



A STUDY OF SOME ASPECTS OF MORTALITY AND MEDICAL FACILITIES IN INDIA

By

M. V. Raman

Officer-in-charge

Demography Unit

Indian Statistical Institute, Calcutta

The population:

The population of India, 439 million in 1961, is increasing at over 2 per cent a year. The growth rate which was only moderate not very long ago received a fillip in the last decade and this in the context of developmental planning is naturally causing concern to the government.

The population at various censuses and the decennial growth rates are shown in Table I.

941 females per 1000 males in the population, the corresponding proportions for the rural and urban sectors being 963 and 845 respectively.

The population distribution in three broad age groups is shown below for India and a few other countries. From the point of view of developmental planning, the large proportion of persons in the earlier ages as a result of

Table I

Population and growth rates since 1901.

	1901	1911	1921	1931	1941	1951	1961
Population	23,62,81,245		25,13,52,261		31,87,01,012		43,92,35,082
		25,21,22,410		27,90,15,498		36,11,29,122	
Decennial percentage variation		+5.7	-0.3	+11.0	+13.5	+14.0	+21.5

*adjusted for estimated inflation in Punjab and West Bengal in 1941 Census.

Sources: Final Population Totals, Paper No 1 of 1962, Census of India 1961.

Jain, S. P.: State growth rates and their components. All India Seminar on Population, Institute of Economic Growth, Delhi, March 1964.

In 1961, about 82 per cent of the population were residing in rural areas. There were

high fertility and gradually declining mortality has far reaching implications.

Table 2

Percentage distribution of population in three broad age groups in India, England and Wales, U.S.A. and Japan

				Below 15	15—59	60+
India (1961)	..	..	..	41.2	53.9	4.9
England & Wales (1962)	..	..	..	22.6	60.0	17.4
U. S. A. (1960)	..	..	..	31.0	55.7	13.3
Japan (1962)	..	..	..	28.6	62.0	9.4

Source: Demographic Year Book 1963, United Nations

A comparison of the age-sex distribution of the population (Table 3) indicates that in all the age groups the male element is predominant. Females are found to outnumber males only in the later ages (i.e. 70 and over).

Compared to the 1951 population distribution, the 1961 population in earlier ages forming the base of the age pyramid has shown an increase which may be attributed to the constancy of fertility and decline in mortality especially in such early ages.

Table 3

Distribution of the standard million according to all-India adjusted population as of 1951 and 1961

Age group	1951 Census		1961 Census	
	Male	Female	Male	Female
0—4	73,208	71,489	83,663	81,695
5—9	64,030	61,888	67,227	64,952
10—14	57,774	54,165	58,162	55,164
15—19	51,012	48,244	50,488	47,568
20—24	44,974	43,659	44,458	42,141
25—29	40,848	39,216	40,117	38,067
30—34	37,051	34,391	35,839	33,297
35—39	32,625	29,314	31,041	27,643
40—44	27,973	24,717	26,354	22,971
45—49	23,404	20,737	22,043	19,104
50—54	18,745	16,936	17,841	15,518
55—59	14,317	13,424	13,735	12,275
60—64	10,341	10,143	9,983	9,325
65—69	6,750	6,857	6,644	6,411
70 & over	10,646	11,122	7,532	8,634
Total	5,13,698	4,86,302	5,15,235	4,84,765

Source: Age Tables, Paper No. 2 of 1963, Census of India 1961.

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Source of mortality statistics:

Reliable mortality statistics are required for planning and executing public health programmes and for the analysis and projection of population trends required for policy mak-

explains the rising growth rates observed in the last few decades.

The trend in the estimated death rates for the different census decades are shown in Table 4.

Table 4

Estimated death rates (per 1000 population)—British India 1901-11 to 1931-41 and Indian Union 1941-51 and 1951-61.

Period	Death rate	Expectation of life at birth	
		Male	Female
1901—11	42.6	22.6	23.3
1911—21	47.2	19.4	20.9
1921—31	36.3	26.9	26.6
1931—41	31.2	32.1	31.4
1941—51	27.4	32.5	31.7
1951—61	22.7	41.2	
1957-58 (rural)*	19.0	45.2	46.6

Sources: Age Tables, Paper No. 2 of 1963, Census of India 1961.
Davis, Kingsley: Population of India and Pakistan,
Princeton University Press, 1951.

