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VILLAGE HEALTH AND SANITARY PROFILE FROM EASTERN HILLY REGION, NEPAL

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SYNOPSIS

A report on the health and sanitary status from Boya Village Development Committee (VDC) is presented as studied by a team of Nepali and Japanese investigators in 1996 and 1997. The purpose of this study was to find out the health and sanitary status in a remote hilly village in eastern Nepal. Data were collected from questionnaire and from a temporary field clinic. The number of households having latrine increased significantly ($P<0.05$) in one year period but without significant impact on the reduction of intestinal helminth infection ($P>0.05$). *Ascaris lumbricoides* was the commonest intestinal parasite followed by hookworm and others. Public piped water was accessible to 32.6% households while remaining 48.4% and 19.0% were using *Dhara* (natural tap) and *Kuwa* (sallow well) water, respectively. No association between the type of water source and gastro-enteritis was observed. The overall hygienic condition was poor. More than half of the residents first consult *Dhami-Jhankri* and *Bijuwa* (traditional/faith/

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shamanic healer) and believe on *Devi-Deuta* (local deities/divine spirit) and *Bhut-Pret* and/or *Bayu* (devils) and *Boksi* (witch) instead of visiting Health Post. Approximately one quarter of residents were smoker while two-third had habit of drinking alcohol. Medical complaint rate significantly increased from 59.6% in the year 1996 to 71.2% in 1997 ($P<0.01$) and was attributed to conjunctivitis epidemic during second visit. Majority of complaints were gastrointestinal. People belonging to *Tibeto-Burman* ethnic group were found to consume meat relatively more frequently than *Indo-Aryan*.

INTRODUCTION

As a part of on-going field study in Nepal, this time, a remote eastern hilly area named Boya Village Development Committee (VDC) in Bhojpur district, Nepal was visited in April, 1996 and subsequently on May, 1997. Boya VDC is located in northern part of Bhojpur district just in between two small rivers called *Yanguwa khola* in the south and west and *Nakhuwa khola* in the east which join to flow in the Arun river at *Kundule ghat*. The altitude range approximately from 1,500 to 2,500 m. According to 1991 population census[5], it is inhabited by 4,107 people (M: 2,051 and F: 2,056) living in 774 households. Boya is half-day walk west of the nearest airstrip at Tumlingtar in Sankhuwasabha district and slightly more than a half-day walk from another airstrip at Taksar near the district head-quarter. It is two days walk north-west of the nearest motorable road at Hile in Dhankuta district (Bhojpur district has no motorable road yet).

At present, Boya VDC has a post office, a sub-Health Post, a police post (*Chauki*), a plant nursery, a proposed high school, six primary schools (up to grade three) and VDC office. There is a weekly bazaar on every Thursday (*Bihibare bazaar*) where people buy and sale day-to-day commodities. Very recently, a mill (grinding) has also been installed by a local. The nearest hospitals are the Bhojpur district hospital located at district head-quarter and Sankhuwasabha district hospital located at Khandbari. The population of Boya consists of various ethnics such as *Rai, Newar, Brahmin/Chhetri, Tamang/Sherpa, Jogi, Magar* and other lower caste

(*Kami/Damai/Sarki*). The people largely depend on subsistence agriculture. The major corps includes rice, maize, wheat, millet, potatoes and vegetables. Almost all household raise some cattle, buffalo, goat, sheep and chicken. Ethnics other than *Brahmin, Chhetri* and *Newar* also raise pigs. Dogs are kept at home for protection. Cats in the village keep on wandering from one house to another. For some people, income is also supplemented from army retirement pension, portering and service (teaching and others). Few people also sell outside goods at the local bazaar.

Parts of Boya VDC has piped public drinking water system. It has no electricity supply except at Ghalegaun where a small scale electricity has been generated on the initiative of locals. People have formed *Upabhokta Samiti* (consumers' committee) to look after and protect forests with some success. Two irrigation projects completed several years ago are now virtually non-functioning due mainly to lack of maintenance indicating no people's participation.

There are few medical reports from rural villages in Nepal. All of the studies were conducted by expedition teams[3,18,21,22] and without follow-up. We, therefore, became interested to study the present health and sanitary status in a remote hilly village and to see the impact of some intervention program in Nepal by follow-up visit. We selected Boya VDC, because, it represents the typical rural areas in Nepal that are devoid of basic infrastructures of human development.

MATERIALS AND METHODS

Household survey

One member from each house was interviewed with the use of pre-prepared questionnaire. Content of questionnaire included family size, latrine facility, drinking water source, knowledge about water-borne and other diseases, consultation pattern during sickness, smoking and drinking habits, meat eating habit and frequency, family planning and others about personal hygiene. Observation on sanitation, water system and other hygienic practice was also made by the team.

