A social and demographic study of Tibetan refugees in India

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Abstract

The social and demographic characteristics of $\sim 65,000$ Tibetan refugees in India were determined from data collected 1994–1996. Approximately 55,000 refugees were living in 37 settlements widely distributed around India. The remaining 10,000 refugees were monks living in monasteries associated with some of the settlements, mostly in the south of India. In the settlements, a community-based surveillance system was established and data were collected by trained community health workers in house to house visits. In the monasteries, data were collected by the community health workers in monthly interviews with a designated liaison monk at each monastery. These data indicated little immigration of new civilian refugees in the past 10 years into the settlements but a steady influx of new monks into the monasteries. The age distribution in the settlements showed a prominent mode in the 15–25 year age range, a declining birth rate, and an increasing proportion of elderly. In general, refugees born in India were educated through secondary school, while refugees born in Tibet were often illiterate. The principle occupations were education involving 27% (including students), farming, 16%, and sweater selling, 6.5%; another 6.5% were too young or too old for employment, and only 2.4% were unemployed. The overall crude birth rate was determined to be relatively low at 16.8/1000, although this may underestimate the true figure. Infant mortality varied from 20 to 35/1000 live births in the different regions. Child vaccination programs cover less than 50% of the population. The burden of illness in this society was mainly characterized by diarrhoea, skin infections, respiratory infections, fevers, and, among the elderly, joint pains and cardiovascular problems. Although calculated death rates were unrealistically low, due to under-reporting, causes of death, derived from "verbal autopsies", were mainly cancer, tuberculosis, accidents, cirrhosis and heart disease in order of decreasing frequency. Overall, the sociodemographic and health characteristics of this population appear to be in transition from those typical of the least developed countries to those typical of middle income and more affluent societies. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Tibetan refugees; India; Social demography; Epidemiology; Health status

1. Introduction

In 1959 the Dalai Lama escaped from Chinese-occupied Tibet and fled to India, followed by about 80,000 Tibetan refugees. The Indian prime minister, Pandit Jawaharlal Nehru, helped make land available for refugee settlements in several states of India and Nepal, and the Dalai Lama established a government in exile at Dharamsala in the Himalayan foothills of Himachal Pradesh. These settlements were open societies and developed actively with help from the government of India and international non-governmental organizations. The infrastructure necessary for self-contained villages was established within a few years including agricultural and dairy cooperatives, handicrafts, carpet weaving, schools, daycare centers, restaurants, and religious temples and monasteries founded by the large number of monks who migrated from Tibet.

The Department of Health in Dharamsala was charged with the job of promoting health and managing sickness in all the refugees. Primary health clinics were built in each settlement and community health workers

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(CHWs) were trained to staff them. Later, hospitals were established in Dharamsala and few other areas. However, this population was scattered over widely separated sites some over 1000 miles from Dharamsala. The difficulties of health care administration, and many other government functions, were exacerbated by underdeveloped postal and telephone services resulting in poor communication between the settlements and the center of government. Inadequate feedback from settlements made central planning for health uncertain and difficult. Therefore, a health data collection unit was established in 1994 with the aim of providing reliable data on vital statistics, health, and disease in the majority of both the settlement and the monk populations. These extensive data, summarized here, represent the first quantitative description of the sociodemographic and health status of the Tibetan refugee population in India.

Populations and methods

The settlement population

To obtain these data, the health data collection unit created a community-based surveillance system employing CHWs who were specially trained for this purpose. These workers conducted a house-to-house survey of the population of each settlement. During the initial household visit the head of the household was asked to provide demographic information about all family members covering age, sex, occupation, education, marital status, place of birth, relationship to the head of the household, years in the settlement, months spent away from the settlement last year, and more. Each family member was assigned a unique identification number composed of a settlement number, village number, house number and family member number. The information was entered on special household cards and sent to the Health Data Unit in Dharamsala for checking and entering into a computer data bank. Therefore, this baseline survey produced a population census and detailed sociodemographic information on each settlement.

Each household was visited monthly by the CHW and any changes were noted. In addition, the CHW obtained details of health problems in household members since her last visit, whether treatment had been sought, and from whom. The duration and final outcome were also noted. Information on any deaths in the household was obtained through the "verbal autopsy" method of Bhatia (1989). From close relatives of the deceased, the CHWs elicited information regarding the circumstances surrounding the death, the signs and symptoms shown by the deceased, information on any known pre-existing disease and treatment. Doctors' notes, hospital records

and prescriptions were sought when available. By this method, in most cases, the assigned cause of death indicated the underlying disease condition rather than the immediate cause of death.

