few animals, a handful of families reported owning a large number. For example, one household owned a total of 30 yaks and another owned 200 sheep. Table 5A provides a summary of the economic status indicators, while table 5B provides per capita income and assets based on this information.

Table 5A. Household animal and crop value and yearly earnings[a]

	Households with at least one indicator item			Households with all composite indicator items		
Economic Indicators	**n**	**Mean (SD)**	**Median**	**n**	**Mean (SD)**	**Median**
Value of animal assets (RMB[b])	279	10711 (14826)	5583	263	10976 (15198)	5417
Value of crops produced (RMB[b])	275	1597 (1045)	1450	219	1823 (991)	1640
Value of crops and animal (RMB[b])				206	13408 (16355)	7736
Income earned from animal sales (RMB[b])	221	65 (235)	0	N/A		
Income earned from sale of agricultural products (RMB[b])	143	21 (126)	0	N/A		
Income earned from out-of-home labor (RMB[b])	278	933 (1031)	600	N/A		
Total cash annual income (RMB[c])	278	996 (1055)	750	133[a]	367 (817)	0

[a]Households are excluded because they are missing some or all of the information

[b]One RMB equals roughly 13 cents of a US dollar.

[c]Total cash income included income from animal sales, sale of agricultural products, and labor income.

Table 5B. Indicators of per capita income and assets[a]

	Households with at least one indicator item			Households with all indicator items		
Economic Indicators	**n**	**Mean (SD)**	**Median**	**n**	**Mean (SD)**	**Median**
Per capita income based on value of animal assets (RMB[b])	279	2122 (2672)	5583	263	2165 (2737)	1167
Per capita income based on value of crops produced (RMB[b])	275	331 (198)	308	219	378 (185)	355
Per capita income based on value of animals & crops (RMB[b])	279	2448 (2673)	1492	206	2643 (2886)	1533
Per capita income based on total annual income (RMB[c])	278	204 (223)	146	133[a]	80 (178)	0

[a]Households are excluded because they are missing some or all of the information
[b]One RMB equals roughly 13 cents of a US dollar.
[c]Total cash income included income from animal sales, sale of agricultural products, and labor income.

All respondents reported on labor income during the preceding year. In 60% of households, at least one person had labor income. Digging for medicinal plants was the most common means of earning income, with 90% (150 out of 167) of households involved in this activity some time during the preceding year. In 12% of households, at least one resident was involved in construction work and 3% had at least one resident involved in some other type of income earning work. For those households which had labor income, the earnings ranged from 0 to 5, 000 RMB, with average labor income of 1,553 RMB. The value of animal assets owned by these households is clearly quite high compared to other income sources and assets, suggesting the importance of animals as stores of value or savings in this region.

II. HEALTH-RELATED ENVIRONMENT

Water Supply

In dry rural areas like the study communities, the availability of water can have serious effects on living standards, agricultural production, and health. Clean, readily available water is essential for health because contaminated drinking water can spread infections and because even minimal hygiene requires adequate supplies of clean water. Children need substantial amounts of clean water when they become sick, particularly during

diarrhea or respiratory infections – the two most common childhood illnesses in poor populations.

The questionnaire included several questions about water supply. The results are shown in Table 6. Approximately 80% of the study households used piped water. However, piped water is often a public spigot situated outside the household in the village centers. Thus, even piped water must usually be carried by residents some distance to the household. Most other households used water from the natural springs, which are often contaminated by animals and animal waste. Especially during the summer, after rain storms, spring water is unsafe to drink unless it is filtered or processed with salt. Among those households who had to fetch water, a total of 207 respondents were able to estimate the time spent in this activity. The range was 2 to 120 minutes per week with a mean of 18 minutes for all households reporting.

Among respondents who reported how often they fetched water, the frequency ranged from 2 to 28 times per week, with a mean of 13. Almost all households have methods of storing water in the home, with wooden barrels being most common. Other methods included plastic containers and metal pails/buckets.

Only 66% of respondents indicated that they had enough water all year round. This finding combined with the fact that most households have to travel some distance to fetch water even when it is available indicate that water is not readily accessible to a substantial portion of the population in the study areas.

