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POVERTY TEN YEARS ON:
INCOMES AND WORK AMONG THE POOR
OF RURAL BIHAR

by

Gerry Rodgers

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Preface

This is a small study of a rather restricted group of wage labour households in rural Bihar. It is therefore limited both in scope and in ambition. A larger study of related issues, "The dynamics of poverty and employment in Bihar", is presently in progress at the A.N. Sinha Institute of Social Studies, Patna, and is directed by Professor P.H. Prasad and myself. Fieldwork for this larger study, which covers a sample of villages from the plains of Bihar, is now almost complete, and a series of papers is in preparation. Some of the rather tentative conclusions in the present paper will receive more systematic attention in the larger study.

I would like to thank Parashuram Sah, who worked with me in rural Bihar in 1970-71 and again in 1981, and greatly contributed to this study. Bachchoo Sharma of the A.N. Sinha Institute of Social Studies also assisted in 1981, and I would like to thank him, Professor P.H. Prasad, and other staff of the A.N. Sinha Institute of Social Studies for their comments and contributions to the present paper. Janine Rodgers was also engaged in separate fieldwork in several of the villages studied here, and has contributed substantially to this paper. Much of the analysis relies on her findings, especially in the areas of health, food and nutrition. Participants in an ILO seminar in January 1983 also made a number of helpful comments.

Gerry Rodgers

I. Introduction

In 1970-71, seven villages in the Kosi region of north-east Bihar were studied in the course of an analysis of the impact of public works on rural poverty (see Rodgers, 1973). These villages were selected for their proximity to public works projects, and so are not statistically representative. But they are geographically widely distributed, and cover a range of agricultural, cultural and economic situations. Within each village, a random sample of agricultural labourers and other low income strata was surveyed, with a view to establishing asset, employment and income profiles.

In 1981, five of these villages were visited for a second time.¹ A systematic attempt was made to relocate and reinterview households covered in 1971 (or successor households, where families had divided), and to obtain basic information on households which had vanished because of deaths or which had out-migrated. The sample is small - about 50 households in 1971, of which 46 were traced in 1981 - but their fortunes over the decade illustrate the evolution of poverty and employment during this period.

Table 1 gives an idea of the basic economic, social and demographic characteristics of the Kosi region. It is essentially agricultural, with a moderate level of irrigation and fairly high rainfall; there is little industry, and a considerable agricultural wage labour population. There is a substantial Moslem minority - actually a majority over parts of the region. The area is technologically and economically backward compared to the rest of Bihar, and even more so relative to other parts of India.

II. Demographic Changes

The growth in numbers of the sample population from 1971 to 1981 can be computed in several different ways. For analytical purposes, the most interesting computation is the natural growth of the 1971 population, that is excluding in-migrants but including out-migrants

¹ Of the two villages not covered in 1981, one was inaccessible due to floods during the period of fieldwork, while the second was excluded because only two households had been covered in 1971.

Table 1: General statistics on the Kosi area
(Purnea, Saharsa and Katihar Districts)

Population	1961	4.8 million
	1971	6.4 million
	1981	8.0 million
Sex ratio	1981	108 males/100 females
Urban (%)	1971	5.6
	1981	7.4
Literacy (%)	1971	15.6 (male 24.7, female 6.1)
	1981	19.8 (male 29.4, female 9.6)
% cultivators	1971	41.4
	1981	37.8 ¹
% agricultural labourers	1971	44.5
	1981	49.2 ¹
% other occupations	1971	14.1
	1981	12.4 ¹
Area irrigated (%)	1976-77	21.4
Major crops (% of gross area sown, 1975-76)		
	Paddy	58
	Wheat	16
	Jute	8
	Maize	9
% of landholdings over 5 acres, 1970-71:		6
% of land in holdings over 5 acres, 1970-71:		39
% Moslem, 1961:		38

¹ Does not include "marginal workers" (6 per cent of total - mostly women).

Sources: Government of Bihar (1978, 1982); Census of India, 1981; Census of India, 1971.

(and their children). On this basis the population increased from 294 to 326 in 10 years (an 11 per cent increase) as a result of 84 surviving births and 52 deaths (among those present in 1971).¹ These figures have been adjusted to cover exactly a 10 year interval. Details are reported in table 2.