- * De, A. K. and Som, R. K.: Abridged life tables for rural India, 1957-58. Milbank Memorial Fund Quarterly, Vol. XLII, No 2, 1964.

ing and planning in many economic and social fields.

The data from the routine vital registration system in this country suffers from quantitative and qualitative defects. Attempts are however being made by the Registrar General to tone up the system. The process is necessarily slow and in the meantime estimates of vital rates will have to be based on data from other sources. Estimates of birth, death and other vital rates are made from time to time from the continuing rounds of the National Sample Survey (NSS).

Trend in mortality: Death rates in India have been declining particularly since 1920, while the birth rates, already at a high level, have shown no appreciable change. This

is evident that before 1920 the death rates were quite high, over 40 per thousand, and since then there had been a progressive decline in the general level of mortality. Other evidences such as trends in registered death rates, infant mortality rates, etc. also corroborate the declining trend in mortality.

The effect of the decline in mortality is seen in the expectation of life at birth during the various decades. It may be noted that for the year 1957-58 abridged life tables have been constructed for the rural population of India based on the age-sex specific mortality rates obtained from the National Sample Survey (fourteenth round)¹⁸. These tables are the first all-India (rural) life tables to be constructed on survey-based death rates.

Death rates estimated from the National Sample Survey data for rural India at different

points during 1951-61 show the trend in mortality in the decennium. The data pertaining to the 7th, 9th & 10th and 14th rounds of the NSS are shown below.

may arise from possible differences in the population age sex structure and socio-economic conditions. It is also observed that the death rates vary markedly in the different areas of

Table 5

Birth and death rates for different NSS rounds—all-India (rural).

Round	Death rate/ 1000	Birth rate/ 1000
Seventh (October 1953-March 1954)	24.0	40.9
Ninth & tenth (May 1953-May 1956)	20.8	38.9
Fourteenth (July 1958-June 1959) ..	19.0	38.3

Source: Preliminary estimates of birth and death rates and of the rate of growth of population. NSS fourteenth round, July 1958-June 1959, No. 48, The Cabinet Secretariat, Government of India.

During the decade 1951-61, death rates have shown much rapid decline compared to the earlier period. A slight decline in the birth rates is also perceivable but in any case that has not kept pace with the falling death rate, the obvious result being acceleration in the growth rate. A similar decline in mortality had been observed in the developing countries all over the world about this time. There can be no doubt that the reduction in mortality was caused by the application of simple public health measures. For technical reasons such measures have been highly effective even while the general conditions of life remained unfavourable. The trend may even be reversed if conditions underlying the demographic transition experienced by the developed countries of the West do not come into operation in this country. In other words, in the absence of corresponding changes in the social and economic situation, the declining trend in the death rate that is noticed currently cannot be long sustained because after all health progress depends fundamentally on economic progress.

Inter-state variation in death rates:

There is considerable variation in the crude death rates (NSS) among the States which

the same State¹⁷. Such intra-State variation is substantial in the case of Uttar Pradesh and Maharashtra. In the States of Bihar, Madhya Pradesh, Madras, Mysore and Orissa the variation is less marked.

The death rates estimated from the National Sample Survey (rural), the Census and the Registration data are given in Table 6.

It may be noted that death rates (NSS) for the States of West Bengal, Kerala, Assam, Jammu & Kashmir and Punjab (including Delhi and Himachal Pradesh) lie between 10 and 14, for the States of Madras, Andhra and Mysore lie between 14 and 16 and for the rest of the States between 17 and 30. The rates estimated by the Census Actuary are generally higher than the NSS rates (rural) and they show a lower range of variation among them. The inadequacy of the registration data is also clear from the table. It was believed that registration in 1951-61 was poorer than that in 1941-51⁴.

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Table 6
Crude death rates by States

State	Crude death rate-NSS, 1957-58 (rural)	Death rate computed by Census Actuary (1951-60)	Registration death rate (1951-60)
West Bengal	10.58	20.5	8.9
Jammu & Kashmir	11.20		
Assam, Manipur & Tripura	11.40	26.9	4.4
Kerala	11.92	16.1	
Punjab, Delhi & H. P.	13.22	18.9	14.7
Madras	14.06	22.5	14.5
Andhra	14.66	25.2	
Mysore	15.35	22.2	
Gujerat	17.15	23.5	
Rajasthan	17.97	19.4	
Orissa	18.78	22.9	15.5
Bihar	19.79	26.1	7.9
Maharashtra	19.22	19.8	15.2
Madhya Pradesh	22.76	23.2	12.3
Uttar Pradesh	29.90	24.9	9.2
All India	19.04	22.8	11.3

Sources: Fertility and mortality rates in India, NSS fourteenth round, July 1958-June 1959, No. 76, the Cabinet Secretariat, Government of India.