Table 6. Household water supply

Water Characteristic	Percent or Mean (SD)	Number of Cases
Water source:		273
Piped water	80%	
Natural Spring	15%	
Water storage:[a]		276
Wooden barrel	80%	
Plastic container	15%	
Metal pail	10%	
% Who have enough water all year	66%	278
Time spent fetching water/week (minutes)	18 (16)	253
No. of times fetch water per week	13 (5)	278

[a] Do not sum to 100 because some households use more than one type of container.

Hygiene and Sanitation

The air quality in the high altitude regions of the Tibetan/Qinghai plateau where the study areas are located is considerably better than in lower elevation areas of China. However, sanitary practices – such as hand washing and safe management of household waste -- are not always used in poor rural villages. Furthermore, in many Tibetan communities, households have not traditionally had their own latrines. In the past, when Tibetan areas were sparsely populated, the lack of latrines and use of untreated night soil as fertilizer was less of a problem. But in recent years, the population has become more densely concentrated in villages, providing ample opportunity for disease transmission if human waste is not disposed of properly.

In Table 7, we examine the hygiene and sanitation practices in the study areas. Given the impurities of spring and piped water in open areas in these villages, a crucial determinant of disease transmission is whether drinking water is boiled. All respondents reported that drinking water was boiled before use. Respondents who reported boiling drinking water all told interviewers that they kept the water on the fire until it boiled. These results appear implausible given the scarcity of fire wood and fuel in the study areas. The answers may reflect respondents' knowledge that they are supposed to boil all drinking water.

Table 7. Household hygiene and sanitation

Household hygiene and sanitation	Percent or Mean (SD)
Boiling water before drinking	100%
Wash hands before handling food	67%
Disposal of household waste:	
Burn	3%
Bury	1%
Dump near house	97%
Disposal of food waste:	
Feed to animals	99%
Dump near house	1%
Type of latrine:	
Pit latrine	83%
Field	17%
Wash hands after using latrine:	33%
Human waste disposal:	
Use on crops	100%
Location of latrine:	
Outside home	97%
Distance to latrine (feet)*	17 (8)

**n=247*

Given the shortage of water, particularly during some parts of the year, regular handwashing can be difficult. Approximately 69% of the respondents indicated that they washed their hands before handling food, but only 33% reported washing hands after visiting the latrine.

Household waste, such as paper and glass, were poorly disposed of, with 97% of the respondents indicating that they dumped household waste near the house. Food waste was predominantly fed to animals.

Pit latrines were common with 83% of the households having a pit latrine. The members of the remaining 17% of households defecated in the surrounding fields. The defecation areas (pit latrine and field) were located very close to the dwelling. The mean distance was 17 feet with a range from 2 to 50 feet and a mean of 17 feet. All households utilized human waste as "night soil," i.e., as fertilizer for farm crops. The use of night soil has the advantage of disposing of human waste in a productive manner

and saving on chemical fertilizers. However, the use of untreated night soil also increases the chances of transmission of infections.

III. HEALTH CARE IN THE COMMUNITY

Village Health Care Workers

Tibetan Village Health Care Workers (VHCW) include village doctors and maternal and child health supervisors in the villages. They make important contributions to the provision of health care in their local communities. Although the national government promotes VHCWs in rural areas, not all villages have well-trained VHCWs for a variety of reasons, including lack of funding in the health care sector. In some cases, VHCWs are trained in biomedicine and Tibetan medicine. Local Tibetans trained in Tibetan medicine often practice in their communities as alternative health care providers. Many Tibetan health care providers are also certified as VHCWs or village doctors. Table 8 shows a summary of VHCW characteristics and practices as perceived by the study respondents.

A majority (85%) of respondents indicated that there was a VHCW in their village. As shown in the table, almost all VHCWs were male, practiced a mix of Tibetan and Western medicine, and used injections. The respondents' perception of VHCWs' level of experience varied with approximately 74% of the respondents indicating that they had sufficient experience to deal with health problems all or some of the time, 11% said the VHCW rarely/never had sufficient experience, and 14% of the respondents indicated they did not have any knowledge of the VHCWs' experience.

