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The Changing Pattern of Sex Ratio in Punjab

THE persistent decline in the proportion of females in India's population requires a thorough scientific investigation because of its serious implications for public health and infant and maternal care. Dr. Visaria has earlier dealt at length with this problem and the causes thereof in his monograph, 'The Sex Ratio of the Population of India' with the help of data of the 1961 and earlier censuses. The present study focuses attention mainly on the causes for the comparatively higher deficit of females in the Northern region, with particular reference to Punjab. We use for this purpose, data of the 1971 Census and estimates obtained from the data generated by the 'Sample Registration System' for 1968 and 1969.

Trends in Sex Ratio in Punjab and its Districts 1901-71

The sex ratio[1] for Punjab has been gradually increasing since 1911 following the decline in 1901-11. This is an important demographic trend in Punjab, different from the other states. The pattern of change in the sex ratio for the state during 1901-71 has been exhibited by most of its districts. For example, the sex ratios for the districts of Gurdaspur, Amritsar, Jullundur and Ropar have been consistently on the increase since 1901 and the sex ratios for

1. Throughout this paper sex-ratio has been defined as number of females per 1000 males.

the districts of Kapurthala, Patiala and Sangrur have been increasing since 1951 (from which date data are available for these districts). Sex ratio for the districts of Ferozepur, Ludhiana and Hoshiarpur had been consistently increasing upto 1951 but had been fluctuating afterwards.

Sex Ratio by Major Religions Groups in Punjab

It is interesting in this regard to examine the sex ratio of sections of population following different faiths. Among major religious groups in India, Sikhs had the lowest sex ratio of 859 in 1971. The highest sex ratio is found among Christians (986). Sikhs and Christians constituted 1.9 per cent and 2.6 per cent respectively of India's population in 1971. Seventy nine per cent of Sikhs in India live in Punjab and the rest are scattered in Haryana (6 per cent), Uttar Pradesh (3.6 per cent), Rajasthan (3.3 per cent) and Delhi (2.8 per cent). Within the state of Punjab, Sikhs form the largest religious group comprising more than 60 per cent of the population. Hindus occupy the second position (37.5 per cent). Together, Sikhs and Hindus, account for 98 per cent of the state population and more than 92 per cent of the population in each of its districts. Between the two, Sikhs predominate in all the districts except Gurdaspur, Jullundur and Hoshiarpur where Hindus outnumber Sikhs. Amritsar, Bhatinda and Sangrur districts, with predominantly high proportions of Sikhs have low sex ratios. In five out of eleven districts of Punjab, four of which record relative preponderance of Sikhs, the sex ratio for Hindus is higher than Sikhs. Sikhs are a fast growing community, the overall growth rate recorded by the Sikhs during 1961-71 being 32.3 per cent, as compared to 24.8 per cent for the general population of the country. The growth rate of Sikhs in Punjab was higher than that of the total population in each of its districts. The sex ratios of Sikhs were lower than that of the total population in the districts of Gurdaspur, Ferozepur, Ropar, Sangrur and Bhatinda.

Sex Ratio by Age Groups

Available data indicate that males cut-number females in Punjab in all ages except between 25-39. With the advancing age, the sex ratio declines and a marked deficit of females is observed in ages above 50. The deficit of females in Punjab starts from the youngest age-group (0-4). This is in contrast to the Southern states which show comparatively higher sex ratios for the younger, reproductive and advanced age-groups and consequently also for the total population.

Sex Ratios in Ruras and Urban Areas

Table 1 below gives the sex ratios for rural and urban parts of Punjab from 1901 to 1971 :

TABLE 1—SEX RATIOS IN RURAL AND URBAN AREAS, PUNJAB 1901-71

	1901	*1911*	*1921*	*1931*	*1941*	*1951*	*1961*	*1971*
Rural	836	785	808	832	855	854	865	868
Urban	804	740	735	721	750	807	817	856

SOURCE : General Population Tables of Punjab, 1971 Census.