Jain, S. P.: State growth rates and their components. All India Seminar on Population, Institute of Economic Growth, Delhi, March 1964.

Vital Statistics of India for 1961, Registrar General's Office, Ministry of Home Affairs, Government of India.

Differentials in mortality:

(a) **Rural-urban:** Generally speaking those populations or classes of population which are in a relatively favourable position from the economic and social points of view have lower mortality rates than the more retarded groups. However, rural-urban differences are sometimes found to depart from this general rule, in as much as the death rates in the cities are sometimes found to be as high

as, or even higher than, those in the country side, although the general level of material welfare and social advancement may be superior in the cities.

The rural and urban death rates obtained from the National Sample Survey seventh round data and unadjusted for recall lapse were 17.6 and 13.9¹. From the results of the Mysore Population Study it was observed that the rate for Bangalore City was lower than

those for the rural zones. It may, however, be pointed out that one of the factors favouring lower crude death rate in urban areas may be the more favourable age composition of the population as a result of selective rural to urban migration. Further, though the country side often tends to be healthier than urban areas, the advantage is offset by poor medical facilities and greater poverty.

(b) **Social and economic factors:** Social and economic factors are related to mortality, the relation varying with cause of death. Factors other than social and economic may be at work in some cases, for example, mortality differentials for cancer of the breast and uterus may be in part due to fertility differentials.

Several criteria may be used for stratifying the population according to social and economic classes. Death rates have been obtained for different population groups (rural) by the National Sample Survey⁷ which show interesting variations in them. It was observed that the death rate of those gainfully employed (10.1 per 1000) was considerably lower than that of others not so employed (23.8 per 1000). It has to be conceded here that the classification by gainful employment status may, however, involve a certain amount of selection, for instance, the ill and the disabled persons may be drawn towards the class not gainfully employed. Further, in this category has been included children of early ages (usually not gainfully employed) where incidence of mortality is strikingly high.

The death rates were found to have a positive association with monthly per capita expenditure. This is somewhat surprising. A plausible though partial explanation to this may be that the removal by death of members of some households might have tended in these cases to raise the per capita monthly expenditure which was related to the size of the household at the time of the inquiry (NSS). The trend in mortality rates for classes according to land possessed also showed similar pattern as in the case of per capita monthly expenditure.

In the Mysore Study¹³ the type of housing (hut or mud house with thatched roof; mud house with tiled roof, or brick, stone or cement house) and type of lighting (crude lamp; lantern; electric light) were used as

indices of economic status for studying variation in mortality in Bangalore City and the Towns. In the rural areas the index was based on the economic status of the household (whether senior worker is labourer or temporary tenant; owner cultivator with less/more land; employee/unpaid family worker/own account worker).

The above study generally showed an inverse relationship between socio-economic status and mortality rates.

(c) **Age and sex:** The enormous magnitude of the risks associated with early life in India is clear from the age specific death rates given in Table 7. For the males the mortality rates attain a minimum value in the age range 15-24 years while for the females the minimum is attained in the age range 35-44 years. Female mortality is markedly higher than that of the male in the age span 15-34 years and less after age 35. There is no doubt that this is related to functions of reproduction.

Table 7

Age specific death rates per 1000 population by sex. All India (rural).

Age	Male	Female	Ratio of female to male mortality (%)
0	197.98	182.48	92
1-4	42.59	45.36	107
5-14	5.55	5.54	100
15-24	3.47	5.44	157
25-34	4.21	6.37	149
35-44	5.83	5.43	93
45-54	12.83	8.02	63
55-64	32.23	21.01	65
65+	72.92	54.70	75
all	19.56	18.81	96

Source: Fertility and mortality rates in India, NSS fourteenth round (July 1958-June 1959), No. 76, The Cabinet Secretariat, Government of India.

