Original Articles

RELATIVE HEALTH OF WOMEN IN INDIAN CITIES

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THE urban population of India increased by 28 per cent during the decade 1931–41. Details of the latest census have not yet been published; but one may not be very incorrect in putting the increase in the number of town-dwellers in the last decade at least as great as that of the previous one. How the health of women is affected by this large-scale urbanisation in India is being studied here.

Health of a community is a difficult thing to measure; as a first step we are studying this problem by examining the death rate of the women of the large cities of India. Since age is a factor in the risk of dying at a time, we have to consider the age specific death rate of women. To get a proper understanding of the effect of urbanisation in Indian women it is necessary to compare the age specific death rate of the urban population with that of the rural population. This comparison we are unable to do at present because the vital statistics of the rural regions of India are known to be incomplete and inaccurate. Therefore, we are confining our discussion of the subject only to what can be obtained from the vital statistics of the cities where deaths are registered fairly completely. The data used in the following discussion are those published in the reports of the health officers of the respective cities.

A very simple way of looking at this problem is to compare the general death rates or rather the age specific death rates of males with those of females. This comparison is fairly satisfactory for our purpose because as far as housing and other sanitary conditions are concerned they affect both the sexes more or less equally in a city. However, we don't ignore the fact that the presence of a large number of bachelors enjoying higher economic status compared to the general standard of the entire population is likely to affect the age specific death rates of the males, in this comparison. But as against this, the presence of proportionately larger number of male unmarried labourers living under low sanitary conditions is also to be considered. Table 1 gives the sex specific death rates in cities of India which have a population of over 500,000, during the period 1930–52.

TABLE 1

Sex specific death rate in the principal cities in India since 1930 (*Class I***)

Year†	CALCUTTA		BOMBAY		MADRAS	
	Males	Females	Males	Females	Males	Females
1930	22.7	39.5	18.0	28.0	42.4	44.0
1931	20.7	35.9	18.0	28.0	34.8	36.9
1932	20.5	34.8	16.0	26.0	33.3†	33.8†
1933	24.0	34.8	19.0	29.0	35.5†	36.8†
1934	23.7	39.4	20.0	30.0	34.0†	34.4†
1935	23.2	39.7	21.0	32.0	33.9†	36.9†
1936	26.2	44.4	22.0	33.0	31.7†	34.0†
1937	21.7	39.3	22.0	35.0	34.1†	35.8†
1938	24.0	41.6	26.0	40.0	34.2†	36.0†
1939	22.9	37.0	22.0	34.0	37.1†	41.0†
1940	23.6	40.3	21.0	32.0	38.6	42.3
1941	11.4	20.5	18.0	26.0	..	..
1942	10.5	16.8	15.0	20.0	23.2	23.14
1943	21.9	42.9	20.0	27.0	39.3	38.78
1944	20.1	34.8	24.0	34.0	38.2	38.2
1945	15.0	24.2	23.0	33.0	30.6†	34.5†
1946	13.9	25.4	24.0	33.0	30.1†	29.3†
1947	16.9	31.7	22.0	31.0	31.0†	30.9†
1948	16.4	31.2	22.0	30.0	..	..
1949	16.1	31.1	23.0	32.0	41.7	42.3
1950	..	..	13.0	18.0	49.3	50.3

** Cities which have a population of over 500,000.
† Rates based on the mid-year estimated population, other rates being based on the previous census population.

In interpreting the above rates quoted from the reports of the respective health officers it must be remembered that in the cities of Calcutta and Bombay the rates have been calculated on the population which existed at the time of the previous census but in the city of Madras it is generally calculated on estimated population. As we are not interested in the study of the trends of these rates in these cities, we are not making any effort in correcting these rates by estimating the change in population. However, it may be noted that in Calcutta the death rate of the male population has recorded a decrease during the period 1943–49, whereas in the same period the female population has shown no such decline in their death rate. The large scale evacuation from the city during the period 1941-42 consequent to the Japanese entry into war and the influx of population into the city during the war due to war-time industries and after the war due to partition of the province cannot explain this phenomenon because these changes in the population structure of the city could have effected only in increasing the male female ratio which would result in proportionately higher inflation in male death rate rather than that of females when these rates are calculated without correction for change in population. In the city of Bombay, the female death rates show no significant trend upwards or downwards, the apparent tendency to increase from one census year to the next census year being mainly due to the fact that no correction for increase of population has been attempted in the calculated rates. On the other hand, the Bombay males have shown slight tendency of a decline in their death rates in the period 1944–49, as is seen from the uncorrected rates.

The death rates of females are larger than those of males in Calcutta and Bombay throughout the period, the differences between sexes being more pronounced in the city of Calcutta. The differences in the general death rates between sexes are not significant in the city of Madras. In certain years male death rates in the city are even higher than the female rate though the differences are not statistically significant. Table 2 gives the sex specific death rates in certain cities of India which have a population ranging from 100,000 to 500,000.

The picture of higher mortality among females seen in large cities of Calcutta and Bombay is true in all the five smaller cities of Northern India. The differences between sexes are more pronounced in the cities of Cawnpore, Benares and Lucknow. Delhi occupies an intermediate position and Nagpur shows the least differences between the sexes. It may be explained that the differences in death rates between sexes may be a common phenomenon in India and not a feature of the cities. In order to examine whether this is true, we are presenting table 3 which shows that these differences are very slight in the provinces in which the large cities studied are situated. It is reasonable therefore to attribute the differences in mortality between sexes to city life.

Chart 1 gives the age specific death rates for the two sexes in Calcutta for the period 1930–48. It is seen from this that except for the first age group, *viz,* children under 1 year and the last age group, *viz,* people over 60 years, in all other age groups women die at a higher rate than men. The difference is most pronounced in the age period 14–40 years, the period when the strain on women due reproduction is the maximum. The figures indicates that in these groups, the female risk to life is about twice that of males and sometimes even higher. (For Charts see Plates XII—XVIII).