At quarterly visits, additional data were collected from each household on pregnancies, antenatal clinic (ANC) care, pregnancy outcomes, and vaccinations in children. In addition to the household data, every quarter data were collected from the health clinics including birth registers, maternal health care, childhood immunization records, and major disease categories for which people sought care. This information was cross-checked with the relevant household data. In terms of childhood vaccination, the health department's routine schedule includes BCG injection at birth, a series of three injections of DPT vaccine and three doses of oral polio vaccine given at 2–4–6 months of age, one injection of measles vaccine at 9 months of age, and DT boosters at 18 months and 5 years of age, all administered by CHWs. The success of the vaccination program was assessed in terms of the proportion of children who were fully vaccinated. In terms of maternal health, CHWs were unable to provide accurate, complete information from their periodic home visits as intended, so these data were compiled from ANC records which included the number of pregnant women, their age, parity, gravidity, prior pregnancy outcomes, and complications of pregnancies and deliveries. The ANC records were incomplete, however, and the resulting data may illustrate aspects of maternal health but do not represent the population as a whole.

All monthly and quarterly data were entered onto special forms and sent to the central data unit in Dharamsala quarterly to be entered into the data bank and keep the information up to date. Supervisory visits by the project manager to each site provided quality assurance for the data collection process.

The monk population

A different system had to be devised for surveillance among the monks because CHWs were not responsible for health surveillance within monasteries and were not allowed to interview each monk, especially in the huge monasteries in the state of Karnataka. In general, monks were registered on the basis of their dormitory groups, though the system of registering monks differed in different monasteries. Data were provided by one responsible monk within each monastery. Educational achievements were based on religious standards which varied between sects so that comparisons between monks of different sects were of little value. Data were recorded on analogous forms and sent to the central unit for entry in the data bank in the same manner as for the settlements.

Results

Settlement population—demographic and social characteristics

Size and geographic distribution of the population

The total population registered in 1996 was 54,537 increasing roughly 1% per year from 1994 (53,293) and 1995 (54,047). The populace was distributed across 37 settlements in six regions of India plus one settlement in Delhi. Fig. 1 shows the location of the settlements are. The largest concentration is in Himachal with 13 settlements totaling 6926 people. The size of the settlements varies widely (Table 1) Two have less than 100 people, 18 have 100–1000 people, and 18 have over 1000 people. The largest settlements are in Karnataka state, a good farming area in the south, with 42% of the Tibetan refugees in five settlements ranging from 2726 people at Hunsur to 6678 people at Mungod, the largest settlement of all.

Birth and death rates

The overall crude birth rate based on records of vital statistics in the community health centers was 16.2/1000 population, and the birth rate calculated from the number of children in the 0–4 year age group was 16.8/1000. Both slightly underestimate the true birth rate as discussed below. As seen in Table 1, there were large regional variations. In general, the North East and Ladakh had higher rates while Himachal and Doon Valley gave the lowest rates.

Death rates were calculated from the actual number of deaths reported in the settlements for the years 1995–96 averaged together (Table 1). The overall death rate and the variations between 3.7/1000 for Ladakh and 9.9/1000 for the Central region appear unrealistic and serious under-reporting must be considered.

Age and sex distribution

The 1996 age distribution of the population reveals a substantial bulge in 10–24 year age range (Fig. 2), suggesting a higher birth rate 10–24 years ago than at present. This is supported by the declining number and percentage of children in the three youngest age groups. Taken together children aged 0–14 years declined from 16,117 (30.2%) to 15,110 (27.7%). In contrast, those aged over 65 years increased to 8.4% of the population in 1996 compared to 7.1% two years earlier, even though the total population increased slightly. Although there were slightly more males than females in the young and old age groups, the age distribution did not differ significantly between males and females beyond what would be expected by chance variation ($P > 0.4$).
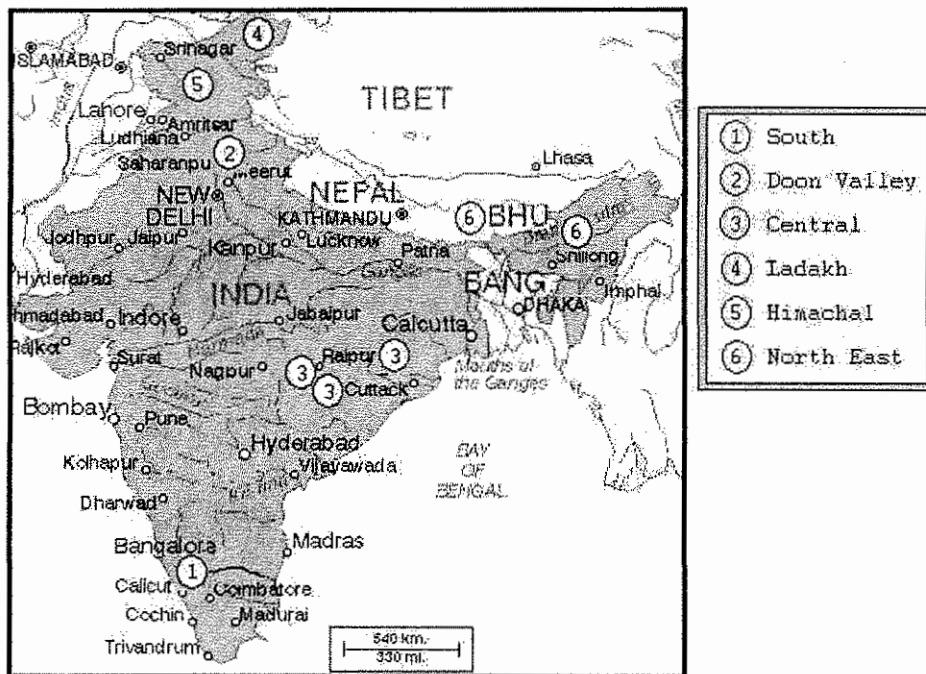
THE TIBETAN REFUGEE SETTLEMENTS IN INDIA.