In some of the advanced countries such as England and Wales, U.S.A., etc. the female

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mortality is lower than that of the male in all the age groups. This is evidently not so in the case of India (Table 7) where for the females the earlier age groups (upto 34 excluding 0-1) are generally associated with higher mortality and later age groups with lower mortality. More or less similar pattern was observed among the Bengalee population of Calcutta¹⁰. It is, however, interesting to observe that in most societies regardless of their stage of development the female death rate often tends to be less than that of the male in the first year of life. It may also be seen (Table 8) that among the prosperous nations the female mortality has declined at a faster rate than male mortality. Perhaps, the female advantage reflects to some extent the level of social and economic development of a country.

'physiological, mental and spiritual activities' and are the source of man's pugnacity. According to Carrel, the existence of the menopause frees women somewhat from the vital urge at a much earlier age than man and the latter pays for his prolonged intensity in his physiological life by a shorter physical one (quoted from Arthur Pedoe: Factors in the trend in mortality, Journal of the Institute of Actuaries, Vol. 88, 1962, p. 5).

Trend in infant mortality:

The extremely high rate of mortality during infancy which is not paralleled again until advanced old age has rendered this rate an object of considerable significance particularly in the field of preventive medicine. Further, of all the age segmental rates infant mortality

Table 8

Ratio of female to male mortality (%)—England & Wales and U.S.A.

Age	England & Wales		U.S.A.	
	1936-38	1956-58	1936-38	1956-58
12	89	65	73	62
22	87	49	78	34
32	89	77	82	57
42	76	75	72	55
52	66	57	68	48
62	69	50	72	50
72	74	60	83	62

Source: Arthur Pedoe: Factors in the trend in mortality. Journal of the Institute of Actuaries, Vol. 88, 1962.

It is common experience that sex differentials in mortality widen as the level of general mortality goes down. The sex variation in mortality has been the subject of investigation for a long time. A number of factors, both known and unknown, contribute to this difference. It may be of interest to repeat what Alexis Carrel, the noted biologist, surgeon and Nobel Lauriate had said in his book "Man the Unknown" (London, Harper and Bros, 1935). He observes that woman differs profoundly from man. Every one of the cells of her body bears the mark of her sex. He adds that the sexual glands intensify all

rate is subjected to relatively larger variation on account of mortality declines. Hence, it is an appropriate index for measuring social and economic improvements and advances in public health and medicine upon which declines in mortality mostly depend. According to the 1961 Census, 41 per cent of the population was below age 15. Besides, India has an abnormally heavy infant and child mortality. According to registration statistics nearly 20 per cent of the total deaths are among infants. The National Sample Survey (seventh round: 1953-54) gives an estimate of 31 per cent for rural areas.⁷ Corresponding

percentages for the other countries are Japan (1962): 6.0, USA (1962): 6.0, and England & Wales (1962): 3.3¹².

A number of countries have succeeded in reducing infant and child mortality. But in spite of medical and social progress, the first year of life still shows the greatest death toll for any single year. Infant mortality rate in India (rural) based on the fourteenth round data of the National Sample Survey is 146 per thousand live births which could have been nearly 200 at the beginning of the century. Table 9 compares the infant mortality rate in India with those of a few countries and the contrast is quite striking. Prevention and cure of specific infectious diseases have obviously played a large part in reducing infant mortality.

Table 9

Infant mortality rates in India and a few other countries

Country	Infant mortality rate per 1000 live births
India-rural male ..	153.2
(NSS 14th round, 1958-59) female ..	138.3
all ..	145.9
U.S.A. (1963)	25.2
England & Wales (1963) ..	20.9
Japan (1962) ..	26.5
Ceylon (1961) ..	52.1

Sources: Fertility and mortality rates in India. NSS fourteenth round, July 1958-June 1959. No. 76, The Cabinet Secretariat, Government of India.

Demographic Year Book 1963. United Nations.

Inter-state variation in infant mortality:

As in the case of crude death rates there is considerable variation in infant mortality rates (NSS) among the States due mainly to socio-economic and health conditions. A close relationship between crude death rates (Table 6) and infant mortality rates (Table 10) can be observed which suggest that the crude death rates are in a great measure influenced by infant and child mortality rates.

Table 10

Infant mortality rates by States

State	Infant mortality rate per 1,000 live births (rural)
West Bengal ..	83.02
Kerala ..	88.86
Jammu & Kashmir ..	94.84
Assam, Manipur & Tripura	96.85
Mysore ..	102.98
Andhra ..	111.38
Rajasthan ..	113.76
Madras ..	118.50
Punjab, Delhi & Himachal Pradesh ..	122.72
Gujarat ..	133.66
Maharashtra ..	134.59
Orissa ..	153.88
Bihar ..	161.08
Madhya Pradesh ..	163.05
Uttar Pradesh ..	220.94
All-India (rural) ..	145.86

Source: Fertility and mortality rates in India. NSS fourteenth round, July 1958-June 1959, No. 76, The Cabinet Secretariat, Government of India.

