In view of higher incidence reported here, prospective studies on a larger population are needed to confirm the findings and elucidate the reasons for the increased incidence.

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Iodine Status among School Children of remote Hilly regions of Nepal

A cross-sectional study was conducted in remote hilly areas (Shree Antu and Ranke) of eastern Nepal to assess iodine status among school children aged 6-12 years. Urinary iodine excretion was estimated in 292 urine samples. The median urinary iodine excretion was 187.52 µg/L, and 33.6% children have insufficient urinary iodine excretion.

Keywords: *Iodine deficiency, Nepal, Urinary iodine excretion.*

People living in mountainous and hilly regions of Nepal have been found to be more iodine-deficient than those living in the plain regions. A national survey in 2007 showed that 18.9% school children were iodine-deficient in the eastern hills [1]. Considering the reported low iodine in soil of this region [2], and the frequent non-availability of iodized salts in remote hilly regions, we designed a cross-sectional study for assessing iodine status in school children of these regions.

We selected Shree Antu (Ilam) and Ranke (Panchthar) areas for sample collection after choosing Ilam and Panchthar as the representative hilly districts. Shree Antu and Ranke areas are at high altitude of 3400 meters and 2100 meters from sea level, respectively. Considering present iodine deficiency of 20% (approximate) in hills, we enrolled 292 school children (108 from 2 schools and a monastery of Shree Antu and 184 from 2 schools of Ranke) aged 6-12 years by random number generation using random number tables. We selected 6-12 years age children because of greater impact of iodine-deficiency on them, and their easy availability through schools. Consent was taken from guardian of children, and ethical clearance from Institute Review Board of B P Koirala Institute of Health Sciences (BPKIHS) in 2012. About 10 mL of urine samples were collected in clean plastic vials and transported to biochemistry laboratory of BPKIHS maintaining cold chain. UIE was estimated using ammonium persulphate digestion method [3].

The median UIE in our study was 187.52 µg/L (227.53 µg/L in Shree Antu and 175.45 µg/L in Ranke), which indicates adequate iodine nutrition among the children of hilly regions [4]. Median UIE among boys and girls was 205.66 µg/L and 150.84 µg/L, respectively. Median UIE was significantly different among genders (P=0.014) and among study areas (P=0.003). Iodine status on basis of UIE (WHO criteria) in the study areas and gender is shown in ***Table* I**, which shows 33.6% children had UIE<100 µg/L [4].

Nepal has been continuously improving in iodine nutrition [5]. The median UIE in our study was lower than in the study of Gelal, *et al*. [6], who has shown median UIE of 208.9 µg/L in hilly region. This suggests that improvement in median UIE is non-uniform within the

TABLE I IODINE STATUS OF THE STUDY POPULATION ON THE BASIS OF UIE (WHO CRITERIA) (*N*=292) ACCORDING TO STUDY AREAS AND GENDER

Study/Area		*Severe ID (<20 µg/L)*	*Moderate ID (20-49 µg/L)*	*Mild ID (50-99 µg/L)*	*Adequate (100-199 µg/L)*	*More than adequate (200-299 µg/L)*	*Excessive Iodine (>300 µg/L)*
**Areas*	Shree Antu (*n*=108)	12 (11.1%)	8 (7.4%)	12 (11.1%)	16 (14.8%)	20 (18.5%)	40 (37.0%)
	Ranke (*n*=184)	18 (9.8%)	17 (9.2%)	31(16.8%)	44 (23.9%)	44 (23.9%)	30 (16.3%)
#*Gender*	Male (*n*=168)	16 (9.5%)	8 (4.8%)	24 (14.3%)	34 (20.2%)	40 (23.8%)	46 (27.4%)
	Female (*n*=124)	14 (11.3%)	17 (13.7%)	19 (15.3%)	26 (21.0%)	24 (19.4%)	24 (19.4%)
Total		30 (10.3%)	25 (8.6%)	43 (14.7%)	60 (20.5%)	64 (21.9%)	70 (24.0%)

*ID = Iodine deficiency; *P=0.003; #=0.09.*

hilly areas and there is no sustainable improvement in median UIE. Even though the population has adequate median UIE, 33.6% school children had UIE<100 µg/L. This finding is similar to those shown by the report of Nepal Micronutrient Status Survey in 1998, which had shown 35.1% of school children iodine deficient. A previous study [6] showed that 18.5% children were iodine-deficient in hilly regions of Nepal. As iodine deficiency is the most common cause of preventable brain damage in children, it should be virtually eliminated from every part of the country [2]. Our study suggests that children living in high altitude of hilly regions at the time of study had adequate iodine nutrition.

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Performance Appraisal of *Anganwadi* Workers

Integrated child development scheme (ICDS) was launched in 1975 in India [1]. The ICDS services, which include supplementary nutrition, preschool education, immunization, health check-ups, health education and referral services, are delivered by *Anganwadi* worker. In view of the increased burden on them, the performance of *Anganwadi* worker has been under scrutiny. We conducted this cross-sectional exploratory study to assess the performance of *Anganwadi* workers in selected *Anganwadi* centers of a North Indian city. Permission from Social Welfare Department and ethical approval from Institute Ethical Committee were obtained.

Fourteen *Anganwadi* workers and 100 ICDS beneficiaries were chosen as a sample of convenience. Tools used for data collection were performance appraisal checklist to appraise the performance of *Anganwadi* workers, and interview schedule to assess the satisfaction level of ICDS beneficiaries. Observation and interview were the techniques used for data collection. A total of 24 observations were made from selected *Anganwadi*