Fig. 1. The Tibetan refugee settlements in India.

Table 1
Demographic characteristics of Tibetan refugee population in India by region, 1994–1996

Region	No. (%)	Settlements			Births/1000/yr		Deaths/1000/yr
		No.	Median	Range	Count	Estimate	
South	23,247 (42.6)	5	4033	2726–6678	15.8	18.0	6.7
Doon Valley	3836 (7.0)	6	470	200–1684	12.4	13.2	7.1
Central	5524 (10.1)	3	1571	1162–2791	18.6	20.5	3.7
Ladakh	5804 (10.6)	3	1004	803–3997	18.4	17.0	9.9
Himachal	6926 (12.7)	13	522	67–1290	11.2	13.9	6.3
North East	7705 (14.1)	7	1022	73–2371	22.5	20.3	8.7
Delhi	1495 (2.7)	1	1495	1495	n/a	n/a	n/a
Total	54,537 (100)	38	899	67–6678	16.2	16.8	

Number of population in each agegroup
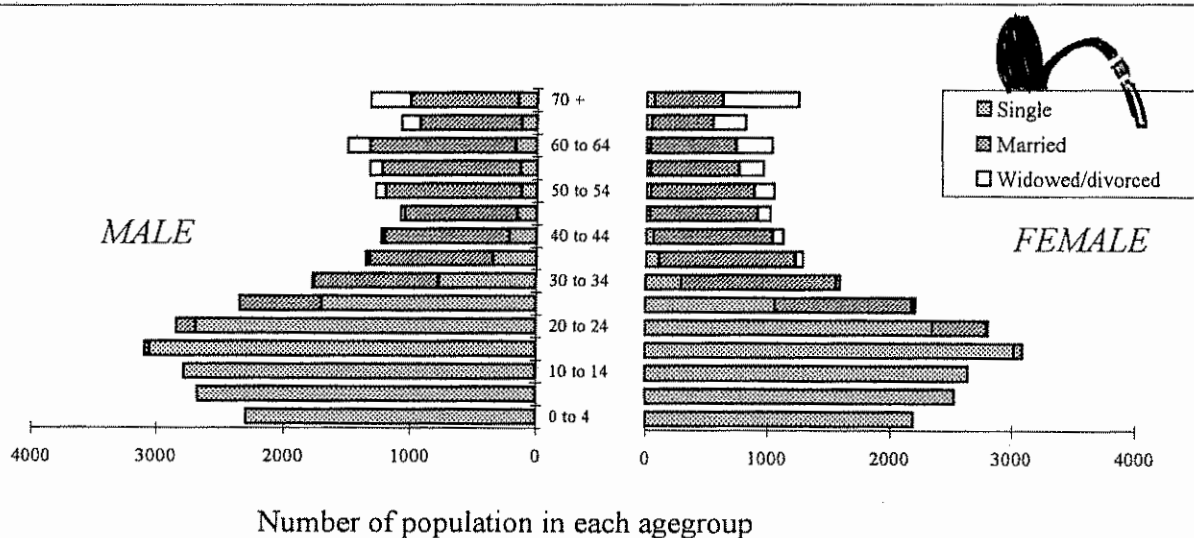
Fig. 2. Age, sex and marital status.

Age, sex and marital status

Fig. 2 also divides the age/sex categories by marital status. A substantial number of women in the 20–24 age group, about half of those in the 25–29 group, and a large majority of the 30–34 year group are married. Men marry about 5 years later but a larger proportion of men remain unmarried at any age than women. At all ages over 30 there are more widowed females than males, presumably because a higher proportion of widowed men remarry. There was little intermarriage with the Indian population since this survey focused on refugee settlements. Thus, even among refugee children born in India, very few had mixed ethnic (national) backgrounds.

Place of birth

The data for place of birth (Table 2) show the transition from Tibet to India that accompanied the mass exodus of refugees following the Chinese occupation of Tibet. Most of the Tibetan-born refugees came with the original migration, while their children or grandchildren make up most of the Indian-born refugees. The transition occurs in the 30–39 year age group. Among those aged 40 years or more, only 2% were born in India (341 of 16,516), while among those aged under 30 years, only 2.7% were born in Tibet (807 of 30,172). This small number represents a trickle of new refugees still managing to escape from Chinese-occupied Tibet (Fig. 3).