Even though females are generally associated with slightly higher mortality rates during the early part of their life, so far as infant age period is concerned they suffer less mortality than the males (Table 7) which seems to be a universal feature.

Cause of death:

Cause of death statistics measure the rate at which deaths from various diseases occur in a population. But they do not reflect the actual morbidity situation of the population, as fatality rates vary widely among the diseases. Consequently, the utility of cause of death statistics for indicating precisely the health or illness situation of a population is correspondingly restricted. However, significant changes in the death rate for a given

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disease broadly reflect similar changes or trends in the incidence of that disease. Therefore, in the absence of adequate and reliable statistics on morbidity, the collection of which involves innumerable difficulties, recourse is often made to mortality data for an assessment of health problems and for the development of public health programmes. However, a meaningful analysis is impossible with the extremely unsatisfactory nature of the cause of death data available in this country.

In recent years attempts have been made in some areas to obtain reliable returns on cause of death by following certain suggested procedures. For instance, in Rajasthan at present such information is collected from government hospitals, in Nagpur from all hospitals and maternity homes. In Poona, causes of death are given in the international form by hospitals, and private practitioners are also encouraged to do so. In West Bengal hospital deaths are certified in the international form. In Bombay, however, the certificates are not given in the international form. In cases where a person was not treated by a qualified medical practitioner, cause of death is verified by contacting the household by medical persons working under the registrars.

The extent to which the different agencies were responsible for certifying the cause of death in Bombay is given in Table 11. It was reported that the causes of death recorded by medical verifiers were far from satisfactory.

Table 11

The proportion of causes of death (%) certified by the various agencies in Bombay City in 1960 and 1961

	1960	1961
Hospitals	31	25
Private medical practitioners	23	21
Coroners & police commissioners	15	13
Hakims & vaidyas	0.1	0.1
Medical verifiers	31	38

Sources: Vital Statistics of India for 1960, Registrar General's Office, Ministry of Home Affairs, Government of India.

Vital Statistics of India for 1961, Registrar General's Office, Ministry of Home Affairs, Government of India.

Deaths classified by cause are available for Bombay, Poona and a few other cities. As registration is claimed to be more or less complete in the above mentioned two cities, it may be possible to study the broad pattern of mortality in these cities (Table 12). The pattern is fairly similar. Further, an examination of the medically certified causes of death (which, however, form only a segment of the total deaths) from other areas like Nagpur and Rajasthan also reveals a certain degree of parallelism with the above figures. Although, generalizations for the whole of India based on figures from a few localized areas is hazardous, they may help in forming a rough and broad mortality picture of the country.

It is clear from Table 12 that apart from the group 'symptoms, senility and ill-defined conditions' which is almost a residual group, the more important groups in Bombay and Poona are i) infective and parasitic diseases, (ii), diseases of the respiratory system, (iii) diseases of the digestive system and (iv) diseases peculiar to early infancy. In the group of infective and parasitic diseases it is observed that about 50 per cent of the deaths are due to tuberculosis, with tuberculosis of the respiratory system standing out as the major killer. Other important diseases from the point of view of fatality are small pox, tetanus and dysentery. In the major groups covering diseases of the respiratory system, pneumonia completely overshadows all other specific causes. Among the diseases of the digestive system gastritis, duodenitis, enteritis and colitis together account for half the deaths and cirrhosis of the liver for about one-fifth. Among the diseases peculiar to early infancy the important causes are prematurity, infections of the new-born and congenital malformations.

The percentage distribution of deaths by broad cause groups in countries e.g. U.S.A. and England & Wales (Table 12) shows considerable variation compared to that of Bombay or Poona (It may be noted here that the residual group for these countries includes a few deaths from some of the specific groups). Deaths from infectious and parasitic diseases account for only 1 per cent of the total deaths while it is about 14 per cent in Bombay and Poona. On the other hand, neoplasms and diseases of the circulatory system contribute to more than 50 per cent of the deaths in the

Table 12

Percentage distribution of deaths in Bombay, Poona, U. S. A. England & Wales, Japan and Ceylon by major cause groups.