Medical survey

Medical survey was carried out at a temporarily set free clinic. The clinic

was run by two Nepali doctors. Medical service was made available to the residents of Boya VDC as well as neighboring VDCs on a first come first serve basis. A patient logbook with regard to the name, age, sex, occupation, smoking and drinking habit, present complain, diagnosis and treatment was prepared. Patients were provided a full course of medicine as per diagnosis made. Patients, with surgical and other problems demanding special management were advised to visit hospitals having necessary expertise.

Intestinal parasite survey

Local residents were provided a clean, dry and screw capped plastic container, with proper instruction, for fecal sample collection. The samples received next day were screened by direct smear method (saline preparation) locally with the use of microscope we carried. Concentration technique was not employed due to the lack man-power and facilities. Individuals positive for helminth infection were given a single dose of albendazole(Eskayef Pharmaceuticals Ltd., India).

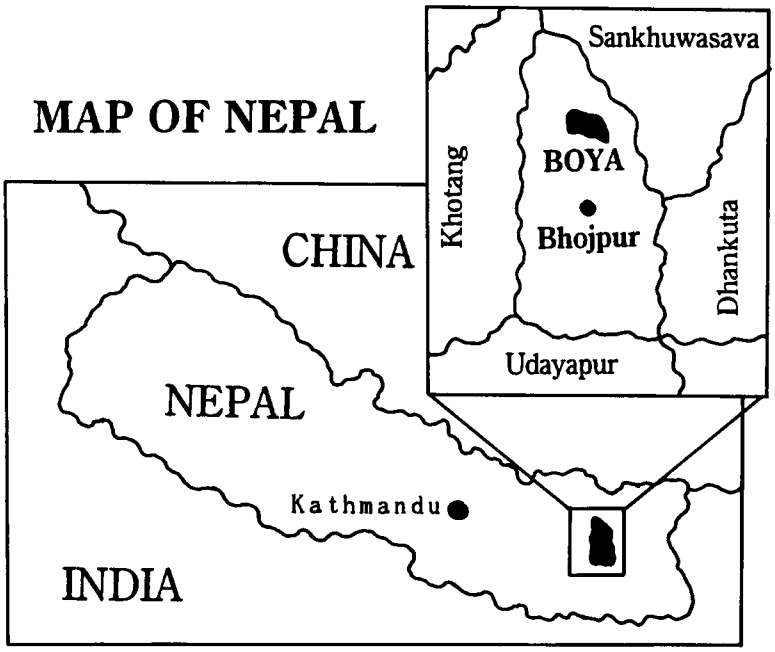

Fig. 1. Survey area: Boya village development committee (VDC), Bhojpur district in Nepal.

Urine test

Urine samples were tested for the albumin and sugar using an uristix (Bayers Diagnostic Ltd. India). Microscopic examination of urinary deposit was performed after allowing the samples to stand at least for 4 to 5 hours at vibration free and shady place.

Health education

The team also provided a basic health education to some of the locals pertaining the construction and use of latrine (pit latrine), smoking and personal hygiene.

Statistical analysis

Chi-square test was applied to see the significant differences.

RESULTS AND DISCUSSION

A total of 123 and 190 households were surveyed in 1996 and 1997, respectively. Only 21 out of 123 households (17.0%) surveyed in 1996 had pit latrine. People having latrine at their home were also going for open defecation. In part, this was attributed to their working at considerably away from their home. After one year, in 1997, the number of household with pit latrine increased significantly to 27.9% (59/190) ($P<0.05$) (Table-I). This was one of the most important impact of our visit and the health education we gave in 1996. This change together with albendazole treament of helminth egg/s positive subjects, however, could not reduce the intestinal helminth infection significantly ($P>0.05$). This appears to be due to the over dispersion of helminths particularly the *Ascaris lumbricoides* in the community[1,19,20] and the selective treatment we did. This study also revealed *A. lumbricoides* as most common intestinal helminth (68.0% in 1996 and 59.4% in 1997) followed by hookworm and others. *A. lumbricoides* (known as *Juka* in Nepal) topping the list of intestinal helminths was consistent with previous reports from Nepal[12,13]. Inadequate use of latrine and high prevalence of intestinal helminths, thus, demand a mass treatment, since the transmission may drastically decrease for months or possibly years after treatment[17].

In 1997, we also surveyed the drinking water sources in Boya VDC. Public piped water was accessible only to 32.6% (62/190) of the households while remaining 48.4% (92/190) and 19.0% (36/190) were dependent on *Dhara* (natural

Table - I. Households with latrine and prevalence of intestinal helminth infection in Boya VDC, Bhojpur, Nepal.