Table 2
Age distribution of Tibetan refugees in India by country of birth, 1994 to 1996[a]

Age group	Indian born	Tibet born	Total
0–4	4429	30	4459
5–9	5094	69	5163
10–14	5340	57	5397
15–19	5886	86	5972
20–24	5280	177	5457
25–29	4143	388	4531
30–34	2678	692	3370
35–39	735	1928	2663
40–44	111	2304	2415
45–49	64	2093	2157
50–54	39	2341	2380
55–59	27	2313	2340
60–64	31	2572	2603
65–69	28	1911	1939
70 +	41	2582	2623
Total	33,926	19,543	53,469

[a] Individuals with missing data excluded.

Education

Like country of birth, educational level among adults differs by age (Table 3) The older cohort is largely uneducated, although about 1/3 read and write Tibetan. The younger cohort is mostly educated through secondary school. This disparity in educational attainment can be illustrated by comparing three of the age groups shown in Table 3. Of those in their 20s, nearly 60% have secondary education and 12% attend(ed) college, while only 5% have no formal education. Of those in their 40s, only 27% have a secondary education, 6% attend(ed) college, and 30% have no education. Among those in their 60s, only 1% have secondary or higher education, while 63% have no formal education. Those in their 20s were born and educated in India, those in their 40s came to India as children, while those in their 60s came to India as mature adults reflecting the literacy rate in Tibet 30 or more years ago.

Shown in the upper panel of Table 3 are children and adolescents. Less than 2% of youth aged 5–19 years had no education. Over 41% had begun primary school between 5–9 years of age. By 10–14 years of age, nearly
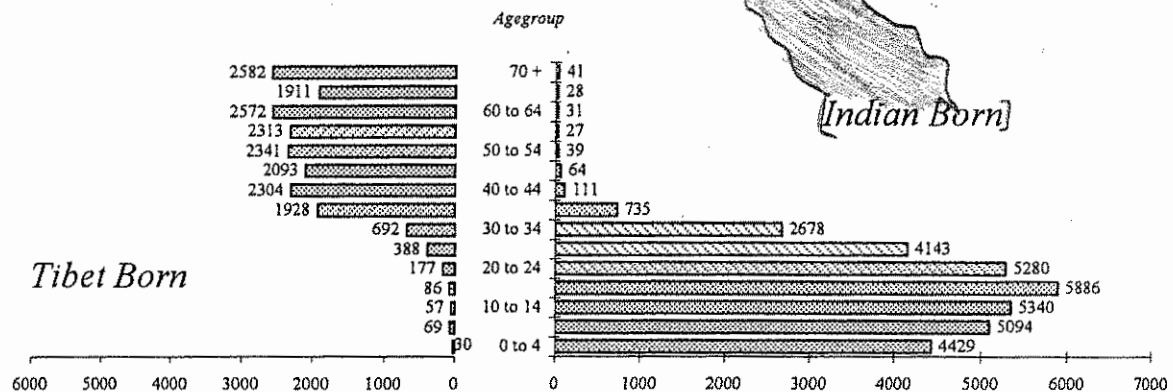

Fig. 3. Distribution of Tibetan refugee population in India by Age group and place of birth.

Table 3
Educational level of Tibetan refugees in India, 1994–1996, age groups (figures are percent of row total)

Age group	None	Primary	Secondary	College	r/w Tibetan[a]	Total no.
5–9	0.1	41.1	0	0	0.3	5201
10–14	2.2	78.8	17.3	0	1.8	5427
15–19	1.9	21.0	73.1	0.9	3.1	6194
20–29	5.2	18.5	58.4	12.0	5.9	10,401
30–39	16.6	25.8	37.4	8.3	11.9	6249
40–49	30.2	15.8	27.1	6.3	20.4	4612
50–59	53.3	4.2	4.7	1.0	36.7	4738
60–69	63.2	1.4	0.7	0.3	34.4	4542
70 +	71.6	0.6	0.7	0.2	26.8	2623

[a] r/w Tibetan: read and write Tibetan only.

97% were being educated and 17% had started secondary school. By 15–19 years of age, 94% were being educated and 76% were in secondary school.

The education of women changed profoundly with the transition from traditional Tibetan society to the refugee settlements in India. Excluding young children, 17,129 people had no education or could only read/write Tibetan, mostly from the original refugee cohort. Twice as many women were illiterate (6961 vs. 3545), and only one-fifth as many women could read and write Tibetan (1072 vs. 5551). By contrast, among those who had primary and secondary education, mostly those born and/or raised in India, there was no difference between the sexes.

