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Demographic Characteristics of Deaths and Life Expectancy in Rural Hospital, Ballabgarh (AIIMS) of Haryana State

THE working group of the Planning Commission on population policy in India (1980) recommended that efforts should be directed at reducing the crude death rate to 9 per 1,000 population, and to increase the life expectancy at birth of both sexes to 64 years, by A.D. 2000.

Ballabgarh block in Haryana has 99 villages with a population of 1.4 lakhs (1986). The area of the block is 370 sq km (south-east and south-west). The town of Ballabgarh is 35 km from New Delhi on the Delhi-Agra highway. The Comprehensive Rural Health Services Project of the All India Institute of Medical Sciences caters to the health needs of 30 villages in this block, covering a total population of 56,580 (1986) i.e. 43.5 per cent of the total block population. The area covered by the project is 160 sq km (south-east and south-west). The project was started in 1966 with the collaboration of Haryana state and the Rockefeller Foundation. In 1966, the crude birth rate and the crude death rate of this block was 52.9 and 16.1 per 1,000 population, respectively. The All India Institute of Medical Sciences established a 53-bed hospital at Ballabgarh town. This hospital serves as a referral institution for three primary health centres and 14 extension health centres (sub-centres) in this area. The present study was undertaken to evaluate the changes in the health profile after 20 years of existence of the project.

The project has two primary health centres (PHCs) in the block for the 30 villages at Dayalpur and Chhainsa. There are six extension health centres, each covering a population of 5,000- 9,000, and including 3-5 villages. One male and one female multipurpose worker have been posted at each of these centres. Each household in the area is visited once monthly by the male and female workers, in accordance with the beat programme set in advance for the entire year. The female worker renders all services related to maternal and child health, while the male worker is responsible for activities like detection and recording of vital events (births, deaths, migration), control of communicable diseases, family welfare, immunisation, etc. He also records the morbidity pattern of the family since his last visit. Both the workers are supervised by a Field Supervisor and a Lady Health Visitor, who are in turn supervised by the medical officers at the PHC and the project headquarters.

In the project area, all the households have been identified on the basis of 'chulhas' (cooking) i.e. all the persons living together and eating from a common kitchen are classified

as members of the same household. Details of the families, such as caste, names of the members, relation to the head of the household, age, literacy status, sex, occupation etc. are recorded on the family demographic record. A yearly census check is also carried out, and the information is updated in relation to births, deaths, occupational changes, educational changes etc. Births and deaths are also entered in the respective registers and the birth and death cards. All the cards are subsequently verified by the Field Supervisor and the doctors. The annual census check provides the denominators for the calculation of some of the important health indicators, i.e. crude birth rate, crude death rate, neonatal mortality rate, infant mortality rate, maternal mortality rate, general fertility rate, net reproduction rate and proportional mortality rate etc.

Materials and Methods

Four hundred thirty-one deaths recorded in 1986, in the project area, were studied as also the total deaths since the inception of the project. Age, sex, caste, seasonal variation of births and deaths, and vital events recorded by the village *chowkidar*, the cause of death and the life expectancy at birth of all ages, in the different age groups (by abridged method for both sexes separately), were analysed.

This analysis enabled us to highlight the areas requiring further attention. In other words, the mortality experience would serve to reorient the service programme and also helps in the teaching activities.

Results and Discussion

Table 1 presents the age-specific deaths in the population. Annual death rates per 1,000 population represent the deaths among the recognised residents of the 30 villages of the project. This also helps in knowing whether the death occurred in the village or outside. This residential death rate contrasts with the more usual area rate. Calculation of the age-specific death rates is facilitated by the proper maintenance of the demographic records.

TABLE 1 : DISTRIBUTION OF POPULATION AND DEATHS BY AGE AND SEX

Age Groups in yrs.	Male			Female			Total		
	No. of Deaths	Pop.	DR/1000 Pop.	No. of Deaths	Pop.	DR/1000 Pop.	No. of Deaths	Pop.	DR/1000 Pop.
0-1	73	1,065	68.5	66	871	75.8	139	1,936	71.8
1-4	14	3,814	3.7	30	3,367	8.9	44	7,181	6.1
5-14	12	8,201	1.5	13	7,072	1.8	25	15,273	1.6
15-44	32	13,140	2.4	27	11,329	2.4	59	24,469	2.4
45-64	42	3,164	13.3	23	2,798	8.2	65	5,962	10.9
65 +	56	1,018	55.0	43	741	58.0	99	1,759	56.3
Total	229	30,402	7.5	202	26,178	7.7	431	56,580	7.6

Although the caste system was abrogated by decree, it still persists in the villages and serves as a realistic index of the social and economic status. The Jats, Brahmins, Rajputs and the Scheduled Castes are the more important castes in these villages. Excepting the Scheduled Castes, the others are mostly farmers with small land holdings. As seen in Table 2, the Jats constituted the single largest group. The service castes include the Lohars, Kumhars, Nais, Dhobhis, Bharbujas etc. Caste-wise analysis showed the maximum death rates among the Scheduled Castes.