The sex ratios for urban areas are lower compared to rural areas in each of the decades. This is mainly due to male selectivity of rural to urban migration. The sex ratio of the rural population has been gradually increasing since 1911 (a slight fall during 1941-51), while the sex ratio of the urban population had decreased during 1901-31, followed by a gradual increase which became quite pronounced in 1961-71. The latter increase is partly due to heavy out migration from the urban areas of Punjab to other states of India.

Factors Caasing Imbalance in the Sexes

The sex ratio of Punjab, with all the increase it had registered since 1901 has been the lowest at 865 among the major states of India in 1971. The following are advanced as factors underlying the high deficit of females in the Northern region in general and in Punjab, in particular.

(i) Influence of spatial mobility on the sex ratio.
(ii) Sex selective omissions in census count,
(iii) Sex ratio at birth in favour of males.
(iv) Sex differentials in mortality adverse to females.

Punjab is known to be a land of outgoing people. For the decade 1961-71, Sinha[2] has estimated a net out-migration rate of —4.7 per cent for Punjab,

2. Sinha, S, K., Internal migration (1971) and population re-distribution, in : Chari, R. B, (ed.X 1975, New Delhi, 119-134.

which is the highest among the losing states of Andhra Pradesh, Gujarat, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh. The role of this cut-migration in changing the sex ratio of Punjab is no doubt significant. At the same time its relevance for the development of the state cannot be ignored. Significantly, as noted by Gosal[3] in his study on migration in Punjab, out-migration has been the highest from areas where density of population is the highest, land holdings are very small and large areas are affected by water logging.

With regard to internal mobility of people within Punjab, relevant data for inter-district migration are not as yet available for 1971. For the composite state of Punjab (including Haryana and parts of present Himachal Pradesh), the districts of Hoshiarpur, Jullundur, Amritsar and Gurdaspur experienced net cut-migration during 1951-61 whereas the districts of Ferozepur, Bhatinda, Ludhiana, Kapurthala, Sangrur and Patiala had net immigration. These districts constitute in the present Punjab and their general characteristics have remained more or less unchanged. Districts showing high sex ratio in 1971 are Gurdaspur, Jullundur, Kapurthala and Hoshiarpur. Gurdaspur has poor type of agriculture and outmigration of men to the more prosperous districts such as Amritsar might have led to a higher sex ratio. Jullundur and Hoshiarpur districts suffer from congestion in agriculture and outmigration from their villages is substantial. Jullundur city has low sex ratio presumably because of its industrial growth attracting a large number of working men. Similar is the inmigration of men for work in the industrial and commercial towns of Amritsar and Ludhiana. Under-developed districts such as Ropar, Patiala, Sangrur and Bhatinda form a block with a low sex ratio. The significant inmigration into these districts is due to expansion of cultivation, large-sized holdings and canal irrigation facilities attracting labour from outside in agricultural operations. Ferozepur district, which is quite prosperous in agriculture, too has larger holdings with canal irrigation facilities attracting agricultural labourers from surrounding areas. In addition to these migration movements, induced by economic factors, the sex composition of the district population is influenced by inmigration of females through matrimony.

3. **Gosal, G. S., Redistribution of Population in Punjab** during 1951-61. **In :Bose,** Ashish **(ed.),** 1951-61. Calcutta, Allied Publishers, 1967 : 105-129.

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Let us now examine the hypothesis that the regional variations in the sex ratio in India are due to sex differentials in under-enumeration in census. The results of post-enumeration check for the 1971 census (Table 2 below) reveal that, among the four groups for states, group A comprising the four southern states shows the lowest net omission for both males and females. The highest omission of females is observed in group D (Haryana, Punjab, Delhi and Uttar Pradesh) and of males in group C comprising the Western states. Further, the sex differential in undercount is most marked in the Northern group which is more deficit in females compared to other groups. Thus we see that sex differentials in under count vary between regions and female under count is comparatively higher in the Northern region compared toother regions. However, the post-enumeration checks being subject to the same limitations as the initial census itself, imbalance in the sexes cannot be completely explained by these checks.