Chart 2 gives the age specific death rates for the two sexes in Bombay city for the period 1931–51. The females have a higher death rate than males in the age period 5 to 40 the most marked differences being in the age period 20 to 40. In the age period 40 to 50 differences are not significant and after 50 women show markedly lower death rates compared to men.

TABLE 2

Sex specific death rate in the principal cities in India since 1930 *(Class II*)*

	CAWNPORE		BENARES		NAGPUR		LUCKNOW		DELHI	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1930 ..	..	..	..	..	..	..	..	..	32.73	45.37
1931 ..	..	..	..	..	..	..	..	..	23.27	30.67
1932 ..	..	..	..	..	..	..	..	..	23.90	32.87
1933 ..	..	..	39.87	51.25	..	..	..	..	28.23	39.94
1934 ..	..	..	59.70	77.30	48.45	55.56	33.81	46.66	26.81	35.27
1935 ..	45.78	63.16	55 00	75.00	42.71	46.57	31.11	43.58	28.25	39.41
1936 ..	41.52	59.57	45.47	58.20	51.47	54.37	30.48	40.48	22.04	31.63
1937 ..	50.65	69.74	51.60	68.00	..	..	32.07	42.67	23.67	33.69
1938 ..	56.48	74.99	43.75	54.66	56.26	59.39	..	..	..	..
1939 ..	46.09	70.30	46.04	57.84	..	..	..	..	..	..
1940 ..	..	..	..	..	55.77	59.48	..	..	..	..

* Cities with population of over 100,000.

Chart 3 gives the age specific death rates of the two sexes for the city of Madras for the period 1930–40. The sex differences in mortality rates are much less pronounced in Madras than in Calcutta in the age period 15–40. In the age period 40–50, the females have generally a lower mortality rate than the males. In age groups below 15, there is no significant difference between the two sexes with regard to mortality rate.

TABLE 3

Sex specific death rates in the provinces of Bombay, Madras and Bengal

Year	Bombay		Madras		Bengal	
	Males	Females	Males	Females	Males	Females
1930	29.01	30.11	26.14	24.92	22.40	22.50
1931	23.34	24.35	24.28	23.18	22.10	22.50
1932	22.68	23.44	22.61	21.31	20.40	20.60
1933	24.32	25.31	24.13	23.19	23.70	24.40
1934	24.93	25.95	25.59	24.31	23.50	23.00
1935	25.14	26.03	25.63	24.15	22.70	22.60
1936	27.56	27.91	23.98	22.62	24.50	24.50
1937	27.24	27.79	24.57	23.43	24.40	25.00
1938	30.15	30.79	24.07	22.86	26.00	26.70
1939	27.20	27.91	25.88	24.65	22.00	21.70
1940	27.69	28.14	25.59	24.35	22.30	22.30
1941	25.50	26.14	26.36	25.30	22.80	23.70
1942	..	..	..	..	19.90†	20.50†
1943	..	..	..	..	31.90†	31.00†
1944	..	..	..	..	28.90†	29.40†
1945	..	..	25.77	23.89	..	..
1946	22.92†	23.16†	19.30†	18.46†	..	..
1947	24.72†	25.29†	20.32†	19.80†	..	..
1948	21.50†	21.57†	18.48†	17.76†	..	..
1949	..	..	17.54†	16.64†	..	..
1950	..	..	19.91†	19.26†	..	..

The above analysis shows that the female population of Indian cities is experiencing much higher mortality rates than the male population and the difference is most marked in the reproductive age period. The higher death rate of females in the age period 15–40 can be explained chiefly as due to strain of reproduction but it is not easy to account for the higher death rates among female children in the age period 5 to 15. In this connection it is interesting to note the following remarks of the 1931 census superintendent for Bombay (p. no. 201 Census of India, Vol. I, Part I).

'The death rate amongst females is higher than amongst males in the 5 to 10 years age group; this is due to the neglect of female children. There is no reliable evidence showing whether the tendency to neglect female children is more powerful in certain communities and castes than in others, but *prima facie* it is probable that neglect of female children varies to some extent with economic circumstances. A study of the specific death rates shows that after the age of 5 only in the 40 and over age groups is the female death rate lower than the male. 65.8 per cent of the female population is aged between 5 and 40 so that the heavy death rate affect the larger proportion of the female population.'

Causes of death

It would be interesting to study the main causes of death which are responsible for the above differences. Chart 4 gives the specific death rates by cause for the two sexes in Calcutta, for the period 1930–50. Cholera seems to show a tendency in recent years to affect females much more than the males. The higher incidence of smallpox among the females has been a phenomenon throughout the two decades under study. Malaria has shown a higher incidence among the females than males all through the years and the ratio between the incidence of the two sexes has been pretty steady. Some-

what similar situation is found to exist with regard to typhoid, measles and kala-azar. Higher incidence of mortality among females is most pronounced in the case of tuberculosis, respiratory diseases and dysentery and diarrhœa.

Chart 5 gives the specific death rates by cause for the two sexes in the city of Bombay, for the period 1931–50. Compared to Calcutta, the higher incidence of diseases among females is not very pronounced in the city of Bombay. The diseases which record significantly higher mortality among females in Bombay are small-pox, measles, ague—remittent fever, dysentery, tuberculosis, respiratory diseases and diarrhœa in the early part of the period under study and respiratory diseases in the latter part. It is not clear what are the conditions which contributed in Bombay towards the lowering of the differences between male and female mortality rates for a number of diseases during recent years. The only group of diseases which still maintain a marked difference between male and female mortality rates in this city is the respiratory disease.