Table 2: Kosi labourers, populations 1971 and 1981

	Males		Females		Total		Mortality (%) 1971-81
	1971	1981	1971	1981	1971	1981	
0-9	47	51	44	33	91	84	
10-19	39	44	29	37	68	81	(11)
20-29	20	34	25	27	45	61	(10)
30-39	17	19	19	21	36	40	(11)
40-49	11	14	14	17	25	31	(14)
50-59	15	7	6	12	21	19	(24)
60+	2	7	6	3	8	10	(66)
Total	151	176	143	150	294	326	

¹ For this calculation, children born after 1971 were counted if their fathers were in the 1971 population. Demographers usually compute growth through females, but in the male-dominated, patrilineal households which prevail in Bihar it is easier to work through males, rather than to try to obtain data on births to women who have out-migrated for marriage. Four out-migrant households, for which 1981 data were not available, were excluded from calculations of both initial and terminal populations.

If the 1971 sample is representative of the 1971 population, the same should be true in 1981; but concentration of the 1971 population in particular phases of the life cycle could bias the conclusions about changes over time. I have not detected any obvious biases, and the age pyramid in 1981 looks reasonably balanced, but the possibility of bias cannot be excluded. For instance, agricultural labour households may tend to have relatively young heads if population is increasing and land remains concentrated in households with older heads. In this case, the sample distribution in 1981 will no longer be representative of all agricultural labourers - new households will be under-represented. Since I have no hard information on this sort of bias, it is neglected in the remainder of this paper.

Of the original 50 households, 5 had out-migrated, and 3 had disappeared through deaths. Thirteen households had divided, forming a total of 28 new households: of the 15 additional households 3 had out-migrated to distant or urban destinations. This gave:

(i) Total households, 1981: 62

(ii) Total local households, 1981: 54

Average household size declined from 6.4 persons in 1971 to 5.6 in 1981.

Several points are worth noting. Firstly, mortality is high. Accurate mortality estimates can be obtained by comparing the population aged x in 1971 with the (same) population aged $x + 10$ in 1981. Percentage mortality rates for the decade are reported in the right-most column of table 2.

Secondly, the total population in the 0 to 9 year age group appears to have declined, contrary to the normal pattern in a growing population. There are several possible explanations. One would be reporting bias. This is always a possibility, but similar survey techniques were used in 1971 and 1981 so there is no reason to expect much more bias in the latter year.¹ The 1981 resurvey produced only one case of a household member incorrectly omitted in 1971. A second explanation would be low fertility; the age-sex structure shows a fairly normal concentration in childbearing ages, so this would have to be due to low intrinsic fertility rates. But the main reason would appear to be the high level of mortality; indeed, it is difficult to explain the change in age distribution from 1971 to 1981 unless we assume that mortality is rising. If it were high but stable, large changes in the age structure would be unlikely without substantial fertility changes.

Thirdly, the growth in the male population exceeded the growth in the female population, the difference being mainly accounted for by the 0-9 year age group - i.e. by births since 1971, and by deaths in this group - rather than by deaths in the adult population. In fact, the

¹ Except perhaps for four households for which information was obtained from third parties in 1981.

shift in the sex ratio for 0 to 9 year olds is surprisingly large; it changes from 1.07 in 1971 to 1.55 in 1981. Among possible reasons one should again note reporting bias, but as mentioned above there is reason to think that this will not be a serious problem. This leaves two possibilities:

(i) chance: This cannot be ruled out, given the small sample size. The probability of obtaining 33 or less of girls out of 84 is 3 per cent if the numbers of girls and boys in the population are equal, and 6 per cent if the reported sex ratio for 1971 accurately reflects the population mean.

(ii) higher mortality among girls. This is a likely factor, and probably the most important. There is some supporting evidence in the data, in that the mortality rate for boys aged 0-9 in 1971 is 6 per cent, that for girls 16 per cent - the latter figure is significantly higher than the former at the 10 per cent level despite the small sample size.¹ A mortality differential of this order would be more than sufficient to generate the observed sex ratio among 0 to 9 year olds, on quite plausible assumptions.² Here again, it seems probable that sex differentials in mortality have been rising, since the sex ratio of the (surviving) population born in 1971-81 is much more male-biased than the sex ratio of (surviving) cohorts born before 1971. Substantial sex differentials in mortality were also reported in Bangladesh by d'Souza and Chen (1980); they found female mortality to be over 50 per cent higher than male mortality in the 1-4 year age group in a "normal"

¹ However no such differential is observed in the adult population, nor is the adult sex ratio weighted against females. This might be the result of migration and marriage patterns prior to 1971, but it could also imply that high sex differentials in mortality are a relatively recent phenomenon.