In the study area, modern formal health care facilities are located in the township health center, county hospitals, and prefecture or higher level cities. Usually these facilities are located at considerable distance from rural villages and are accessible to villagers only by long trips by foot, horse back, motorcycle, or car (if available). To assess access to health care facilities, respondents were asked to estimate how long it took them to get to the township clinic. A large proportion of respondents (69%) did not know how long it would take, perhaps reflecting their lack of personal experience with the township clinic. However, among those who gave an estimate, the time to reach the township clinics averaged 72 minutes with a range of 5 to 180 minutes. For the 36% of the respondents who indicated how they got to the clinic, 35% walked while the remaining 1% either used a car or a horse.

When asked about the amount of time it took to reach the county hospital, most respondents again could not provide an estimate. For those who did, the average time was 130 minutes or 2.2 hours with answers ranging from 15 to 180 minutes. Among the 34% who gave information on how they got to the County Hospital, 27% reported walking and the remaining 7% reported traveling by car.

Table 8. Characteristics of Tibetan village health care workers

Characteristic	Percent	Number of Cases
VHCW in your village	85	268
Sex of VHCW		193
Male	99	
Female	1	
Type of medicine VHW practices		234
Tibetan	20	
Chinese	1	
Western	13	
Tibetan & Western	64	
Chinese & Western	1	
Tibetan, Chinese & Western	1	
Types of medicine VHW uses		234
Injections	80	
Western medicine	80	
Tibetan Medicine	86	
Chinese medicine	0	
Acupuncture	15	
Whether VHW has sufficient experience to help respondent with medical problems commonly experienced.		237
All the time	32	
Some of the time	42	
Rarely	9	
Never	2	
Do not know	14	

Illness and Health Care Among Tibetan Adults

A list of health conditions and infections was used to assess common health problems among Tibetan adults. The list included problems related to: diarrhea, respiratory/ chest, cough, skin, abdomen, back, feet, joints, eyes and other types of problems. Study respondents were asked to identify the health problems they or other adult household members suffered from when they got sick. The question did not refer to a particular episode of illness but rather to when household adults get sick in general. We therefore interpret the results to indicate the general type of symptoms experienced by people who are sick. As shown in Table 9, cough, respiratory/chest, diarrhea and joints were identified as the most common problems. The "other" category included conditions such as headaches, heart problems, kidney problems, gallbladder problems, digestive issues, fever, ear infection, dizziness, lower back and abdominal pain (among women) which were frequently reported. Some respondents also reported that their husbands, sons, or mothers were paralyzed and mute. Many respondents said that some of their family members were always sick, but they were not able to identify which particular health problems these family members had. Respondents and their families were more likely to get sick in the winter (77%) and spring (68%), while they were least likely to get sick in the summer (14%) and autumn (17%).

Adult villagers often sought health care for their health problems. Respondents reported that they or family members sought health care from the nearest hospital (83%) and the village doctor (69%). Family members are also an important source of care: 44% of respondents and adult family members sought care from another family member. In 74% of cases, adults suffered through their ailments without seeking help while 7% said adults self-medicated with traditional remedies. The category "other" includes visits to township health centers, county hospitals and provincial Tibetan medical hospitals. Also some of them said that they invited the doctor to come to their homes or that they bought medicine from a drug store.

Table 9. Health problems and care seeking among Tibetan adults

Characteristic	Percent	Number of Cases
Types of Health Problems Adults Experienced:		
Diarrhea	56	268
Respiratory/ Chest	68	271
Cough	78	271
Skin	6	271
Abdomen	55	271
Back	38	271
Feet	33	272
Joints	29	271
Eye	16	268
Other	21	273
Type of Care Sought by Respondent and Other HH Adults when Sick[a]:		
From village doctor	69	265
From nearest hospital	83	265
Self medicate with traditional remedies	7	265
Suffer through and not seek help	74	265
From family member	44	265
Other	11	265

[a]Percentages do not sum to 100 because respondents gave multiple answers.