Cause	Bombay 1956-60	Poona 1957-60	U.S.A. 1962	E & W 1962	Japan 1962	Ceylon 1960
I. Infective and parasitic diseases ..	13.7	14.5	1.1	0.9	5.0	7.6
II. Neoplasms	3.2	2.8	16.1	18.4	14.5	2.6
III. Allergic, endocrine system, metabolic and nutritional diseases ..	5.6	1.5	1.8	0.7	0.5	0.9
VI. Diseases of blood and blood forming organs	7.3	2.0	0.2	0.3	0.2	3.1
V. Mental, psychoneurotic & persona- lity disorders	—	—	—	—	—	—
VI. Diseases of nervous system and sense organs	2.6	2.4	11.4	14.1	22.8	1.3
VII. Diseases of circulatory system ..	7.0	5.2	39.9	33.9	12.7	7.2
VIII. Diseases of respiratory system ..	18.9	11.6	3.7	12.1	6.5	8.3
IX. Diseases of digestive system ..	7.6	7.5	3.1	2.2	5.8	6.1
X. Diseases of genito-urinary system ..	1.4	0.8	1.0	1.1	2.0	0.8
XI. Deliveries and complications of preg- nancy, child birth and puerperium	0.2	0.4	0.1	0.1	0.3	1.3
XII. Diseases of skin and cellular tissue	0.2	—	—	—	—	—
XIII. Diseases of bones and organs of movement	—	—	—	—	—	—
XIV. Congenital malformations ..	0.5	0.5	1.2	1.0	0.6	0.1
XV. Certain diseases of early infancy ..	11.4	17.0	3.7	1.7	3.1	13.7
XVI. Symptoms, Senility and ill-defined Conditions	11.4	28.5	1.1	1.2	10.1	21.0
XVII. Accidents, poisoning and violence ..	9.0	5.3	7.2	4.3	7.9	5.0
Residual	—	—	8.5	8.0	7.9	21.0
Total	100 (151830)	100 (27453)	100 (1756720)	100 (557639)	100 (710022)	100 (84918)

Sources: Vital Statistics of India for 1961, Registrar General's Office, Ministry of Home Affairs, Government of India. Demographic Year Book 1963, United Nations.

U.S.A. and England & Wales whereas in Bombay, Poona and Ceylon the corresponding proportion is only about 10 per cent. In Japan these diseases claim more than 25 per cent of the deaths.

Thus, one of the major health problems is to bring down deaths due to infectious dis-

eases like tuberculosis, small pox, dysentery etc. which are mostly preventable as could be seen from the experience of western countries where such diseases once prevailed fairly extensively. However, with the elimination of these and other preventable diseases, diseases like cancer, rheumatism, diseases of heart, etc. which are usually associated with

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old age may emerge as greater threats to life than today. It would thus appear that health problems in one form or another would manifest necessitating different courses of action. It is only by raising substantially the levels of living of the masses that these challenges could be adequately met.

Selection of an appropriate cause of death :
A question naturally arises as to which cause is to be selected for tabulation and further study when two or more conditions contribute to the death. In this connection, the World Health Organization has recommended the selection of the 'underlying cause of death' defined as (i) the disease or injury which initiated the train of morbid events leading directly to death or (ii) the circumstances of the accident or violence which produced the fatal injury, as more objective from the standpoint of action required for prevention of death. The use of specially designed International Form of Medical Certificate of Cause of Death facilitates the selection of the underlying cause when two or more causes are jointly recorded¹¹.

A large bulk of deaths in India, particularly in rural parts are not amenable to a cause-wise classification for lack of precise diagnostic information. But quite substantial information in this respect is available for the cities where medical certification of cause of death is in vogue. Misreporting of cause of death is naturally more frequent among cases not availing medical care during illness than among those availing medical assistance.