An insight into the factors which operate in producing the differences in death rates observed between sexes in the urban population may be obtained if we compare such differences in different sections of the population which differ in their social customs. With this purpose in view, we are presenting table 4 giving sex specific death rates in the different religious communities of the city of Bombay. Data of this kind were not available for the other cities.

An examination of the above table reveals that the sex differences in death rates are highest among the Muslims. Next in order comes Hindus, then Christians and lastly Parsees. The order of magnitude of the sex differences between mortality rates of these four communities correspond exactly to the degree of social advancement of the women of these groups. Parsees who are the most advanced group, show practically no significant differences between sexes with regard to mortality rates. During the period 1941–46, the Parsee females show even smaller mortality rates than the males of the group. As the age specific death rates are not available we are not in a position to assess the significance of these differences. But at any rate it is safe to conclude that on the whole the Parsee-female death rates are not higher than the male rates of the corresponding period. Christians who can be considered to be the next socially advanced group on the average, come next to Parsees with regard to differences between the sexes. Muslims who form the most backward class socially have the maximum sex differences in mortality. 'Purdha' system is very common in this group and illiteracy is also highest.

It is difficult to point out the exact conditions which are responsible for the marked differences noted between male and female mortality in Calcutta compared to Bombay and Madras. One can only make certain conjectures. In looking for the explanation of this phenomenon, we have to pick out those situations which affect

TABLE 4

Sex specific death rate in the different communities of Bombay city

Year	Parsees		Christians		Hindus		Muslims	
	Male	Female	Male	Female	Male	Female	Male	Female
1931 ..	15.17	15.31	15.23	22.42	17.72	25.48	20.14	38.07
1932 ..	13.07	13.40	13.66	21.32	16.93	25.12	17.14	30.81
1933 ..	13.43	13.29	15.97	23.41	20.50	30.87	19.70	34.56
1934 ..	13.99	15.72	16.94	25.94	20.30	30.12	20.36	36.57
1935 ..	15.23	15.94	17.64	25.02	22.30	33.43	20.47	34.53
1936 ..	14.77	14.87	17.93	24.91	22.33	34.16	21.94	37.79
1937 ..	15.33	14.43	17.39	28.33	23.06	35.99	20.94	37.58
1938 ..	17.39	14.69	20.81	30.04	27.32	42.08	24.67	42.90
1939 ..	15.30	13.88	18.01	27.58	22.96	35.27	21.57	36.19
1940 ..	14.61	14.83	17.33	25.80	21.86	33.08	20.40	36.32
1941 ..	15.46	12.63	16.49	20.51	18.35	26.79	18.25	30.00
1942 ..	13.86	12.87	17.21	18.42	15.06	20.07	16.24	24.76
1943 ..	17.16	13.90	20.28	23.57	20.68	28.75	21.10	30.88
1944 ..	18.24	15.33	23.74	29.33	25.44	36.18	24.48	38.28
1945 ..	16.54	14.17	21.74	27.19	25.02	35.50	21.47	34.42
1946 ..	15.49	14.65	21.32	28.26	25.25	36.14	24.51	35.23
1947 ..	14.84	14.17	20.08	24.00	22.74	33.44	21.09	32.86
1948 ..	13.99	14.31	20.71	25.18	23.30	32.96	21.43	32.12

the females differently from the males in these cities. Difference attributable to food, nature of house, drinking water, economic conditions, etc. can be ruled out to a great extent because these differences are those which exist mainly between families and not between the sexes. One possible explanation may be the difference in the degree of opportunities obtained for fresh air and sunshine, between men and women. The existence of considerable number of bachelors having economic status differing from the general average and living under different sanitary conditions from the general level of the population may also bring about the differences noted. But as we have already pointed out the existence of proportionately larger number of male unmarried labourers would to a great extent offset this factor.

It is well known that a considerable proportion of the women of Calcutta spend very little of their time outside the four walls of their houses which are mostly ill-ventilated and under poor lighting conditions. The fact that the menfolk spend almost all their day-time outside the house, generally in their places of work which are better situated with regard to conditions of lighting and ventilation and only a small proportion of the time inside the houses may explain the increased resistance they acquire against diseases in general and communicable diseases in particular. The difference between the sexes with regard to opportunities for games, physical exercises and other forms of recreation may also account for part of the differences noticed with regard to the mortality conditions. Above all, the physiology of the females, particularly the decline in their degree of resistance to diseases consequent to frequent pregnancies, may have been responsible for the increased risks to diseases they run in a city life.

One possible explanation of the difference between the male and female death rates is that more men are likely to leave the city to suburban areas, when they are seriously ill than females. Deaths of people who are normally resident in cities do not enter the city vital statistics when they take place outside the city. But against this possibility, we may consider, the larger number of women who are likely to come to the city limits for making use of the hospital services of the city, particularly maternity hospitals. Death occurring in this group, are liable to be included among deaths in the city. However, this explanation even if it holds good cannot account for all the differences noted between the male and female death rates.

Another possible explanation for the higher female mortality is the comparatively stricter observances on the part of women, of certain religious practices which have detrimental effect on health. Women are known to be more orthodox than men, in their food habits and among communities which were traditionally vegetarians, proportionately more men have taken to non-vegetarian food, probably with beneficial effects than women. In certain sections of the Bengalee population widows are accustomed to drinking water from open ponds. The custom of drinking river water is also more prevalent among women. Another unhygienic habit that can be cited here, is that of wives taking food left over by their husbands. This has the effect of increasing the risk of women getting infection from men without affecting corresponding risk of men getting infection from women.