IV. CHILD HEALTH

Health Care Among Children

For children's health, the questionnaire was based on a list of health conditions and infections, including problems with: diarrhea, respiratory/chest, cough, skin, abdomen, back, feet, joints, eye and other types of problems. Study respondents were asked to identify the health problems that their child/children suffered from when they become sick. Like the question described above for adults, this question referred to general health problems that the children in the household experienced whenever they became sick. As shown in Table 10, cough, respiratory/chest and diarrhea were the

most common problems. These respiratory and diarrheal infections were far more common than any other single health condition reported. Weather and climate are closely associated with children's illness. Like adults, children are more likely to get sick in the winter (86%) and spring (73%) and least likely to get sick in the summer (6%) and autumn (9%).

When respondents were asked how they treated their children's ailments, 72% indicated that they sought care from the nearest hospital, 57% went to the village doctor, 4% medicated the child themselves with traditional remedies and 37% did nothing to treat the child.

Table 10. Health problems and care seeking for/among Tibetan children

Characteristic	Percent	Number of Cases
Health problem:		
Diarrhea	51	251
Respiratory/ Chest	65	248
Cough	83	248
Skin	4	251
Abdomen	17	251
Back	2	251
Feet	2	251
Joints	1	251
Eye	6	243
Other	4	251
Seasons more likely to get sick:		
Winter	86	215
Spring	73	215
Summer	6	215
Autumn	9	215
Usual source of care:		
From village doctor	57	259
From nearest hospital	72	259
Self medicate with traditional remedies	4	259
Suffer through and not seek help	37	259
From family member	37	259
Other	10	259

Respondents were also asked about deaths among their children. As shown in Table 11, 18% indicated that they had a child die before he/she reach the fifth birthday, with highest proportion of deaths occurring in the first year of life. A large proportion of respondents were unable to report a cause of death for their child or children. Among those who did report a cause, most indicated that the cause of death was something other than diarrhea, cough or birth complications. Instead, they reported causes such as cold, pneumonia, preterm birth, and injury. Many of the deaths occurred shortly after birth.

Table 11. Deaths among Tibetan children

Characteristic	Percent
Proportion of respondents who had a child die before reaching the age of 5 (n=254 respondents)	18%
Age at death (N=60 children)	
Before reaching age of 1 year	87%
Between 1 and 3 years of age	12%
Between 3 and 5 years of age	2%
Causes of death[1] (n=60 children)	
Diarrhea	7%
Cough	14%
Birth complications	0%
Other causes	66%
Don't know	36%

[1]Figures do not sum to 100% because of multiple responses.

Immunization

Immunization is effective in reducing childhood infections and deaths, especially in low-income countries. Routine vaccinations against several infectious diseases are now a part of public health policy in many countries. Generally, childhood vaccinations are provided against: tuberculosis, diptheria, tetanus, pertussis, polio and measles.[14] Vaccination against hepatitis-B is a recent addition to this basic package.

WHO recommends that children receive a total of 10 vaccine doses (1 BCG dose and oral polio vaccine (OPV) at birth, 3 doses of diptheria-tetanus-pertusis (DPT) vaccine, another 3 doses of OPV and one measles vaccine) in the first year of life to protect fully against common childhood diseases including tuberculosis, diptheria, tetanus, pertussis, polio and measles.[14] Similarly, the Qinghai Immobilization Record specifies that children should have 15 doses of vaccines before they reach their 6th birthday. [15]

To assess the level of immunization coverage in the study areas, respondents were asked about the immunization history of their family members. As shown in Table 12, respondents knew more about immunization of younger children (0 to 6 years old) than that of older children and adults. Only 64% of children 1 year and under had received any vaccination (including injections and oral vaccines). Among those who had been vaccinated, 54% had been vaccinated only once and 22% only twice. The fact

that 36% of children ages 1 year and under were not immunized at all and the 54% of this age group received only one vaccine dose indicates clearly that Tibetan children in this area are falling behind on their immunization schedules. The very low immunization levels observed place children at risk of contracting the infections listed above.