Year	n of household surveyed		Prev. of intestinal helminth	
	Total	Latrine*(%)	Total	Positive**(%)
1996	103	17 (16.5)	242	134 (55.4)
1997	190	53 (27.5)	264	128 (48.5)

*n of household with latrine; **n of helminth positive.

tap) and *Kuwa* (sallow well), respectively. Though the water quality was not tested, most of the *Kuwa* appeared to be contaminated with their dirty surroundings. However, we found no significant difference in the incidence of gastro-enteritis (diarrhea/dysentery) among people belonging to the households having access to piped water (6.5%; 4/62) and the households using *Dhara* and *Kuwa* water (10.2%; 13/128) ($P>0.05$). Though 83.0% (158/190) of respondents were aware of the fact that water could be the source of diseases, all of them were drinking untreated water (without boiling or filtering) as drinking treated water in the village is impracticable.

Tibeto-Burman ethnic group (*Rai, Newar, Tamang/Sherpa, Jogi* and *Magar*)[23] and lower caste (*Kami, Damai* and *Sarki*) people traditionally drink *Jand* (a fluid preparation prepared from fermented millet, corn, wheat or rice) and *Tongba/Tumba* (a fluid to be sucked through a straw like bamboo pipe from a bamboo or wooden vessel containing fermented milletsoaked in water). Almost all residents belonging to *Tibeto-Burman* ethnic group and lower caste people drink alcohol except small children. Two-third of the interviewee had habit of drinking alcohol - *Jand* and/or *Raksi* (distilled *Jand*). Average daily consumption of *Jand* and *Raksi* were two liters and one and half glass (approximately 100 ml), respectively. None of the *Indo-Aryan* (*Brahmin* and *Chhetri*) interviewed were

drinking alcohol and reflected their traditional culture. The situation in the cities or towns, however, is different.

Out of 190 households surveyed in 1997, one or more than one family member of 104 households had had some kind of health problem between the period of our two (on April, 1996 and May, 1997) visits. As elsewhere in the world[8,16] majority of residents consulted *Dhami-Jhankri* or *Bijuwa* (traditional/faith/shamanic healer) (Table-II). Most of the locals in the village believe on *Devi-Deuta* (local deities/divine spirit) and *Bhut-Pret/Bayu* (devils) or *Boksi* (witch). On some

Table - II. Consultation pattern of inhabitants of Boya VDC, Bhojpur, Nepal during illness.

Consultation pattern	n (%)
Traditional/Faith/Shamanic (TFS) healer only	34 (32.7)
Health Post (HP) only	22 (21.2)
Hospital (Hosp.) only	6 (5.8)
TFS + HP or TFS + HP + Hosp.	38 (36.5)
Local herbal remedy only	4 (3.80
Total	104 (100)

occasions even an injury (cut or accident) are dealt by *Dhami-Jhankris* or *Bijuwas*. This is a common practice in rural areas in most developing countries[7,8,16] including Nepal[2,6,10] resulting into low usage of Health Post[2,21]. Thus, *Dhami-Jhankris* or *Bijuwas* in Nepal, still appear to have their potential influence in the development[6] particularly in health sector. People favoring two-phase treatment plan in which they consult Western doctor while in hospital and then consult a traditional healer at their home has also been reported from elsewhere in the world[4]. Low HealthPost usage in Nepal, however, has also been attributed to the accessibility, unavailability of medicine or "bad" (expired) medicine, expense, poor staffing and staff quality, and lack of female staff[2,21]. An old man at our clinic revealed that he walked long way (from neighboring VDC) with a belief that we give a "*taja*" (fresh) and "*asal*" (good) medicine brought directly from Kathmandu.

Approximately one third (29.5%) of interviewee were smoker. This finding was in agreement with those reported from other parts of Nepal[11,21]. Out of total 56 smoker, 89.3% (50/56) were smoking *Bidi*/cigarette with an average of 12 sticks/day. Home-cultivated tobacco (*Surti*) was common due to economic factors. Most began smoking during their childhood as a result of emulation of adults, and believe that smoking keeps the body warm though most of them were aware of the fact that smoking is detrimental to health. Remaining 10.7% (5/56) were *Khaini* (a wet preparation of *surti* and other additives) and *maduwa surti* (a dry preparation of *surti*) chewier; a relatively new practice in hilly areas but common in *Terai* (Plain) area adjoining to India, and in India.