² For instance, a crude birth rate of 45 per thousand would imply roughly 140 births over 1971-81. The choice of this CBR for the example was based on calculations reported below. With a plausible sex ratio at birth of 72 male to 68 female, the observed 1981 population would imply death rates of 29 per cent for males and 51 per cent for females, a ratio lower than that observed during 1971-81 for those aged less than 9 years in 1971, and not a great deal higher than that reported by other authors.

period, and over 60 per cent in a period of "food shortage". Substantial, although smaller differentials were also recorded in Bangladesh for all other ages above one month.

Overall indices of fertility and mortality have to be estimated indirectly from these data, because no direct information is available on children born after 1971 and died before 1981. This information was not collected because of its vulnerability to recall error. However, if we assume that the mortality pattern of those alive in 1971 follows one of the standard life tables, it is possible to estimate these unknown rates. For instance, model West table level 5 (Coale and Demeny, 1966) gives a probability for males aged 10-19 to survive to ages 20-29 of about 10.6 per cent, compared with the 11 per cent recorded in table 2 for the whole population aged 10 to 19. The same life table would imply mortality from age 0 to age 10 of some 45 per cent, and computing back one can work out the corresponding overall fertility rate.

An iterative procedure which finds the best fit between the population changes observed, and those predicted by different life tables, was used (Arriaga et al., 1976; program TWOCN). To reduce random fluctuations due to the small sample size, male and female populations were aggregated and the total then compared alternately with male and female mortality patterns. The results are quite startling. Whatever the assumptions used - male or female life expectancy, life tables North, South, East or West - no estimate of life expectancy at birth exceeded 30 years. The highest estimate was 28.6 years, using males, model West. This estimate also gives a crude birth rate of approximately 45 per thousand, a crude death rate of 35 per thousand, and an infant mortality rate in excess of 300 per thousand.

These results are dependent on inferences about mortality up to age 10. They are particularly sensitive to mortality in the first year of life, and unfortunately this is the measure on which there is least information in the data.¹ The infant mortality level thus has to be

¹ We have infant mortality only for those aged 0 to 1 in 1971, i.e. only one year of data; for mortality in the eleventh year, by contrast, we have deaths in 1972 of those aged 10 in 1971, deaths in

mainly inferred from overall age-sex patterns of mortality, so increasing the margin of error in the results.

Nevertheless, the conclusion is clear that mortality among this group of the rural poor is exceedingly high, both absolutely, and, as table 3 shows, relative to other groups in India.¹ It can be seen from table 3 that fertility levels also appear to be high, although here the difference, from the rest of Bihar at least, is smaller, so the net outcome is a population growth significantly lower than that of the population of India or of Bihar as a whole. As we have seen, there is at least a hint in the data that this is partly due to rising mortality, particularly among girls.

It is often thought that households tend to be immobile, and that most migrants tend to be individuals. In our sample, however, there is some household mobility - 5 out of 50, as noted above, plus 3 of the 15 new households. Individual mobility is higher than this, but the rate of permanent out-migration is not much higher. Excluding the out-migration of women for marriage, the individual migration rate comes to 13 per cent (as against 10 per cent for households)² - 16 per cent for males, 9 per cent for females. Out-migration of those aged 20 to 29 in 1971 was 29 per cent, reflecting moves of young adults with newly formed (but small) households.

1973 of those aged 9 in 1971, etc. - ten observations in all. As it happens, we have rather few observations of children aged 0-1 in 1971. This may be due to under-reporting, age misreporting, or chance; but it reduces the reliability of this estimate further - since mortality tends to be higher in this age group, and we have too few observations, our overall mortality estimates will tend to be biased downwards.

¹ Some other estimates of infant or child mortality in the Kosi area are available for the population as a whole. J. Rodgers (1976) estimated at least 195 per thousand mortality up to age 5 in 1971; Blaikie (1976) estimated 236 per thousand mortality up to age 5. These figures are both considerably below our estimates here (i.e. 300 up to 1 year), but they were estimated for a broader population cross-section, including better-off groups. In addition, since both estimates were based on recall data, they are more vulnerable to underestimation than are our estimates here. Blaikie only found slight excess female mortality, but this is again vulnerable to reporting bias.

² Technically, migration should be adjusted for mortality in the intervening period. This would raise the rate, roughly, from 13 to 14 per cent.