TABLE 2—NET OMISSION RATE PER 1000 ENUMERATED PERSONS BY SEX AND GROUPS OF STATES, 1971 CENSUS

	C			
Male	11.4	14.6	18.1	16.9
Female	12.9	16.6	19.2	25.9

SOURCE : 1971 Census.

NOTE : Since the sample size for individual states was not adequate enough to provide reliable net error, the states were grouped in order to have net error within the desired level of precision.

Sex ratio at birth (female births per 1000 male births) obtained from 'Sample Registration System' (rural) data of 1969, for the Northern states of Haryana, Jammu and Kashmir, Punjab and Rajasthan are the lowest amongst the major states of India. The pattern of inter-state variation in sex ratios at birth is similar to the corresponding pattern of Variation of the population sex ratio, indicating some association between the two. A correlation coefficient calculated between the sex ratio at birth and the corresponding sex ratios in the population has a value of + 0.65 and is statistically significant at 5 per

cent level. This indicates that a higher sex ratio at birth leads to a higher sex ratio in the population. The sex ratios at birth from Registration data exhibit a similar pattern but the values though are comparatively lower indicating sex selective under-registration of births arising from preference for male children.

Several factors for explaining regional variations in the sex ratio at birth in India have been advanced. These include racial and cultural differences[4], differences in food habits and variation in climate. However, we have no data to study the variations in sex ratios at birth by these factors.

To take up infant mortality first, it has been observed that female infants are subject to greater risks of mortality than males in Northern states of Punjab, Rajasthan, Uttar Pradesh and the Western States of Gujarat and Maharashtra. The sex differentials in infant mortality are most marked in Punjab and Uttar Pradesh. On the other hand, the Southern states have lower female mortality during infancy compared to males. Assam in the East and Haryana and J & K in the North have also indicated lower female infant mortality. For an idea of the overall impact of sex differentials in mortality conditions, we quote death rates for selected age-groups separately for Punjab and the four Southern states.

TABLE 3—AGE-SPECIFIC DEATH RATES BY SEX SRS (RURAL), 1969

0-4	24.3	37.2	49.3	49.4	51.2	48.2	23.9	22.3		54.4
5-14	2.2	2.0	4.3	4.5	4.1	4.0	1.8	2.4	3.9	4.0
20-24	0.6	3.2	4.0	4.7	2.7	5.5	2.0	1.4	4.9	6.7
15-49	2.7	2.8	6.4	5.8	4.4	6.0	3.7	2.7	6.7	7.7
50-54	9.4	17.0	20.6	15.5	21.4	14.4	9.5	10.1	22.2	19.7
70+	112.4	91.7	127.1	132.7	110.4	101.4	96.4	90.4	140.2	141.0
Total	11.3	12.0	17.4	16.9	15.6	15.1	9.5	8.5	18.6	18.9

SOURCE : 'Measures of Fertility and Mortality', SRS Analytical Series No. 2, 1972, Registrar General, India.

4. Jaster Zebski, The Sex ratio at birth. Vol. II, 1919.

The pattern of age specific death rates in Punjab indicates higher female mortality rates compared to males in the age-groups (0-4), (20-24) and (50-54) and the sex differentials are highly marked. The female mortality rate in the reproductive period (15-49) is comparable to males indicating improvement in maternal mortality in Punjab. The mortality rate in the advanced adult ages (70+) for females is lower than males. The crude death rate in Punjab is marginally higher for females than for males. Inter-state variations in sex differentials in mortality rates in specific ages are quite marked. Sex differential in mortality in Punjab is the highest in age group (0-4) among the given states. This has perhaps led to the lowest sex ratio in Punjab in this age-group. The sex differentials in mortality in the reproductive ages are not significant and therefore the pattern of sex ratio in these ages in Punjab is not much different from the Southern states. In the age-group (50-54), the sex differentials in mortality in Punjab are higher compared to other states, leading to very low sex ratio in Punjab in these ages. In the advanced adult ages (70+) lower female mortality in Punjab does not, however, explain the corresponding low sex ratio in the state in these ages.