A number of countries have adopted the international form of medical certificate and classify deaths according to the underlying cause. A prerequisite for the introduction of such a procedure, however, is the universal availability of medical care. In our country which falls short of the basic requirements in this respects, it is doubtful if the scheme could be successfully implemented. An investigation of a sample of households in Calcutta in 1959 where deaths were known to have occurred revealed that about 75 per cent of the cases had availed of substantial medical care during illness. On a joint consideration of the officially reported causes of death and those obtained from the household canvass, the latter often giving a fairly detailed history of the illness before death, it was possible to re-

concile the causes officially given and to arrive at the most probable underlying cause adopting a suitable rationale for the purpose²¹. On the whole, the official statement and the investigators' returns showed a fair degree of correspondence with the derived underlying causes of death when grouped in broad categories, the agreement being slightly better in the former. However, this study broadly indicated the directions in which misclassifications could have occurred in the data from the above two sources which may give an idea as to the diseases or groups of diseases liable to be under or over-estimated according to the source of information. For instance, for deaths due to tuberculosis and diseases of the respiratory system while official returns gave a fairly adequate picture, the survey returns gave a poor appraisal of the situation. On the other hand, for deaths due to accidents and material causes, the household survey seemed to have given better results.

Medical care : The Health Survey and Development Committee, also known as the Bhoré Committee (appointed by the Government of India in 1943) reported that medical relief facilities in the country were extremely inadequate both in quantity and quality. More recently, the Health Survey and planning Committee set up by the Government in 1959 reviewed the developments that have taken place since the publication of the report of the Bhoré Committee and have given valuable recommendations for the future planning of health development in the country.

Satisfactory treatment facilities are generally available in urban areas. Nevertheless, the pressure on hospitals, especially in some departments, is so heavy that the available resources are often inadequate to meet the requirements. In villages, where more than 80 per cent of the population live the need for developing medical services is indeed great. For realistic planning in public health a correct appraisal of the existing situation is fundamental. Some information in this regard had been collected by the National Sample Survey.

The extent to which medical facilities are availed depends not merely on the availability or existence of such facilities but also on some considerations like easy accessibility, ability to purchase and so on. The National Sample Survey has given useful information on some of these points.

(a) **Hospitals**: It has been estimated that the average distance of the nearest hospital from a village is about 8.9 miles.⁵ Only for

As may be expected the average distance from the nearest hospital decreases as the population of village increases (Table 14).

Table 14

Average distance from villages to the nearest hospital by size class of population

Population size class	11th round		12th round	
	% villages	Average distance (miles)	% villages	Average distance (miles)
Upto 200	33.6	9.83	33.1	9.80
201-500	33.6	9.09	34.1	7.92
501-1000	19.5	7.73	18.8	8.50
1001-2000	9.1	7.53	9.4	7.56
2001 and above	4.2	6.65	4.6	7.14
all classes	100.0	8.83	100.0	8.58

Source: Report on Indian villages (A study of some social and economic aspects), NSS tenth to twelfth rounds, 1955-57, No. 45, The Cabinet Secretariat, Government of India.

15 per cent of the villages the nearest hospital is within a distance of less than 2½ miles. Table 13 gives the information in greater detail.

Table 13

Cumulative percentage distribution of villages by distance from the nearest hospital

Distance in miles	NSS round		
	10th	11th	12th
0	1.30	2.30	1.56
1	5.85	6.78	5.83
2	15.61	15.89	13.86
3-5	44.36	44.26	45.36
6-10	74.15	74.60	74.84
11-20	90.41	93.38	91.91
above 20	98.66	99.75	98.57
not available	1.34	0.25	1.43
Total	100.00	100.00	100.00

Source: Report on Indian villages (A study of some social and economic aspects), NSS tenth to twelfth rounds, 1955-57 No. 45, The Cabinet Secretariat, Government of India.

Besides the distance factor, the type and condition of connecting roads is also important from the point of view of accessibility to medical services. Information available in this regard from the various rounds of the National Sample Survey is given in Table 15.

(b) **Medical practitioners**: In the foregoing paragraphs discussion was confined to institutions (hospitals) the setting up of which obviously rests on several considerations. Thus the accessibility of hospitals (in terms of distance) in comparison to medical practitioners may be even more difficult. But the situation in respect of the latter is also not vastly different is borne out by the following table which gives the percentage of villages having medical practitioners.

It was estimated that about 68 per cent of the medical institutions in the rural sector are private chambers, 21 per cent dispensaries and about 4 per cent hospitals.⁶ On an average a hospital attends to 54 patients, a dispensary to 18 patients and a private chamber to 5 patients daily. But in view of the inadequate number of such medical agencies, the relief that could be offered to the villagers can only be meagre.

