The Economic Journal of Nepal, Vol. 15, No.1, Issue 57, January-March 1992 © DOE-TU

Sex Ratio In Nepal

Y. B. KARKI *

INTRODUCTION

This article deals with sex ratio in Nepal since 191 when the first population count was conducted. The author was prompted to investigate this issue because sex ratio in 1981 was the highest among all population counts and censuses of Nepal and slightly above the upper limit of normal range of sex ratio prevalent in other countries of the world.

BACKGROUND

The sex ratio is usually expressed as the number of males per hundred females. It is usually calculated by taking the number of males in a population at a given time and dividing it by the number of females in the same population. The overall sex ratio is entirely determined by

- The sex ratio at birth.
- Sex differences in mortality.
- Differential migration.
- Sex differential enumeration.

The sex ratio at birth is just the number of male births per 100 female births. It is normally around 105, that is 105 boys are born for every 100 girls, but does vary somewhat between populations and sub-groups. For example in England and Wales in 1985 the sex ratio at birth was 105.4. Interestingly in England and Wales the ratio seems to have been slowly increasing for a long time. It was 103.5 in 1900 (Newel, 1988).

Sex differences in mortality cause the sex ratio to vary between ages. Mortality of each sex is determined by occupational and biological factors. Men generally work at more hazardous, strenuous and stressful occupations while women are generally exposed to the special risks of childbearing, and some countries (e.g. South Asian Countries) still show higher death rates for females than for males. The weight of biological forces is reflected in the higher mortality of male infants and fetuses. In advanced nations, however, the overall mortality is lighter among women than men. Therefore, women, on average, live longer than men. Thus the sex ratio tends to decline with age. In high mortality countries, on the other hand, female mortality tends to be higher than male mortality, probably due to worse malnutrition among young females and the risks of maternity. Consequently the pattern of sex ratio by age is very different from that of a developed society.

---

* Y. B. Karki is associated with Central Department of Population Studies T.U. Kirtipur

Sex selective migration also causes the sex ratio to vary between ages. In the Northern Territory of Australia because of continued large male migration the sex ratio was high. The sex ratio for age group 20-39 years for the Northern Territory was found in the 1976 census to be 124 males per 100 females (Pollard, Yusuf and Pollard, 1981). When census defects (omission, incorrect declaration of ages) differ between males and females, then the sex ratio at the various ages will be distorted. The Tunisian census of 1956 is the case in point which was found to have left out women population flagrantly (Pressat, 1978) causing sex ratio at ages 60 and above rise beyond 127 males per 100 females.

SEX RATIO TREND IN NEPAL.

The sex ratio for the population of Nepal is shown in Table 1 from 1911 onwards. The urban/rural breakdown of sex ratios is given only from 1952/54 onwards because of the unavailability of

Table 1
Sex ratio, Nepal 1911 - 1991

Census Year	Urban	Rural	Nepal
1911	n.a	n.a.	104.28
1920	n.a.	n.a.	100.91
1941	n.a.	n.a.	100.06
1952/54	104.12 a	96.64	96.80 (100.62 b)
1961	112.41	96.52	97.28
1971	116.58	100.78	101.36
1981	115.24	104.36	105.02
1991 c	110.00	98.11	100.10

n.a. = not available.

a) Only for three towns of Kathmandu valley.
b) Includes absentee population.
c) Based on 19991 Sample Census (CBS, 1992).

Note: No sex distribution of population was available for 1931 to estimate sex ratio for that year of population count.
Source: C.B.C. Different Census Reports.

urban data for the earlier population counts. Even for 1952/54 the urban sex ratio is available only for the three cities of Kathmandu valley. The urban sex ratio is usually high because the urban centres absorb migrants from rural areas and also to some extent from outside the country. Since in the case of Nepal migrants are male selective the urban sex ratios are above 100 in all the censuses (**Table 1**).

In general the national sex ratio outside the range of 90 to 105 are to be viewed as extreme (Shryock, et al, 1976). Nepal's sex ratios from 1911 to 1991 are within the normal range varying from a low of 96.80 in 1952/54 to a high of 105.02 in 1981.