Although the percent of children who received at least one vaccine increased to 92% for children 1 to 6 years of age, the number of times vaccinated was still well below the recommended number of vaccine doses. Respondents did not have vaccination records and were unable to report the specific types of vaccines that their children and others received. It is possible that respondents did not remember and, therefore, failed to report all of the immunizations that were received. However, the relatively low use of medical care suggests that even if respondents omit some immunizations, the children in these study areas are not likely to be receiving the immunizations that they need.

Table 12. Immunization history among Tibetan community members

	Age Group (Years)			
	0 to 1	Above 1 to 6	Above 6 to 18	Above 18
Percent received at least one dose of injectible or oral vaccine:				
Yes	64	92	78	35
No	36	4	6	12
Do not Know			11	51
No Response		4	5	2
Number of times received vaccines[1] (percent):				
1	54	21	22	41
2	22	54	35	24
3	17	19	18	12
4	6	5	6	3
5 or more			2	4
Do not know			16	15
No Response		1	1	1

[1]Only those who have received at least 1 vaccine

V. WOMEN'S HEALTH

Pregnancy History and Child Birth

Study respondents were women of reproductive age. A total of 98% respondents reported that they were still menstruating and 91% reported having no physical impairment to pregnancy and childbirth. Table 13 summarizes their pregnancy histories. The number of pregnancies among women in the sample varied from 0 to 9. Approximately 8% of the respondents had never been pregnant, 60% had been pregnant either once or twice and 31% had been pregnant 3 or 4 times. The majority of women in the sample reported having 1 to 2 live births, although almost 30% reported having 3 to 4 live births. The number of stillbirths, induced abortions and miscarriages reported was relatively low. This is a common finding, particularly in populations with little access to health care, because women may not be aware when they have an early miscarriage and may be reluctant to report miscarriages, abortions and stillbirths.

Table 13. Pregnancy history among Tibetan women*

Pregnancy Outcome	Percent
Number of pregnancies	
0	7.6
1 to 2	57.7
3 to 4	30.8
5 to 6	3.2
7 to 9	0.7
Number of live births	
0	3.5
1 to 2	65.5
3 to 4	29.8
5 to 8	1.2
Number of still births	
0	96.5
1	3.1
2	0
3	0.4
Number of induced abortions	
0	94.6
1	4.6
2	0.4
3	0.4
Number of miscarriages	
0	93.4
1	2.3
2	2.7
3	1.6

*n=279.

The use of health care during pregnancy and delivery is examined in Table 14A. Only a minority of women (30%) visited a health care provider at all during pregnancy. Among those who did, a majority visited only once or twice. Almost all (93%) the respondents gave birth at home. In most cases, respondents' mothers assisted at the delivery. Only 1% of respondents indicated that a VHCW was present at delivery and only 4% had a township or county hospital doctor present. One reason for the very low rates of professional birth attendance is that most village health workers and village doctors are not trained in assisting at childbirth. Furthermore, most of them are men and, therefore, culturally prohibited from attending at childbirth. Most deliveries occur at home, at least in part because women and their families cannot afford to travel to and stay in the township or county, where medical care is available, prior to delivery. Doctors from township health centers and county hospitals generally do not travel to women's homes to provide delivery care and even if they did, in many cases the distance is too great for them to arrive in time. Moreover, families often cannot afford to pay them.

After women gave birth, the placenta was buried in almost all cases (95%). Women were able to rest and recuperate during the postpartum period, prior to returning to work. However, for some women, this period lasted only 7 days while other women had 60 days before returning to work. On average, women reported that they had 22 days of postpartum recuperation, substantially longer than the 3 day postpartum recuperation period reported in Tibetan herder populations in Qinghai Province.[16]

Table 14A. Pregnancy care among Tibetan women*

Pregnancy Care	Yes (%)	Number of Cases
Frequency of HW visits during pregnancy[1]		271
0	72	
1 to 2	18	
3 to 4	8	
5 to 6	1	
Place of child birth[1]		269
Home	96	
Township Clinic	1	
County Hospital	4	
Other	4	
Person present at childbirth[1]		273
Sister	18	
Mother	84	
Aunt	9	
Grandmother	4	
Friend	4	
VHCW	1	
Township/County hosp. Doctor	4	
Other	5	
Disposal of placenta[1]		271
Bury	98	
Don't Know	2	

*n=279 unless indicated

[1]Only women who have had at least 1 pregnancy (n=252)

Respondents were also asked about infections that they had during pregnancy or after childbirth. As shown in Table 14B, eight percent reported that they had had an abdominal infection, 6% a uterine infection, and 86% reported that they had not had any type of infection.