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Table 15

Percentage distribution of villages by type of road connecting the village with hospital

type of road	NSS round			
	10th	11th	12th	13th
within village	1.30	2.30	1.56	4.84
foot-track	27.91	30.23	24.39	20.35
unmetalled	22.87	22.61	26.03	26.16
others	46.57	44.39	46.59	48.10
not available	1.35	0.47	1.43	0.55
Total	100.00	100.00	100.00	100.00

Sources: Report on Indian villages (A study of some social and economic aspects), NSS tenth to twelfth rounds, 1955-57, No. 45, The Cabinet Secretariat, Government of India.

Indian villages (A study of some social and economic aspects), NSS thirteenth round, 1957-58, No. 64, The Cabinet Secretariat, Government of India.

Table 16

Percentage of villages having medical practitioners by category.

Category of medical practitioner	NSS round	
	10th	12th
Allopath	2.27	2.10
Homeopath	2.92	2.49
Ayurvedic	5.91	4.15
Others	4.84	5.90

Report on Indian villages (A study of some social and economic aspects), NSS tenth to twelfth rounds, 1955-57 No. 45, The Cabinet Secretariat Government of India.

(c) **Medical expenditure:** Another important aspect of medical care relates to the expenses incurred on medical treatment. However, in view of the unreliability of the available data in this respect, they do not help in forming significant conclusions. They merely serve as rough indications of the extent of medical expenditure incurred during a stated period of time and nothing more.

According to the National Sample Survey the monthly expenditure on medicines per

person in rural areas was Rs. 0.25 while in urban areas it was almost double i.e. Rs. 0.49. For the major cities of Bombay, Calcutta, Delhi and Madras combined, the expenditure per person was 0.65¹⁰.

Similar information has been collected in a pilot health survey in West Bengal. The expenditure per case in respect of medicines, doctors' fees, etc. generally appeared to be high. Further, it was seen that the cost of medical treatment was higher in the urban areas compared to the rural. The expenditure in rural areas in West Bengal for treating (taking into consideration all systems of medicine) an acute illness was Rs. 5.18 and a chronic illness Rs. 23.46 over a three-month period while in the urban areas the corresponding figures were Rs. 20.66 and Rs. 70.43. It is not claimed that these figures reflect the actual expenditure. On the other hand, they are likely to err on the side of exaggeration because of the tendency, sometimes noticed, to report not only the actual expenses incurred during the period under consideration but also to include expenditure relating to some previous period but cleared off during the reference period. However, it may be conceded that the higher costs of medical expenditure in urban areas, particularly cities and large towns, may be due to the superior quality of

medical facilities available in such places. Also the tendency for advanced cases to seek medical relief in these places tends to increase treatment costs.

The foregoing discussion though based on insufficient data nevertheless helps in understanding some of the basic problems in the field of public health and also in sizing up the dimensions of the task involved in adequately meeting the challenging situation.

Summary: The recent acceleration in the rate of growth of our population is clearly the manifestation of declining death rate with the birth remaining more or less steady at a high level. The observed decline in mortality largely brought about by the application of simple public health measures may not be self-sustaining unless there is adequate improvement in the economic and social situation.

There is considerable inter-state variation in the crude death rates due to possible differences in the health conditions and also the age composition of the population. To obtain more meaningful results, therefore, it is desirable that zonal groupings are attempted on considerations of demographic homogeneity of the constituents.

Though the countryside often tends to be healthier than urban areas, the advantage is often offset by poor medical facilities and greater poverty. Further, the selective rural to urban migration tends to lower the rate of general mortality (urban).

In studies relating to social and economic differentials in mortality, factors other than these may influence mortality. For instance, the stratification of the population by employment status may involve some selection.

Unlike Western experience female mortality in this country is heavier than the male in early age periods particularly during the reproductive years. Such female disadvantage is generally observed in non-industrial communities which tends to diminish as economic development proceeds.

The limitations of the statistics of cause of death are only too well known. Accurate recording of the causes of death depends primarily on the availability of medical care which does not exist in any appreciable scale in this country. However, in cities like Bombay and

Poona special efforts are being made to record the causes of death as completely as possible. These may provide a basis for forming a broad mortality picture of the country. Infectious and other preventable diseases which are major public health problems today may be controllable but in the process other less known diseases like cancer and cardiovascular diseases may emerge creating new public health problems.

Medical facilities are scarce in the rural areas. Statistics in this regard are revealing. It has been estimated that the average distance from a village to the nearest hospital is 8.9 miles with unsatisfactory connecting roads. Only about 2 per cent of the villages have allopathic medical practitioners while homeopathic and ayurvedic practitioners are found in 3 and 5 per cent of the villages respectively.

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