Although census taking was only a half hearted exercise prior to 1952/54 (CBS, 1987) the Sex ration of total counts in 1911, 1921 and 1941 do not look abnormal. The sex ratio in 1952/54 was 96.80 based on population present while if the absentee population is also included the sex ratio becomes 100.62 similar to the sex ratios shown by other censuses. Except for the population counts of 1911 and the census of 1981 Nepal's sex ratios seem to be hovering around 100. Of all these ratios the 1981 sex ratio of 105.02 looks suspicious, firstly, it is slightly above the normal range and secondly it suddenly jumps from 101 in 1971 to 105 in 1981 unprecedented in the history of Nepal's sex ratio.

SEX RATIOS BY BROAD AGE GROUPS AND REGIONS

Table 2 shows the trend in age-sex structure of Nepal's population starting from the census of 1952/54 by ecological zones. For the whole country a steady increase in the proportion of the population under age 15 is apparent from 1952/54. The principal cause of the rise in proportion under age 15 was probably the decline of infant and child mortality. But the high sex ratio shown by the 1981 census for 0-14 age group cannot be fully explained by the decline of young age mortality alone. The population of the 0-14 age group in 1981 comprises of children aged 0-9 (those born between 1971 and 1981) and those aged 10-14 (0-4 in 1966-1971 or born in that period). In 1971 male population aged 0-4 was 791,000 and by 1981 they became 10-14 years of age and it is not possible that the same number of males could have survived to become 10-14 in 1981. To our surprise the 1981 census shows about 920,000 male population aged 10-14. It shows something in the order of 200,000 boys over and above the expected number after allowing for mortality attrition. Who are thee extra boys ? They could be

- those left out in 1971 enumeration;
- migrants from outside the country:
- those who were over enumerated by field workers in 1981 because monetary gains were high;
- an outcome combination of all the above factors. The likely reason is the over-enumeration of boys in this age group because even if there was immigration their ages would be higher than 15.

Table 2
Sex Ratio by Broad Age Groups and Ecological Regions, Nepal: 1952/54 - 1991.

Census year		Mountains/Hills				Tarai				Nepal				
		0-14	15-59	60+	All Ages	0-14	15-59	60+	All Ages	0-14	15-59	60+	All Ages	
1952/54	a	104	91	83	92	105	100	74	100	104	94	80	97	
1961	b	103	89	89	94	106	103	72	103	104	94	83	97	
1971	c	102	96	96	98	106	109	86	106	104	101	92	101	
1981	d	107	99	110	103	109	107	113	108	108	102	111	105	
1991	e	–	–	–	96	–	–	–	104	105	96	103	100	

a) Department of Statistics (1958).
b) CBS (1967).
c) CBS (1984).
d) CBS (1991/92).
e) CBS (1992).

The female population of the same age group, however, does not indicate that type of anomaly. In 1966-71, the 0-4 year age group numbered about 844,000 and by the time they became 10-14, i.e., by 1981 only about 788,000 girls survived. It may be that these figures are not absolutely correct but still they exhibit an expected pattern. It is therefore clear that the sex ratio of 108.11 in 1981 for 0-14 age group is out of range because it is inflated by the more than expected number of boy population than girl population. Similar problems are found for the mountain/hill and the Tarai populations of the same age group but in the cases of the Tarai immigration cannot be ruled out.

The sex ratios for the broad age groups for the whole of Nepal from 1952/54 to 1971 and in 1991 look okay because they are at least in the expected direction in that they decrease with increasing age and the range is also reasonable (**Table 2**). But in 1981 the sex ratios for the whole country and also for the age groups under 15 and over 60 are too high. The high sex ratio can be attributed to one or a combination of several factors mentioned below:

- out migration of females;
- return of male emigrants with high sex ratio families;
- heavy immigration of non-Nepalese males;
- gross under-enumeration of females;
- gross over-enumeration of males.

I have already talked about the 0-14 age group above. Under-enumeration of females in higher age groups is very unlikely. Emigration of females leaving their male counterparts in Nepal is not a possibility. Return of male migrants is a possibility but not to the extent of raising sex ratio to 111 for ages 60 and above. Therefore, the likely reason for high sex ratios in 1981 could be either

- heavy immigration of males; or
- gross over-enumeration of males; or
- a combination of both of these factors.