Table 14B . Infections after childbirth

	Had Infection (%)
Infections	
Urinary Tract	0.0
Vaginal	0.4
External genitalia	0.0
Abdominal	8.0
Uterine	6.0
Skin	0.7
Other	0.4

Five respondents said that they did not know whether they had any of these infections and three did not answer the question. Respondents were permitted to give multiple responses.

Women's Knowledge of Infectious Diseases

Another important concern is whether women know about common infectious diseases which affect their own and family members' health. The survey asked respondents about their knowledge of tuberculosis (TB), Hepatitis-B, sexually transmitted diseases (STDs), human immunodeficiency virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS). Only one respondent said that she knew about TB. None of the respondents knew about Hepatitis-B, STDs, HIV or AIDS. And none knew how these infections are contracted or what they could do to protect themselves against STDs.

Use of Contraceptive Methods and Side Effects

The national birth planning program in China has markedly increased awareness of and access to contraception in the past 30 years, even in outlying areas. Although birth guidelines have been less strict for ethnic (non-Han) minorities and for those living in rural areas, ethnic minority and rural women have been discouraged from having more than three children. The survey asked respondents "What method(s) of contraception are you using if you do not want to get pregnant?" The results are shown in Table 15. The most common method mentioned by respondents was the copper IUD (79%) followed by sterilization (10%). Only 1% of the women mentioned the hormonal IUD and less than 1% mentioned abstinence or withdrawal methods. None mentioned traditional contraceptives and no one reported using condoms. A total of 33% of women mentioned other contraceptive methods, including pills and injections. While most women used/mentioned one contraceptive method, other women used/ mentioned up to four different methods.

Table 15. Use/Mention of contraceptive methods

Characteristic	Percent	Number of Cases
Pregnancy prevention methods practiced:		262
Sterilization	10	
Hormonal IUD	1	
Copper IUD	79	
Abstinence	>1	
Withdrawal	>1	
Herbs/ Traditional remedies	0	
Other	33	
Number of contraceptive methods practiced		266
1	81	
2	17	
3	2	
4	>1	

IUDs have sometimes been associated with infections due to unsanitary insertion procedures and transmission of infection from the vagina into the uterus. Respondents were asked if they had ever had an infection from using an IUD. Among women who had used an IUD, 45% and 31% of respondents said that they had abdominal and uterine infections after IUD use, respectively, as shown in Table 16.

Table 16. Infections associated with IUD for women who had an IUD-associated infection

Infections associated with use of IUD	Percent
Urinary Tract	1.8
Vaginal	8.6
External genitalia	0.4
Abdominal	45.0
Uterine	31.0
Skin	1.0

Child Feeding Practices

Breastfeeding has been shown to be superior to other infant foods and to provide significant health and nutritional advantages for the child, including both nutrients and immunological protection. WHO recommends exclusive breastfeeding for the first 6 months of life with introduction of complementary foods at 6 months and continued breastfeeding until at least 2 years of age.[17] During the period of transition from exclusive breastfeeding to other semi-solid and solid foods, children are vulnerable to inadequate nutrient intake and frequent infections. On the other hand, after six months of age, children need supplemental food to maintain adequate growth. WHO recommends that complementary food be provided in a timely and safe manner and should be appropriate to the child's nutritional needs including energy, proteins and vitamins and such as iron, zinc, calcium, iodine and vitamins.