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ISONIAZID IN THE TREATMENT OF A CASE OF TUBERCULOUS MENINGITIS IN AN ADULT

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BEFORE the discovery of streptomycin, tuberculous meningitis was almost invariably fatal. The first real advancement in the therapy was the introduction of combined intramuscular and intrathecal streptomycin. Para-aminosalicylic acid (P.A.S.) is also used as an adjuvant to diminish the tendency of the *Myco. tuberculosis* to become resistant against streptomycin. Illingworth (1950) remarked that apparent cure without sequelæ could be obtained in 20 to 30 per cent of cases of tuberculous meningitis

CURVES OF AGE SPECIFIC DEATH RATES FOR MALES AND FEMALES OVER ONE YEAR (1930—1950) IN THE CITY OF CALCUTTA

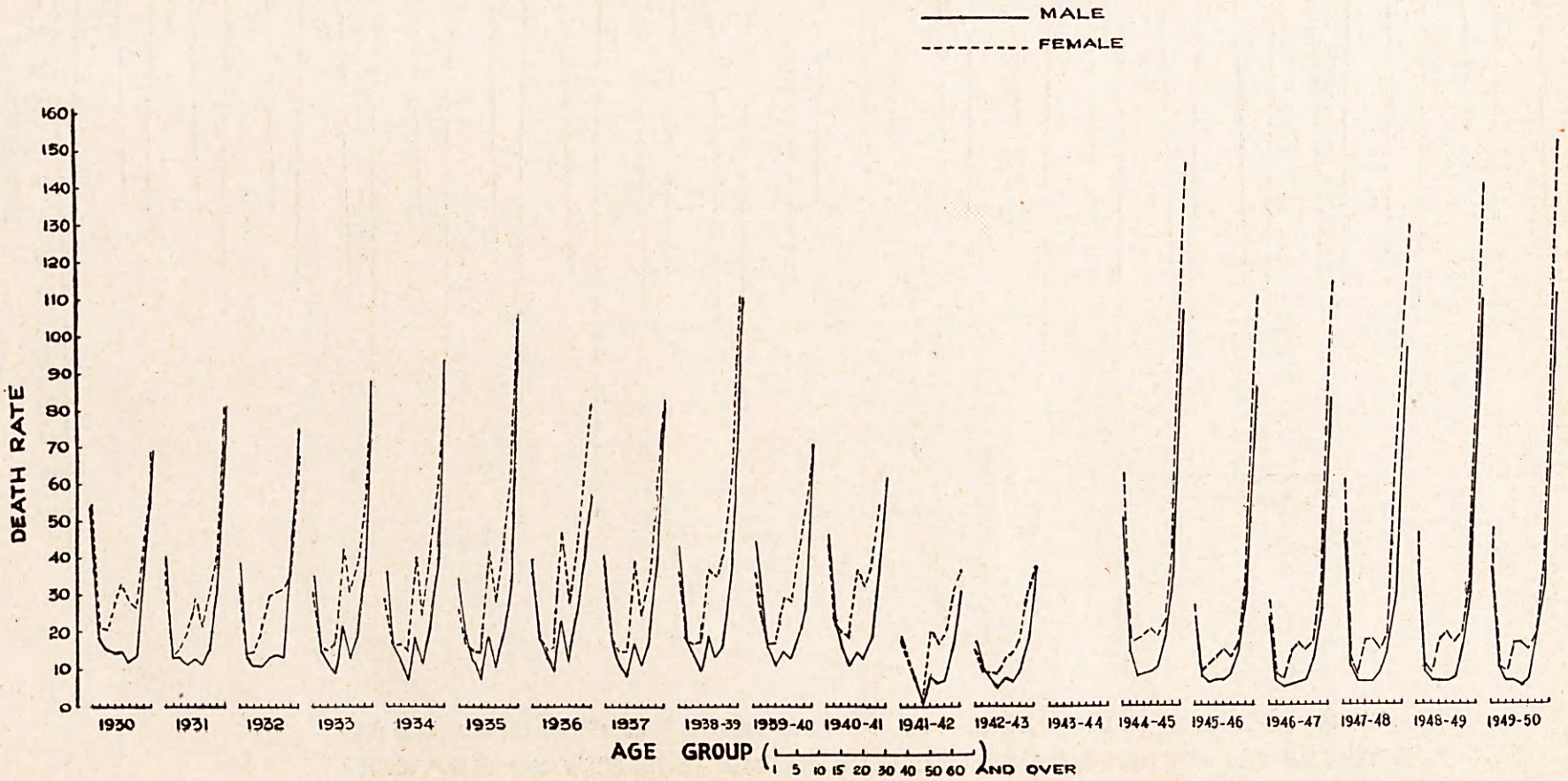

CHART 1. (Page 309)