TABLE 2 : CASTEWISE DISTRIBUTION OF DEATHS IN THE PROJECT AREA

<i>Caste</i>	<i>Population</i>	<i>No. of Deaths</i>	<i>Death Rate/1000 Pop.</i>
Jat	12,698	86	6.8
Rajput	7,566	53	7.0
Brahmans	8,866	65	7.3
Harijans	8,745	97	11.1
Scheduled Castes	9,777	48	4.9
Others	8,928	82	9.2
Total	56,580	431	7.6

The climate in this area cannot be exactly differentiated into the conventional four seasons. A more practical demarcation is the winter months of December, January and February, the spring months of March and April, the hot-dry period of May and June, the hot-wet monsoon period of July, August and September, and autumn comprising October and November. The high point in the frequency of deaths is in the hot-wet season (Table 3). A high birth rate is also seen in this season. Seasonal differences in the infant mortality rate and the neonatal mortality rate follow the same pattern as the crude death rates. This is to be expected as infant deaths constitute a large proportion of the total deaths. In the present study, however, the spring season was seen to have the highest infant and neonatal mortality, while the hot-wet and autumn seasons constituted the most favourable rates of the year.

The Haryana government appoints chowkidars in the villages to record the vital events. When these records were compared with the records of the health workers, it was seen that only 66.1 per cent of the deaths which occurred in these villages were recorded by the chowkidars.

A sex-wise comparison of the deaths in the project area showed that the three commonest causes were respiratory disorders, digestive disorders and causes peculiar to infancy, in both sexes (Table 4). The three commonest causes reported in our country in the rural areas are senility, respiratory disorders and causes peculiar to infancy.

The data were also used to construct a life table by the abridged method, using the mortality data of 1986 (Table 5). The life expectancy at birth for the males, females and combined was 66.2, 66.0 and 66.0 years respectively. This is much higher than the national life expectancy, and also higher than the targeted life expectancy at birth of 64 years for both sexes, by A.D. 2000. This it is clear that the population served by the Comprehensive Rural Health Services Project of the All India Institute of Medical Sciences has a better health profile than most populations in the country. This is a clear and positive indicator that projects of this nature can be replicated in problem districts of the country, so as to improve the health status of the population.

TABLE 3 : SEASONAL VARIATIONS IN BIRTHS AND MORTALITY RATES

<i>Months</i>	<i>Live Born</i>	<i>No. of Neonate Deaths</i>	<i>NMR</i>	<i>No. of Infant Deaths</i>	<i>IMR</i>	<i>No. of Deaths for All Ages</i>	<i>Death Rate/1000 Pop.</i>	<i>BR/1000 Pop.</i>
Winter	364	14	38.5	31	85.2	93	6.6	25.7
Dec.	127	12	94.5	18	141.7	47	10.0	26.9
Jan.	137	2	14.6	11	80.3	23	4.9	29.0
Feb.	100	-	-	2	20.0	23	4.9	21.2
Spring	165	6	36.4	21	127.3	64	6.8	17.5
March	76	2	26.3	9	118.4	33	7.0	16.1
April	89	4	44.9	12	134.8	31	6.6	18.8
Hot-Dry	268	9	33.6	30	111.9	78	8.3	28.4
May	124	2	16.1	10	80.6	30	6.4	26.3
June	144	7	48.6	20	138.9	48	10.2	30.6
Hot-Wet	783	19	24.3	37	47.2	132	9.3	55.4
July	245	5	20.4	10	40.8	45	9.6	52.0
Aug.	279	9	32.3	17	60.9	54	11.4	59.2
Sept.	259	5	19.3	10	38.6	33	7.0	55.0
Autumn	396	10	25.2	20	50.5	64	6.8	42.0
Oct.	213	6	28.2	13	61.0	31	6.6	45.1
Nov.	183	4	21.9	7	38.2	33	7.0	38.8
Total	1976	58	29.3	139	70.3	431	7.6	34.9

TABLE 4 : CAUSE OF MORTALITY

<i>Rank Order</i>	<i>Diseases Groups</i>	<i>Male</i>		<i>Female</i>		<i>Total</i>	
		<i>Nos</i>	<i>%</i>	<i>Nos</i>	<i>%</i>	<i>Nos</i>	<i>%</i>
1.	Cough (Disorders of resp. system)	49	21.4	45	21.3	94	21.8
2.	Digestive Disorders	35	15.3	48	23.8	83	19.3
3.	Causes Peculiar to Infancy	40	17.5	26	12.9	66	15.3
4.	Senility	33	14.4	22	10.9	55	12.8
5.	Fevers	19	8.3	26	12.9	45	10.4
6.	Accidents & Injuries	24	10.5	14	6.9	38	8.8
7.	Other dear Symptoms	12	5.2	5	2.5	17	3.9
8.	Others	6	2.6	5	2.5	11	2.5
9.	Diseases of the circulatory system	5	2.2	5	2.5	10	2.3
10.	Disorders of the central nervous system	6	2.6	2	1.0	8	1.9
11.	Child Birth & Pregnancy	-	-	4	2.4	4	0.9
Total		229	100.0	202	100.0	431	100.0

TABLE 5 : LIFE EXPECTANCY IN RURAL HEALTH PROJECT, BALLABGARH

<i>Age Groups</i>	<i>Expectation of Life in Yrs</i>		
	<i>Male</i>	<i>Female</i>	<i>Both</i>
<1	66.2	66.0	66.0
<2	70.3	70.4	70.2
<3	70.5	71.0	70.6
<4	70.4	70.2	70.3
<5	70.2	69.5	70.0
5-10	69.7	68.9	69.4
10-15	64.7	64.0	64.5
15-19	59.8	59.1	59.5
20-24	54.8	54.2	54.6
25-29	49.9	49.3	49.7
30-34	44.9	44.5	44.7
35-39	40.0	39.6	39.8
40-44	35.1	34.7	34.9
45-49	30.2	29.8	30.0
50-49	25.3	24.9	25.2
50-59	20.4	20.0	20.3
60-64	15.6	15.2	15.5
65-69	10.7	10.4	10.6
70-74	5.8	5.7	5.8
75+	-	-	-