Table 17. Child feeding practices for women who had had at least one live birth

Characteristic	Percent
Ever breastfed a child	97
Feed baby colostrum[1]	99
Initiation of breastfeeding[1]	
Immediately after birth	6
Hours after birth	94
Days after birth	2
Other	0
Child age when stop breastfeeding (months)[1]	
2 to 5	4
6 to 12	18
13 to 24	71
24 to 60	4
Child age when introduce complementary foods (months)[1]	
1	70
2 to 5	21
6 to 24	6
Types of complementary foods provided[1]	
Tsampa	97
Rice	3
Meat	70
Adult food only	2
Flour soup & adult food	70
Other	27

[1]Only those who had breastfed

Table 17 summarizes child feeding practices among women in the sample. Women were asked about their child feeding patterns in general rather than about a specific child. Breastfeeding was common among Tibetan women with 97% of women who had been pregnant indicating that they had breastfed or were currently breastfeeding a child, and that virtually all of them fed colostrum to their babies. Most of the women (94%) initiated breastfeeding several hours after birth rather than immediately. Surrogate nursing was uncommon with only 0.5% indicating that their sister or cousin had breastfed their child. Breastfeeding cessation varied from 2 to 60 months with 71% of the mothers stopping breastfeeding in the second year of life. Although breastfeeding was common, many of the women introduced other foods at early ages: 70% of the women indicated that they introduced complementary foods at the age of 1 month, while 21% of them introduced other foods between 2 and 5 months. This is an indication that exclusive breastfeeding is uncommon. The most common supplementary food was *Tsampa*, which is roasted barley ground and mixed with butter, cheese, sometimes sugar. These ingredients are mixed then mixed with tea and fed to the baby. *Tsampa* is a staple Tibetan food generally eaten every day. Flour soup, adult food, and meats were also common supplementary foods given to infants.

VI. CONCLUSION AND DISCUSSION

The goal of this study has been to provide an overview of the lives and health of Tibetan women, children, and families living in rural villages of Qinghai Province. Here we summarize our main findings.

Education, Literacy and Income

In the study population, half of the adult and almost all of the children have attended school at some point. Adults who did attend school completed an average of 5 years and children completed an average of 4 years. The national government requirement of nine years of compulsory education appears to have increased the proportion of children who attend school compared to their elders. However, while many attend schools, they generally do not complete the full nine years of school. We also found that one third of reproductive age women had attended school (not shown) and that 20% report that they are able to read and write Tibetan, a finding which contradicts the

conventional wisdom that almost all Tibetan women are illiterate. Given the high rates of school attendance among children, it is likely that the proportion of reproductive age women who are literate will increase in the next several decades. Nonetheless, the effects of attending school on women's and children's health will depend not only on *attending* school, but also on *completing* school, since relatively few rural Tibetans are able to complete even the six-year primary education, let alone the full nine year compulsory education. Therefore, an emphasis on school completion is still crucial to improve the educational level of the Tibetan population and especially that of the female population. The quality and content of schooling is also an important issue to address, but this study did not collect data on these issues.

Our results show that annual income is very low for these rural Tibetan families. However, the value of animal assets relative to annual income is high. Holding wealth in animals is traditional in rural Tibetan households. Animals are generally not raised to be sold or to be slaughtered for household consumption, but rather as a longer term investment. For most families, cash income comes primarily from raising crops and work outside the home, such as collecting medicinal plants. Collection of medicinal plants has become a particularly important means of supplementing income because of substantial price increases for a particular herb, known in English as Chinese caterpillar fungus（Cordyceps sinensis).

Water, Sanitation and Hygiene

Most participants in this study had access to clean drinking water and most had access to piped water (although often at some distance from their house at a communal tap). More than half of respondents said that they had adequate water supply throughout the year.

All respondents reported that they heated water to the boiling point before drinking – however, we suspect that these responses were due in part to women's knowledge that they were *supposed* to boil drinking water rather than to actual practice. The availability of water is likely to be due to government infrastructure projects in the area. For similar reasons, a high proportion of households use latrines in this area.

However, other types of waste management are poor since virtually all households report that they dump trash and refuse near their house.

All households use human waste as night soil or agricultural fertilizer. Use of human waste as fertilizer can be an environmentally sound means of waste disposal and a low cost form of fertilizer. However, without composing or proper treatment, night soil can transmit many types of infectious diseases among people very easily. The fact that night soil is so commonly used suggests that it is important for Tibetan and other rural farmers to have access to information about its proper treatment prior to its use as fertilizer for crops used for human consumption.