PLATE XII

CURVES OF AGE SPECIFIC DEATH RATES FOR MALE AND FEMALE OVER ONE YEAR (FROM 1931-50) IN THE CITY OF BOMBAY

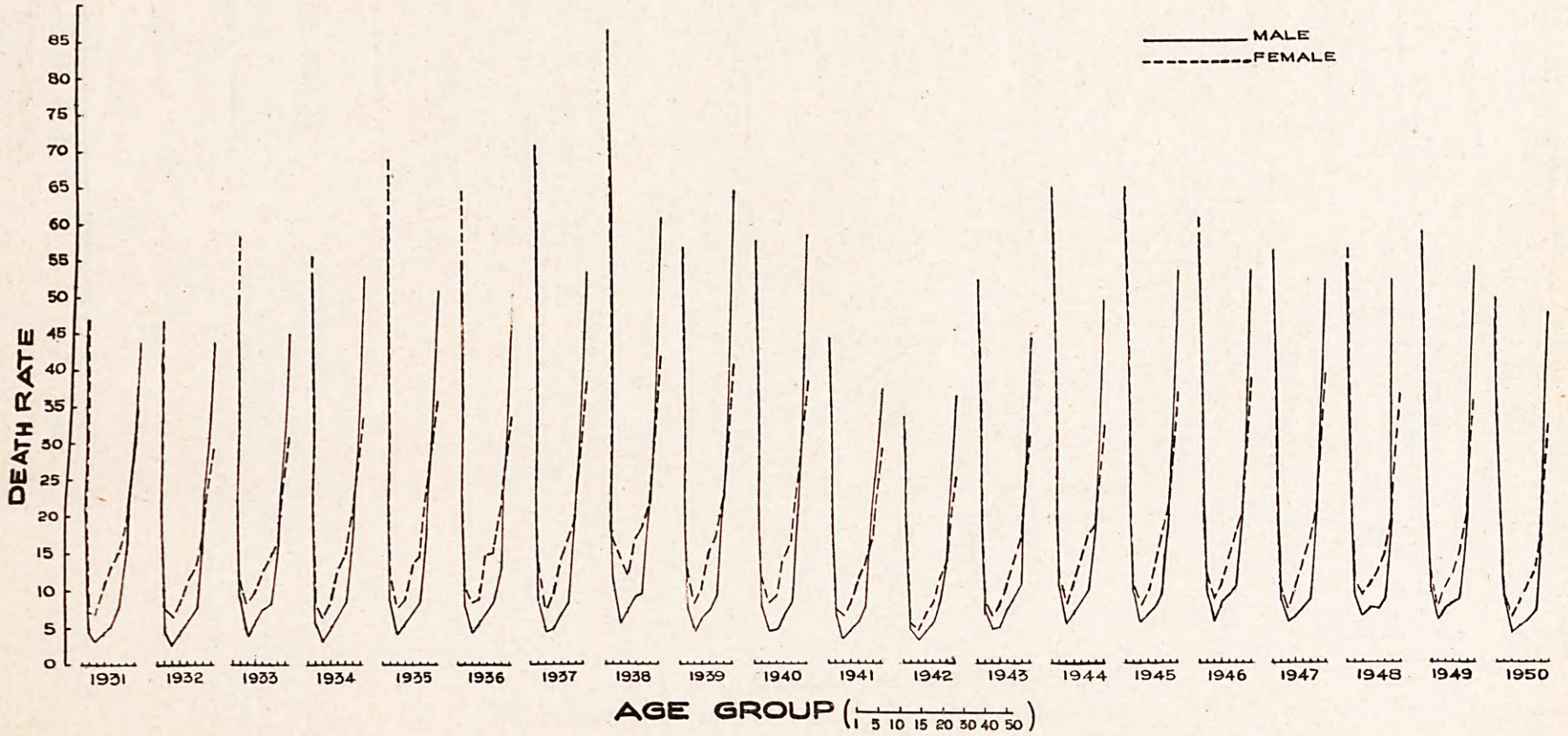

CHART 2. (Page 309)