Occupation

Among the various occupations of this population, education was the most frequent (Table 4): 27% were still going to school or college. The next most frequent was farming, occupying 16% of the population, followed by sweater selling, 6.4%, full-time housewives, 5.2%, handicrafts such as carpet making, 5.1%, and military service with 5.0%. Only 2.4% claimed to be unemployed, while 16.4% were too young or too old for to be working.

Certain occupations differed according to sex or birthplace. Farmers were largely Tibetan-born, but of either sex. Housewives were also predominantly Tibetan-born, 3 : 1 compared to Indian-born women suggesting that older Tibetan women more often stayed home

Table 4
Primary occupations of Tibetan refugees in India from 1994 to 1996

Occupation	Number	%
Student	14,784	27.1
Too young or old	8932	16.4
Farming	8746	16.0
Sweater selling	3461	6.4
Housewife	2834	5.2
Handicrafts	2745	5.1
Military	2712	5.0
Petty business	1917	3.5
Others	1727	3.2
Monk	1755	3.2
Retired or unemployed	1328	2.4
Government staff	927	1.7
Teacher	742	1.4
Restaurant	582	1.1
Animal husbandry	489	0.9
Health workers	475	0.9
Office	269	0.5
Nun	116	0.2
Total	54,537	100.0

while younger Indian-born women more often worked outside the home. There were far more women than men in the carpet industry but government staff were mainly males.

Regional differences in the frequency of occupations were most striking for farming and sweater selling. In the South and Central regions, 27.0% and 25.2% of the settlement population were farmers. The Doon Valley (4.4%), Ladakh (4.8%), and the North East (9.9%) were intermediate, while in Himachal Pradesh, only 0.4% of the population were farmers. In contrast, Himachal Pradesh had the highest proportion of sweater sellers, 11.8%. The frequency of these two occupations was not inversely related across the regions, however, because the South (7.5%) and Central (6.0%) regions had the second and third highest proportion of sweater sellers. The proportion is the Northeast (0.6%) and Ladakh (0.4%) was low. The proportion of students, on the other hand, was much more alike across the regions, varying from 25.2% in the Central region to 30.3% in Himachal Pradesh.

Composition of households

For the entire population of 54,537 there were 9679 (18%) heads of household, giving a mean household size of 5.6 individuals. Among these, 47% were the children of the head of the household, 12% were spouses, and 9% were grandchildren. Other members of the immediate family of origin of either the head of household or the spouse comprised 8% of the household members include parents, siblings, and in-laws. Second degree relatives including grandparents and nieces/nephews and unrelated guests each comprised approximately 1% of household members.

Settlement populations—health status indicators

Infant mortality

In 1995 and 1996 there were 290 births and six infant deaths reported from the North East region which gives a regional infant mortality rate (IMR) of 20.7/1000 live births. The one infant death each in Orissa (Central) and Dickyiling (Doon Valley) gave those settlements IMRs of 22.3 and 31.2, respectively. Four infant deaths occurred in three settlements in the South for an IMR of 21.3/1000 live births for these three settlements. Although these numbers of infant deaths are very small and therefore unstable, it is clear that infant mortality is low, apparently in the range of 20–50/1000 live births.

Maternal health and antenatal care

Data were available from ANC records on 1232 pregnancies for 1994–96 compared to 2084 (59%) recorded live births. This varied from 45% to 69% in the different regions and from 5% to 100% in the different settlements. This gives some indication of the

incompleteness of these data as mentioned previously. This variability and lack of representativeness makes regional comparisons inappropriate and only aggregated data are presented. Fifty-four percent of pregnant women were between 20–29 years of age, while 4% were less than 20, and 8% were 40 or more years of age. For 27% of these women it was the first pregnancy, while 15% had 5 or more prior pregnancies. Ninety-one women (7%) had problems during the antenatal period and 47 (4%) during delivery. There were four maternal deaths.

Childhood vaccination

The performance of the vaccination program varied by region, by year, and by type of vaccine, but, overall, less than half of children were fully vaccinated. Averaged over 3 years, 47% of children received BCG, 39% of children received the complete DPT/polio series, and 31% received measles vaccine. BCG vaccination improved from 44% in 1994 to 49% in 1996 (Table 5) The data for DPT/polio and measles vaccination are more difficult to interpret. Vaccine coverage improved from 1994 to 1995, when it exceeded 40% for each. The sharp decrease in 1996, to 30% and 7%, respectively, can be explained, in part, by the vaccination schedule itself. DPT/polio vaccines are given at 2, 4, and 6 months of age. Measles vaccine is given at 9 months of age. Of children born in 1996, only one-half would have aged 6 months by the end of the year and only one-fourth would have aged 9 months. Thus, the 30% and 7% rates for DPT/polio and measles must be interpreted relative to the proportion of children who reached the appropriate age by the end of 1996. Vaccine shortages did not occur. The regional break down of these data showed marked differences between regions within the same year and across years within the same region.