A total of 285 and 309 locals attended our free-health clinic in 1996 and 1997, respectively (Table-III). Of them, 59.6% (170/285) in 1996 and 71.3% (220/309) in 1997 presented with some kinds of ailments ($P<0.01$). The significantly increase in complaint rate in 1997 was attributed to conjunctivitis epidemic during our second visit. Remaining complaints were identical for both the years. Abdominal problem (gastritis, diarrhea or dysentery) was most common followed by chest pain in 1996 and by conjunctivitis in 1997, and others. Hyperacidity and gastritis constituted more than 80% (80.4% in 1996 and 83.7% in 1997) of abdominal problem. Though not significantly, hyperacidity and gastritis was more common among females than in males, and appears to be due to their frequent *Brat* (keeping fast in the name of god). We did not find any association between smoking and alcohol drinking with hyperacidity and gastritis. *Jhada-Pakhala* (Diarrhea) and *Aun* or *Masi* (dysentery) were not common (10.6% in 1996 and 7.7% in 1997). This could be due to the our visit during dry season. *Jhada-Pakhala* and *Aun* or *Masi* is common during rainy (summer) season (June - August) and various diarrheagenic parasites, bacteria, and viruses have been isolated from diarrheic and/or dysenteric fecal samples in Nepal[9]. Cases of urinary tract infection (UTI) were diagnosed by complaint and by detecting of albumin and pus cells in urine sample. Urine sugar test revealed no single case of hyperglycemia

Table - III. Pattern of medical problem among clinic attending locals in Boya VDC, Bhojpur, Nepal in 1996 and 1997.

Medical problem	1996 n (%)	1997 n (%)
Abdominal problem	92 (32.3)	104 (33.7)
Conjunctivitis	2 (0.7)	46 (14.9)
Chest pain	25 (8.8)	24 (7.7)
Back and joint pain	19 (6.7)	14 (4.5)
Urinary tract infection (UTI)	16 (5.6)	11 (3.6)
Prolonged menstural bleeding	8 (2.8)	10 (3.2)
Palpitation/breathlessness	0	3 (1.0)
Herpes labialis	0	2 (0.6)
Fever (due other than to UTI)	7 (2.5)	4 (1.3)
Anemia	1 (0.3)	2 (0.6)
Total	170 (59.6)	220 (71.2)
No complaint	115 (40.4)	89 (28.8)
Grand Total	285 (100)	309 (100)

(diabetes) in locals examined. Our present finding was in agreement with that reported from Bala village in same district[21]. Almost all subjects were treated with the respective medicine we carried. Cases demanding surgical and/or other special management were referred to hospitals having necessary expertise/facilities. There were 6 cases of tuberculosis undergoing treatment.

Observation revealed a poor sanitary and hygienic condition in the community. Children were seen defecating around the houses leading to soil contamination and dispersion of parasites in the environment. Children often eat without washing hands. This, in part, appears to be associated with higher prevalence of intestinal helminth in children (data not shown). However, even adults often eat *Khaja* (tiffin) without washing hands. Radish and carrot are often eaten without washing. Ninety eight percent of people in the village wash their

hands before meal without using soap. Over 85.0% (106/123) were unaware about the mode of infection of intestinal helminths in 1996. These factors appears to be responsible for high prevalence of intestinal parasite infection in the rural villages. People belonging to *Tibeto-Burman* ethnic group were found to eat meat relatively more frequently (on an average twice a week) compared with *Indo-Aryans* (on an average once a month) as has been reported previously[14]. This observation was well in agreement with significantly higher prevalence of *Toxoplasma* infection among *Tibeto-Burmans* compared with *Indo-Aryans* in eastern Nepal (unpublished data) and with the high prevalence of *Toxoplasma* infection among meat animals in Nepal[15].

Children seen at the clinic were immunized. However, most parents were not aware of the types of immunization. Family planning was not common practice among locals except the use of condoms and/or contraceptive "pill" by some couples. Males were scared of sterilization believing that vasectomy makes them weak and becomes unable to do heavy works for their livelihood. Though male dominated society, there was a good attendance of females at the clinic.

CONCLUSION

This study has revealed the present health and sanitary situation in a remote area in Nepal; a country highly diversified in geo-topography and ethnicity. Findings indicated a need for an ongoing educational and promotional activities with regard to public health and sanitation. Healthpost usage appears to be encouraged by regular supply of medicine at affordable price, manning of health post by trained man-power, supply of female staff, and regular immunization program including the exploitation of potentiality of *Dhami-Jhakris* and *Bijuwas* in health care system[2,6-8,10,16] for a sustainable health. However, the role of such traditional/faith/shamanic healers should clearly be defined. It is better to give a time to time orientation to such local healers about modern medical practice to avoid various negative effects[7,8], and thereby to have their contribution in the health care delivery system.

These factors together with the beauty oh Himalaya may draw the attention of researchers interested in epidemiology of various diseases in Nepal in future.

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