CURVES OF AGE SPECIFIC DEATH RATES FOR MALE AND FEMALE OVER ONE YEAR *(FROM 1930-40)* IN THE CITY OF MADRAS

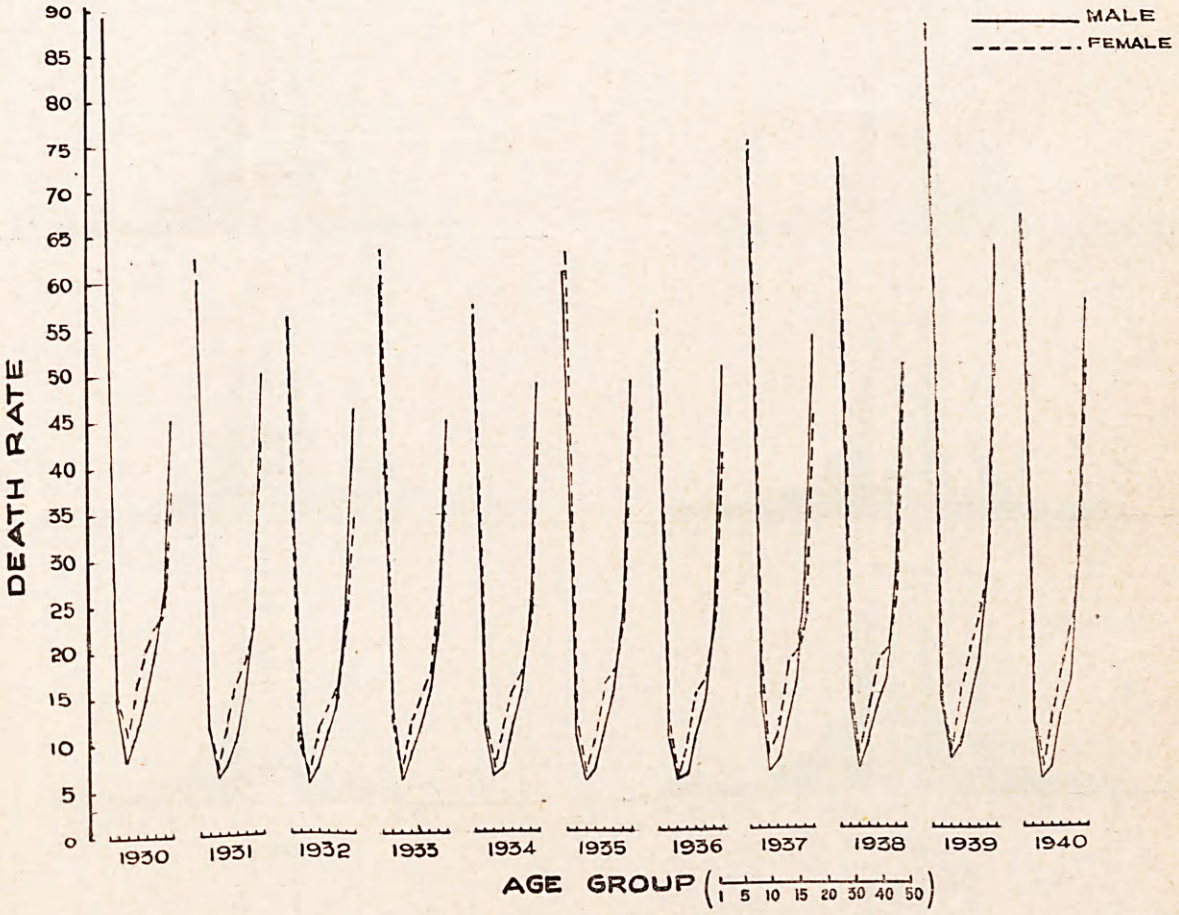

CHART 3. (Page 309)

MALE AND FEMALE DEATH RATES BY CAUSES IN CALCUTTA

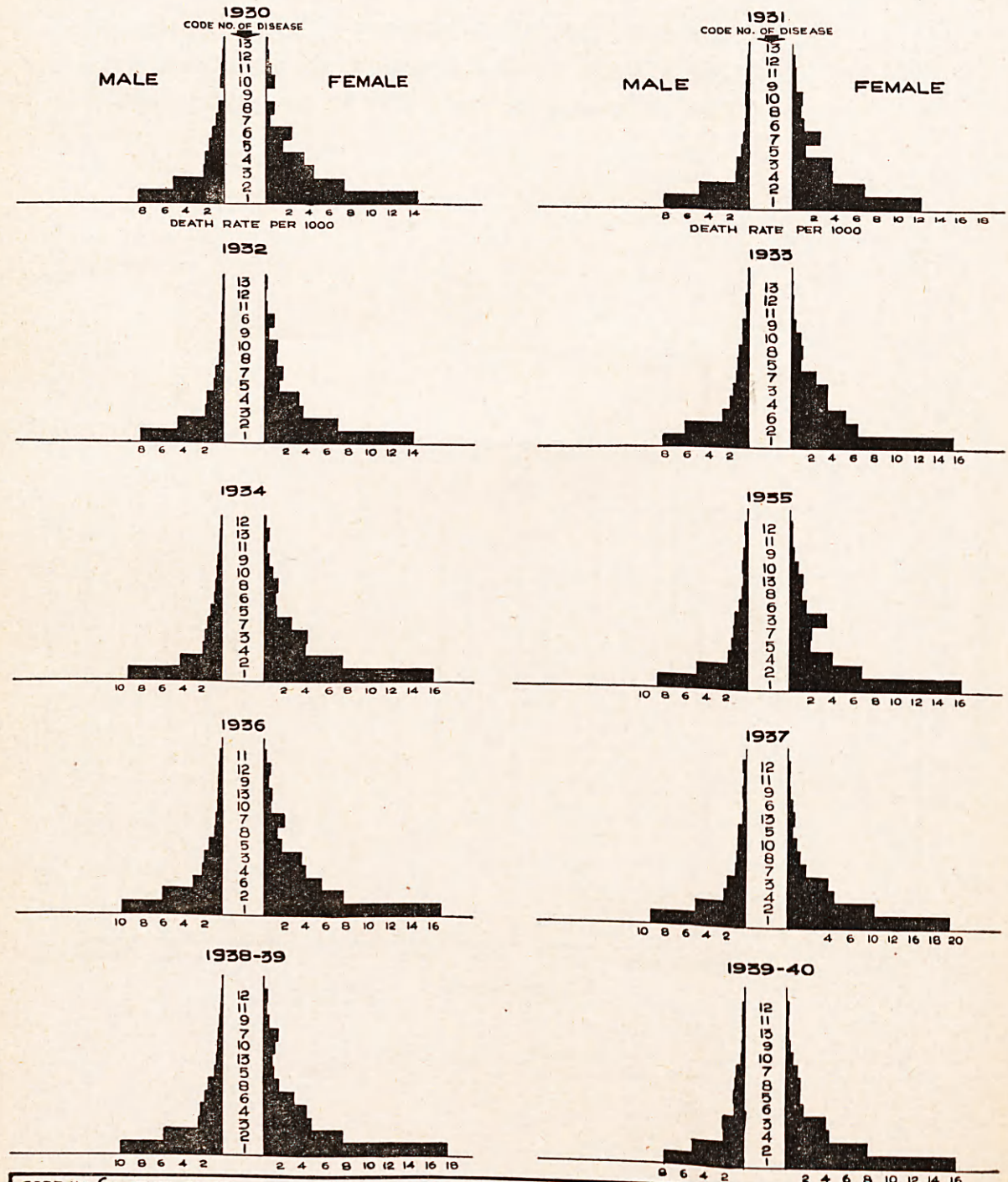

CHART 4. (Page 309)