Clinic attendance and illness

Data compiled quarterly from the health clinics showed that the common diseases of developing countries—skin conditions, upper and lower respiratory tract infections, fevers, diarrhoeal diseases, tuberculosis, parasitic and other infectious diseases—abound in the settlements and accounted for 52,544 (60.3%) of the 87,109 clinic visits in 1996 (Table 6) While these illnesses are common in all age/sex groups, among the older population these illnesses are supplemented by joint pains, peptic ulcers, and cardiovascular conditions. It is important to keep in mind that these data represent clinic visits, not individuals, and, therefore, reflect health care services more accurately than they represent the distribution of morbidity in the population.

Causes of death

Probable causes of death were allocated to 556 (70%) of the 798 deaths identified (Table 7) Cancers were the leading causes of death, followed closely by pulmonary tuberculosis, of which 35% were thought to be due to drug resistant strains. Accidental deaths were the third most common specific cause, mainly due to vehicular collisions, altercations or drowning. Cirrhosis of the liver figured especially high in the NE region where the drinking of the fermented millet brew called chang is widespread. Deaths from malaria were common in the NE and central regions where anopheles mosquitoes abound.

The monk population

There are a total of 134 monasteries in or near Tibetan settlements in India. The largest of these are located in the state of Karnataka in south India. Between 70 and 75% of the total monk population reside in these monasteries in south India. It was not

Table 5
Childhood vaccination among Tibetan refugees in India, by region, 1994–1996 (figures are percent of children receiving the indicated vaccine or the complete vaccine series)

Regions[a]	BCG			3 × DPT + Polio			Measles		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
South	48.5	48.7	43.9	47.2	42.7	26.4	46.9	43.3	6.7
Doon Valley	12.0	52.9	62.9	18.0	51.1	31.4	16.0	35.3	7.2
Central	45.7	57.1	65.9	37.8	52.7	43.5	37.8	48.3	1.2
Himachal	25.9	69.5	46.5	27.2	67.2	32.5	25.9	57.0	9.6
North East	58.2	35.1	47.0	55.9	22.2	28.3	48.2	26.9	8.4
All	43.7	50.0	48.6	42.1	44.0	30.1	40.2	42.0	7.4

[a] Data not available from Ladakh and Delhi.

Table 6
Reasons for clinic visits in Tibetan settlement populations in India 1996 by age group and sex

Illness[a]	Ages 0–5 years				Ages 6–14 years				Ages 15–49 years				Ages 50 or more years			
	Male		Female		Male		Female		Male		Female		Male		Female	
	no.	(%)	no.	(%)	no.	(%)	no.	(%)	no.	(%)	no.	(%)	no.	(%)	no.	(%)
Skin conditions	951	15.9	1216	20.1	2003	21.0	1578	18.0	2003	11.7	1485	9.5	1025	7.7	655	6.2
Upper respiratory tract	778	13.0	826	13.7	988	11.0	963	11.3	2194	12.8	1896	12.1	1484	11.1	889	8.4
Fever	757	12.7	745	12.3	813	9.0	824	9.7	1475	8.6	1303	8.3	986	7.4	798	7.6
Diarrhoea	858	14.3	784	13.0	885	9.7	1020	12.0	1278	7.5	1140	7.3	927	6.9	625	5.9
Dyspepsia	225	3.8	213	3.5	464	5.1	497	5.8	1260	7.4	1590	10.2	1104	8.3	1132	10.8
Joint pain	30	0.5	30	0.5	128	1.4	139	1.6	977	5.7	1088	7.0	1377	10.3	1417	13.5
Ear/eye	328	5.5	341	5.6	656	7.2	501	5.9	911	5.3	766	4.9	648	4.8	508	4.8
Injury	361	6.0	322	5.3	846	9.3	496	5.8	1179	6.9	578	3.7	483	3.6	345	3.3
Others	336	5.6	234	3.9	338	3.7	398	4.7	905	5.3	937	6.0	763	5.7	544	5.2
Lower respiratory tract	397	6.6	350	5.8	331	3.6	348	4.1	853	5.0	584	3.7	606	4.5	503	4.8
Cardiovascular cond.	1	—	2	—	8	0.1	6	0.1	381	2.2	479	3.1	1288	9.6	1221	11.6
Dysentery	234	3.9	251	4.2	323	3.6	318	3.7	455	2.7	465	3.0	512	3.8	416	4.0
Tuberculosis	20	0.3	38	0.6	95	1.0	125	1.5	1287	7.5	690	4.4	336	2.5	62	0.6
Infectious diseases[b]	166	2.8	175	2.9	257	2.8	278	3.3	490	2.9	384	2.5	416	3.1	248	2.4
Malaria	200	3.3	151	2.5	292	3.2	252	3.0	425	2.5	414	2.6	304	2.3	249	2.4
Worms	213	3.6	248	4.1	360	4.0	419	4.9	299	1.7	284	1.8	130	1.0	139	1.3
Anemia	53	0.9	53	0.9	123	1.4	99	1.2	289	1.7	425	2.7	265	2.0	245	2.3
Urinary tract cond.	27	0.5	34	0.6	72	0.8	64	0.8	219	1.3	404	2.6	283	2.1	273	2.6
Unknown	31	0.5	23	0.4	49	0.5	152	1.8	97	0.6	104	0.7	298	2.2	176	1.7
Antenatal care	0	—	0	—	0	0	10	0.1	0	0	521	3.3	0	0	0	0
Hepatitis	12	0.2	5	0.1	23	0.3	27	0.3	89	0.5	61	0.4	111	0.8	36	0.3
Malignancy	2	—	1	—	5	0.1	3	0	37	0.2	17	0.1	30	0.2	31	0.3
STDs	0	—	0	—	23	0.3	6	0.1	26	0.2	35	0.2	3	0	9	0.1
Total	5980	100	6042	100	9082	100	8523	100	17,129	100	15,653	100	13,379	100	10,521	100
Visits per person	3.1		3.2		2.5		2.5		1.7		1.6		2.7		2.7	