Health Care Facilities

Almost every village has a village doctor or village health workers and almost all of them are male. These health providers practiced both Tibetan and western medicine and commonly used injections (often of antibiotics, often given inappropriately and/or in extremely high doses). Adults and children needing health care are most likely to seek help from a village doctor or health care worker because they are often the only health care providers available within a reasonable distance. Township health centers and county hospitals are located at considerable distance from the villages and on average it takes two hours to reach them. Many families (70%) did not seek health care at all when an adult family member was sick. Not surprisingly, families appear to seek health care for adults only when the illness is serious. Families were more likely to seek health care when their children became sick, although in one third of the cases of child illness, they did not seek care from a health provider.

Village health workers and village doctors are often the only health care providers available to village residents. Thus, it is essential to improve the quality of services that they provide by training them in disease prevention and management and regularly updating their skills and knowledge. Township health centers, country hospitals and higher level health facilities are often too far from the villages to be of use. Transportation is a huge issue for villagers who need health care, because generally the only way to reach these health facilities is to walk for several hours. For urgent health situations, such as deliveries and health emergencies, it is clearly impossible to reach these facilities in time to get help.

Child Health

Common child health problems in this population were diarrhea and respiratory/chest ailments, cough, and ear disorders. Diarrheal and respiratory disease is common in undernourished children, particularly in conditions of poor hygiene and sanitation. Even though drinking water supplies in these villages appear to be relatively good compared to other areas, some families continue to get their water from contaminated springs. Even those with piped water have to carry it some distance and store it in containers in the house. As many studies have shown, the cleanliness of the storage container, the implement used to dip the water, and cups, plates and utensils can affect the likelihood of disease transmission. Although all respondents say that they boil their water before drinking, it seems unlikely that this practice is really universal given scarcity of firewood. Poor handwashing can also be a source of disease transmission and less than half of participants in this study reported washing their hands after using the latrine. Moreover, one third of women report that their families do not have adequate water supply which makes practices such as handwashing and careful washing of dishes and utensils more difficult. Respiratory and cough problems may be related to the weather and climate. During the cold season, homes are not well heated and illnesses among children are most common in the winter and spring.

Respiratory disease may also be more common during the cold seasons because families spend more time indoors in close contact with each other and because smoky cooking and heating fires can cause respiratory problems, especially for young children.

Another major cause of child morbidity and mortality in these villages is the lack of immunization coverage. Despite provincial and national immunization programs which are consistent with WHO recommendations, none of the children in the study areas appear to have received all of the immunizations that they should have. Among those who received at least one vaccine dose, very few received more than one or two doses. Adults were even less likely to be immunized.

In these villages, children often die in infancy. Eighteen percent of respondents reported that one or more of their children died within the first five years of life. Since many of the deaths occurred within one month of birth, it is likely that the quality of maternal care and delivery care is part of the cause. Almost all deliveries occur at home and are attended by untrained family members, including mothers and sisters. No trained health care providers are available at all to assist in delivery in these villages – putting both mothers and infants at serious risk. Furthermore, most women do not visit health workers or receive any prenatal care during their pregnancies. Clearly, there is an urgent need for better health care and health facilities for women and children in these areas.

Women's Health

Aside from pregnancy and delivery, other aspects of women's health examined in this study included contraceptive use and knowledge of major diseases. The results show that most women used contraceptive methods, particularly the Copper IUD. Side effects of the IUD appear to be very common in this population: almost half of the sample reported having abdominal pain or uterine infections associated with IUD use. These results suggest that women need more contraceptive method choices and also better information on the use of contraception. It may also be important to train health care providers in better methods to insert IUDs without causing infection.

We also found that study participants knew very little about common infectious diseases such as tuberculosis, sexually-transmitted diseases, HIV, and AIDS. This is a serious problem for this population because many people leave their villages for work

and may return home with TB or STDs. These results suggest that programs to educate women and their family members about infectious disease and its prevention are crucial for these villages.

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