MALE AND FEMALE DEATH RATES BY CAUSES IN CALCUTTA

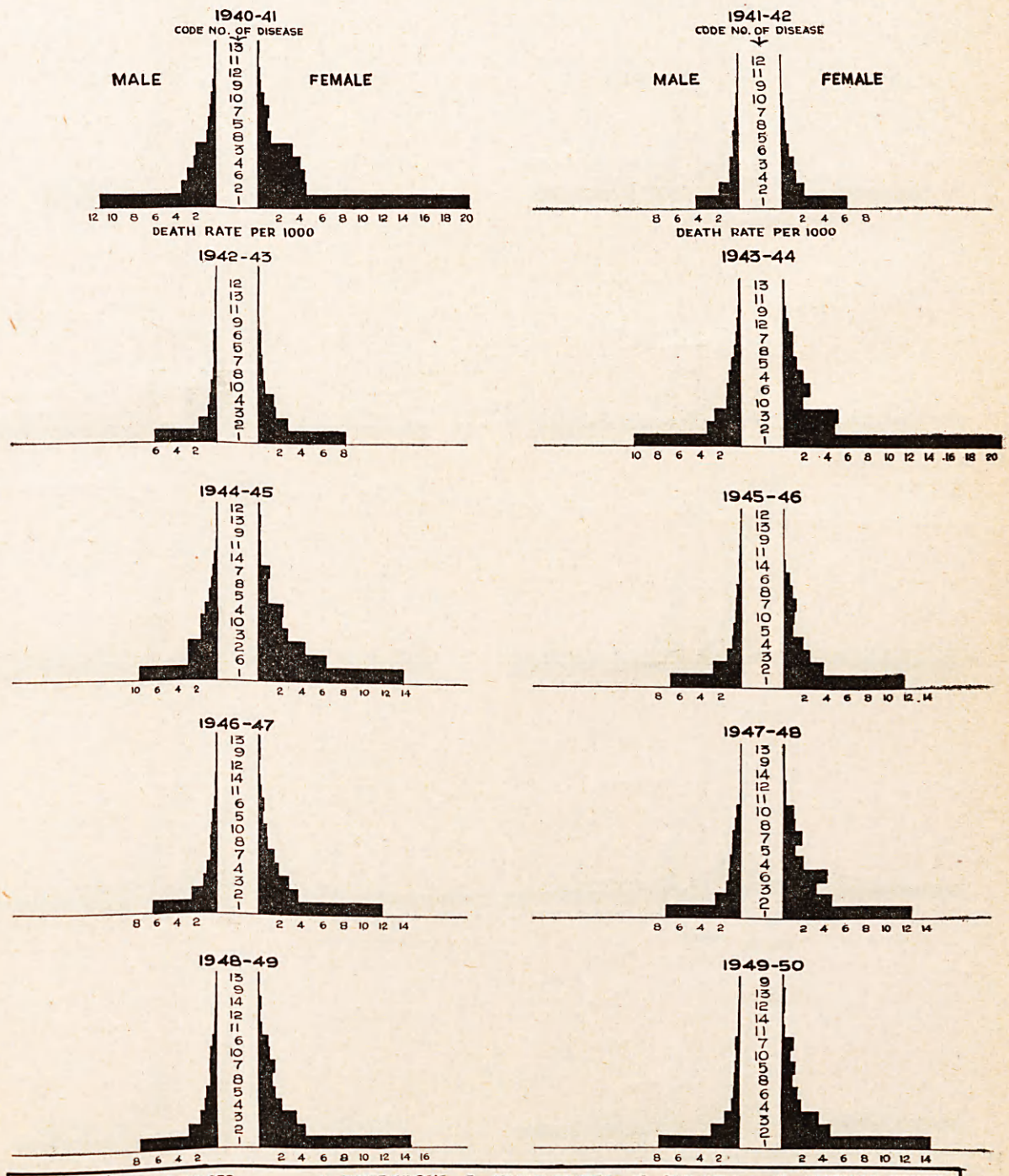

CHART 4—*contd.* (Page 369)

MALE AND FEMALE DEATH RATES
BY CAUSES IN
BOMBAY
(CITY)