[a] Listed in descending order of cumulative total across all age/sex groups.
[b] Infectious diseases other than those listed, e.g., pertussis, polio, etc.

possible to survey all the monasteries, but well over half of the total monk population was included: 9134 from the 23 large monasteries in Karnataka, 859 from eight monasteries in Doon Valley and 832 from 11 smaller monasteries in Himachal Pradesh.

The demographic characteristics of the monk population are interesting because they would certainly differ from the population in the settlements. The monks are all male, live mainly in dormitories, share the same occupation, live closely together, and their living conditions do not vary much. Moreover very few were born the settlements but migrated there from Tibet or other areas. The key characteristics ascertained were their age distribution, place of origin and number of years in the monastery.

Age distribution and place of origin

The age distribution of the monks shows that the great majority are aged from 10 to 29 years (Table 8)

Since scholars from all over the world attend these seats of higher learning, their place of origin is shown in Table 9 The monasteries in Mungod and Bylakuppe, which are among the larger ones, attract more monks from Tibet and neighboring Buddhist countries like Nepal, Bhutan and Mongolia. The Gyudmey Monastery in Hunsur, being a center for advanced study in Tantric learning, had nearly all its monks coming from Tibet. The smaller monasteries which do not provide higher education tend to recruit new members from India. In the Doon Valley and the Himachal Pradesh monasteries the majority of monks were born in India, with 33% and 26%, respectively, from Tibet, and 15% of those in Himachal Pradesh coming from Nepal, Bhutan, and other countries.

Number of years in monastery and English literacy

Over the past decade or more there has been a steady influx of monks from Tibet. This is most marked in the

Table 10
Duration of monastery residence and English literacy of Tibetan monks in India, 1994–1996, by region (%)

No. years	Mungod	Byalkuppe (old)	Byalkuppe (new)	Hunsur	Kollegal	Doon Valley	Himachal Pradesh
0–3	27.6	36.8	3.6	18.8	13.3	29.0	43.9
4–6	26.0	28.6	10.9	28.2	22.0	35.0	20.5
7–9	9.7	10.8	47.3	13.5	29.4	18.6	9.9
10–12	10.1	8.3	18.3	15.6	30.9	5.8	6.4
13+	18.0	15.0	20.0	24.0	4.4	8.0	17.8
Unknown	7.7	0.5	0	0	0	0	1.0
Average	7.9	6.8	7.5	9.7	10.0	6.3	6.9
r/w English[a]	33.0	15.0	85.0	25.0	60.0	80.0	38.0

[a] r/w, read and write.

nature of the present refugee population. Survivors of the original migrant cohort, now aged 40 or more years, were born in Tibet, are less well educated, and tend toward the occupations of their native home. Below that age, most were born in India, are more educated, and occupationally more diverse. A small number continue to come from Tibet. Only 3400 of the general refugee population aged less than 40 years were born in Tibet. On the other hand, Tibetans do visit India transiently, partly to see the Dalai Lama and partly to attend school. For example, at Bir many newly arrived young adults are given English tuition and most of these return to Tibet and use their new skills as teachers or tour guides (Personal communication, Head Master of Bir School, 1995). The case is very different with the monk population as demonstrated clearly in the data described above.