The sex ratio for the non-dependent population aged 15-59 indicates that heavy immigration of males can only be a small possibility because in general those who migrate belong to the age group 15-59 and this is not supported by the relatively low sex ratio of 102. Because this ratio is the highest compared to all the other censuses some immigration of males cannot be ruled out. Among the two regions the Tarai exhibits higher sex ratio for the 15-59 age group and the ratio was higher in 1971 than in 1981 implying that the Tarai was accommodating relatively more male migrants in 1971 than in 1981.

SEX RATIO BY AGE

Table 3 presents sex ratios by five-year age groups for the census years 1952/54 - 1991. It is seen that the sex ratio in the age group 0-14 has remained consistently less than 100 in the first three censuses. This finding is contrary to most other populations because sex ratios in early ages are normally high but in the case of Nepal this may not

be wrong for many studies on infant and child mortality have shown higher mortality for male infants than for female infants until as late as 1970s (Vaidyanathan and Gaige, 1973; Krotki and Thakur, 1971; Gubhaju, 1974; CBS, 1976 and 1978 and Thapa and Retherford, 1982).

Table 3
Sex Ratios by Five-year Age Groups, Nepal: 1952/54 - 1991

Age Group	Census Year				
	1952/54	1961	1971	1981	1991 a)
0 - 4	98	98	94	106	102
5 - 9	103	103	103	104	104
10 - 14	114	114	118	117	109
15 - 19	102	102	110	110	97
20 - 24	88	86	93	91	87
25 - 29	89	90	96	96	91
30 - 34	89	91	91	92	93
35 - 39	100	104	108	107	101
40 - 44	89	89	98	100	95
45 - 49	102	101	114	114	104
50 - 54	92	92	104	115	105
55 - 59	102	100	107	119	117
60 - 64	76	80	89	109	99
65 - 69	87	92	100	116	111
70 +	82	82	92	111	102
All Ages	97	97	101	105	100

a) Based on 10 per cent Sample Census, CBS (1992).
Source: CBS, Different Census Report

Sex ratio in the 10-14 age group is consistently high in all the censuses (Table 3). This looks like a typical feature of Nepal. It may be that girls 10-14 report themselves as being 15+ and those 15-19 report themselves as 20+. To some extent age shifting may explain high sex ratio but in 1971 and in 1981 they are too high. High sex ratios are also seen in 15-19 age groups in 1971 and 1981. In part this could be due to girls aged 15-19 reporting themselves as 20+ and thus inflating the sex ratio in 15-19 age group.

The sex ratio for the population between the ages 25 to 34 are low throughout. This is quite consistent with Nepal's long tradition of male migration.

Sex ratios in old ages look too high especially in 1981. To some extent this could be due to sex differential mortality. Another possible reason could be the return of male migrants back home in old ages. Both these can contribute to high sex ratios in

old ages but again why only in 1981 these ratios are too high. If that is a common phenomenon the sex ratios in 1981 should not be inflated out of proportion. Immigration could be a contributory factor here but as discussed earlier, generally people of non-dependent age migrate. One is therefore left with the suspicion that males were over-enumerated in 1981.

SEX RATIO BY CASTE/ETHNIC GROUP

The 1991 sample census provides information on caste/ethnic stratification of Nepalese population by age and sex. Utilizing these data the author has calculated sex ratios for cultural groups by broad age groups (Table 4). The overall sex ratios show

Table 4
Sex Ratios by Board Age Groups for Caste/Ethnic Groups, Nepal: 1992.

Caste/ Ethnic Group	Age Group				
	0-14	15-64	65+	Age unstated	All Ages
Tarai Communities	109.03	105.94	111.65	65.45	107.40
Muslims	111.47	105.28	104.49	44.44	107.94
Brahmin	102.93	94.57	92.50	47.83	97.83
Chhetri	102.84	91.24	107.43	77.78	96.55
Sanyasi	102.22	93.15	103.13	33.33	97.27
Newar	103.11	98.33	102.77	41.67	100.26
Magar, etc. a)	102.70	91.32	108.32	56.25	96.64
Danwar/Jirel	96.35	91.14	94.87	–	93.44
Low Castes	102.85	88.06	117.69	63.64	95.15
Raute/Darai/Raji	76.92	76.13	61.11	–	76.14
Chepang, etc. b)	102.91	96.14	120.98	125.00	99.79
Foreigners	65.96	119.74	125.00	–	100.00
Not Stated	110.42	104.05	73.91	–	105.09
Others (Mountains/ Hills	101.92	90.55	119.77	80.00	96.05
All Ages	104.74	96.25	106.51	61.34	100.10

a) This group includes Gurung, Limbu, Rai, Thakali, Sunwar, Lepcha, Thami, Sherpa and Bhote.
b) This group includes Kumal, Charuate, Bote and Majhi.
Source: C.B.C. Different Census Reports.