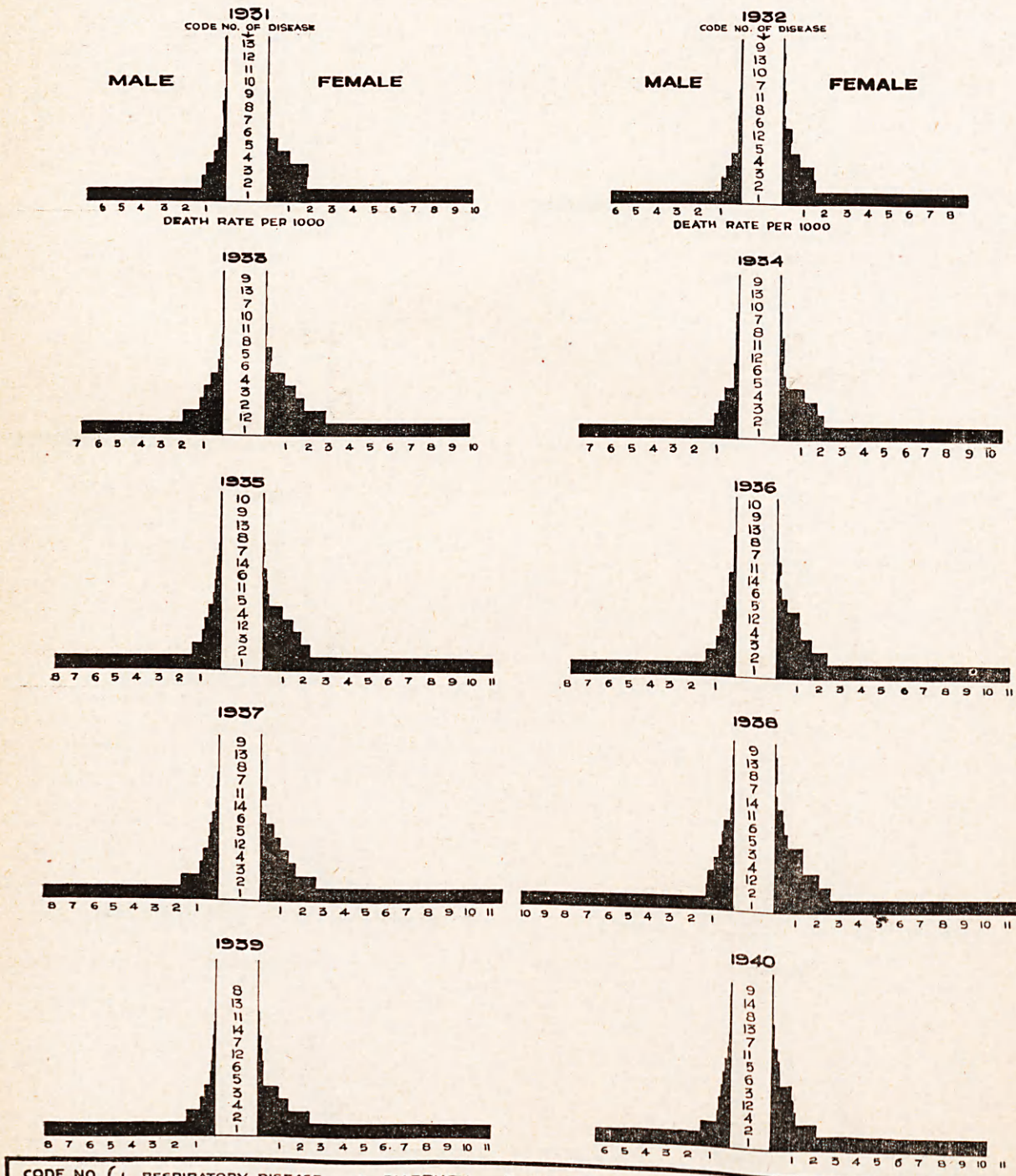

CHART 5. (Page 309)

MALE AND FEMALE DEATH RATES
BY CAUSES IN
BOMBAY
(CITY)

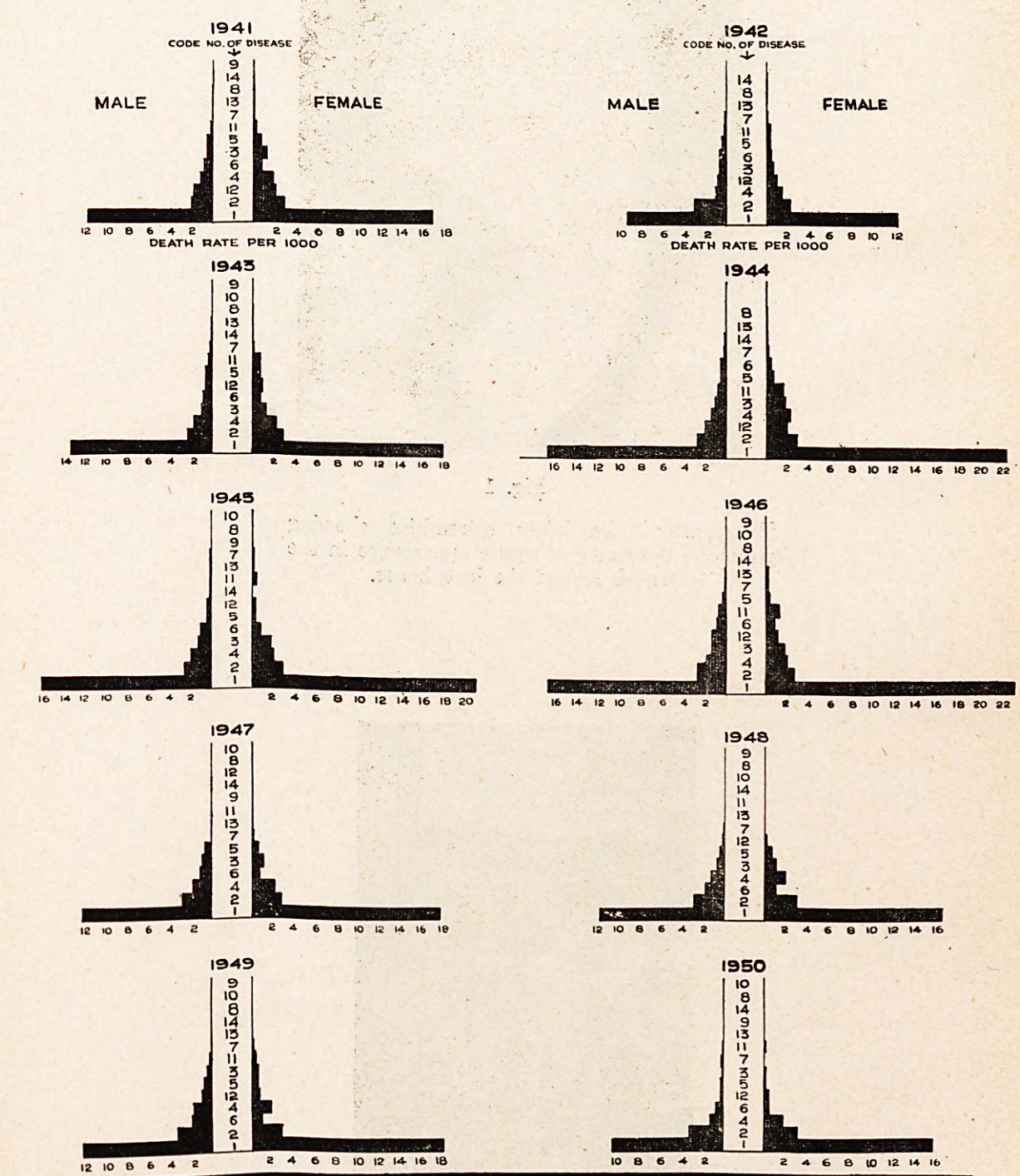

CHART 5—*concld.* (Page 309)