Several threads of evidence suggest that this society is in transition from the profile typical of developing countries to that more typical of developed countries. The age distribution of the population, a declining birth rate, increasing life expectancies, and growth in the proportion of the elderly population may all indicate a transition to the pattern of more affluent countries. At least three important demographic trends contribute to the surprisingly low birth rate: better education, low unemployment associated with employment opportunities for women, and later age of marriage (Sheps & Ridley, 1965). About 25% of the total population is attending school with more females than males, suggesting the absence of a strong pro-male bias in educational opportunities in India compared to traditional Tibetan society. This dramatic change in educational achievement is a tribute to the emphasis placed on education of the refugee children by both the Indian and Tibetan governments who set up special schools for this purpose from the earliest days. Unemployment was limited to only 3.2% of the whole population. This is low for any society and unheard of in developing countries. The age at marriage is commonly delayed until 25 years for

women and later for men, although there were substantial regional differences in this respect (Bhatia et al., 1998). Finally, infant mortality was estimated conservatively around 20–50/1000 live births. This figure can be compared to India where the rate is around 70/1000 or Nepal with a rate of more than 100/1000 (Khalique et al., 1993). This important indicator of a population's health and socioeconomic development is uncommonly low for a developing country society, even considering the relatively small number of infant deaths. Undoubtedly, maternal educational plays an important role in this regard (Nag, 1983; Ware, 1993). These factors all indicate the state of transition toward a higher level of socio-economic development (Federici, 1993).

Although some indicators of the health status of the Tibetan settlement population point in this direction as well, other characteristics reflect the level of socio-economic development of a developing country and/or a mass refugee population. Regional differences were important in this respect. Where the land is good for agriculture there are a higher proportion of farmers, 16% in the south. Where the climate is cold and inhospitable, as in the NE and Ladakh, the age at marriage is earlier and the birth rate is correspondingly higher with a greater than average family size (Bhatia et al., 1998). These regions had the highest proportion of pregnancy in women under 20 year of age and, for most of these women, it was not the first pregnancy. Childhood vaccination has been a high priority for the Department of Health; however, the program covers much less than half of the children. The reasons for this failure must be examined and rectified. Clinic records also reveal the frequency of diseases one might expect in a developing country, although the regions vary in this respect as well. For example, skin conditions account for 30% of clinic visits in Himachal Pradesh and the NE where winters are cold and personal hygiene more difficult. The cold climes also had more upper and lower respiratory tract infections. In the southern and

central settlements, which are dry and hot in the summer, there were more clinic visits for diarrhoea, dysentery and worm infestation, and an epidemic of dysentery among those over 50 years of age occurred in Doon Valley in 1996. In Orissa, malaria is endemic and an epidemic occurred there also in 1996. On the other hand, in the regions with relatively older populations, Himachal and the South, hypertension and other cardiovascular disorders accounted for substantial numbers of clinic visits, typical of economically more developed societies.

The limitations of these data must be kept in mind. Estimation of accurate birth rates was complicated by the possibility that birth registries would omit deliveries that occurred outside the settlements, for example, deliveries attended by Indian doctors or during a mother's extended absence selling sweaters/handicrafts in the cities. Most of these children will be counted subsequently in the 0–4 year age group; therefore, the yearly average of this group should check the accuracy of the actual birth figures. Such a calculated birth rate, however, would always be low for two reasons. Firstly, any deaths in the 0–4 group during the 5 year interval would not appear in the numerator and, secondly, the population on which the 1994 (0–4) calculation should be the median year of the five year span, i.e., 1992 which is not accurately known. Therefore, the 1994 population census was used. This is probably about 2–3% too high, and the birth rates will be 2–3% too low by this calculation. Since the calculated rate is too low it indicates that the actual figure is even lower due to under-reporting or failure to catch all births. In spite of the inaccuracies in these figures, however, it is clear that the overall birth rates are low for such an undeveloped traditional society where rates above 30/1000 are more commonly found.

A second important limitation concerns the morbidity profile of the population. A true picture of the disease burden in a society can be obtained by collecting illness information at the village level through regular household visits in the community. The illness information collected at the household level tends to be more accurate because it includes ill people who may seek health care outside the settlement services. In our study this did not work well as some of the CHWs were overworked and failed to make the scheduled monthly visits. For this reason the illness data was derived from the outpatient records of the settlement clinics or hospitals which were compiled every three months.

A third important limitation concerned the pregnancy records. Here again it was found that CHWs were unable to provide this information from their regular monthly home visits as intended so data had to be derived from the pregnancy forms in ANC clinics. It was found that these gave an incomplete record, varying from 45% to 69% of all births, with Orissa having the highest coverage and Himachal Pradesh the lowest. This incomplete and variable data makes objective inference impossible. Therefore, the data illustrate circumstances for certain large segments of the population, but do not represent the population as a whole. The poor collection of data essential to providing insight into women's reproductive health issues, is symptomatic of the low importance attached to women's health at the settlement clinics and at the level of the community.

The Chinese invasion of Tibet in 1959 forced tens of thousands of Tibetan refugees to flee to India following the Dalai Lama. The data presented in this manuscript are the first quantitative description of the demographic, social, and health status of this population, some 40 years later. While imposing on the largess of neighboring India, this refugee population and its government in exile have established a functional, rapidly developing society which, in many ways, is in a state of transition from the poverty of Tibet and India of the 1960s to a higher socioeconomic level with characteristics of more developed countries. These data highlight both the remarkable successes of these people and their government and the notable deficiencies which will challenge their development in the future.

Acknowledgements

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