high values for the Tarai communities and Moslems implying high female mortality than male mortality. In both groups early age sex ratios are high and old age sex ratios are also high which reinforce the implication that female mortality are consistently higher among all ages. But it could also be that the Tarai communities are affected by immigrants particularly in age groups above 15 thereby contributing to high sex ratios.

Among other major groups Brahmins show decreasing sex ratio with age which may mean that male mortality is higher than that of females. But Chhetries and Magar, etc., show overall low sex ratios and the sex ratios in old ages are high. These groups may still have higher female mortality than male and many males out migrate for employment elsewhere. Traditionally the people who join the army in foreign countries and at home belong to these two cultural groups . Raute, Darai and Raji groups exhibit very low sex ratios throughout all ages and so do the Danwar/Jirel group. The low caste is seen having very high sex ratio in old ages. All these findings open up new research areas with regard to male and female populations of different cultural groups. It would be interesting to know what happens to the male folks in these populations, why they are too few compared to their female counterparts.

CONCLUSIONS

The analysis clearly points out that the sex ratio in 1981 is out of range. This situation was created because of high sex ratios in early ages and old ages in 1981 while the sex ratio for the 15-59 was normal. Since the 15-59 age group is likely to be affected by immigration (because migrants are usually of this age group) the overall sex ratio in 1981 was, to a large extent, affected by over-enumeration of male population. Over-enumeration was possible because of the highest monetary incentive given in 1981 to field workers compared to all other censuses (see Karki, 1992, for more). However, it cannot be completely ruled out that the 1981 sex ratio was not affected by immigration of males but this factors may have contributed only moderately.

Examination of sex ratios by caste/ethnic groups confirms the hypothesis that male migration is common primarily among specific caste/ethnic groups. The analysis also opens up new research areas as to why in certain caste/ethnic groups sex ratios are too low throughout all ages. It also shows that some cultural groups may be enjoying female life expectancy than others. Therefore it calls for demographic research focusing on specific socio-cultural groups.

SELECTED REFERENCES

Central Bureau of Statistic (1992) *Population Census*- 1991, (Advanced Tables), Vol. 1, National Planning Commission secretariat, His Majesty Government, Kathmandu.

_____ (1975) *Population Census* - 1971. NPCS, HMG, Kathmandu.

_____ (1987) *Population Monograph of Nepal*. NPCS, HMG, Kathmandu.

_____ (1084) *Population Census* - 1981 NPCS, HMG, Kathmandu.

_____ (1967) *Results of the 1961 National Census of Nepal*. NPCS, HMG, Kathmandu.

_____ (1992) *Four Monthly Statistical Bulletin*. Vol. 43 (2). NPCS, HMG, Kathmandu.

_____ (1976) *The Demographic Sample Survey of Nepal. 1974/75*, NPCS, HMG, Kathmandu.

_____ (1978) *The Demographic Sample Survey of Nepal 1977/78*, NPCS, HMG, Kathmandu.

Department of Statistics (1958) *Population Census of Nepal 1952/54*. Basantapur, Kathmandu.

Gubhaju, B.B. (1974) *An Abridged Life Table Construction for Nepal for the Period 1961-70*. (mimeo), Nepal FP/MCH Project, Kathmandu.

Krotki, Karol J. and Harsha N. Thakur (1971) "Estimates of Population Size and Growth from the 1952/54 and 1961 Censuses of the Kingdom of Nepal". *Population Studies* 25 (1).

Karki, Y.B. (1992) *Estimates and Projections of Population, Nepal: 1991-2031*, Paper submitted to the U.N. Population Fund. Country Office, Kathmandu.

Newell, C (1988) *Methods and Muslim Demography*, Belhaven Press, London.

Pollard, A. H. Farhat Yusaf and G.N. Pollard (1981) *Demographic Techniques*, Pergamon Press (Surded)

Pressat, (1978) *Statistical Demography*, Methuen University Press Cambridge.