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# Report of an Enquiry into the Causes of Maternal Mortality in Calcutta

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# Report of an Enquiry into the causes of Maternal Mortality in Calcutta

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## Introduction.

Maternal mortality, either directly or indirectly due to childbearing causes, is known to contribute largely to the toll of female life in India, but exact information on the subject is very meagre. Such returns as are available from the Health Departments of different provinces show figures for maternal mortality rates which vary greatly from province to province. They are based, in some cases, on returns from limited areas only, and the figures are valueless on account of inaccuracy of registration of births and deaths and unreliability of stated causes of death. They give no idea of the true state of affairs.

An indirect light on the importance of childbearing in contributing to maternal mortality is provided by comparing mortality rates for males and females in the reproductive period of life (Appendix A, Table I). The figures for British India in the Report of the Public Health Commissioner for the year 1936 show that during the age period 15 to 40 years the female death rate was consistently higher than the male death rate, and the greatest difference between the rates occurred in the age period 20 to 30 years. Some provinces and some municipalities show very startling differences in these death rates, *e.g.*, in Calcutta in 1936 the death rate for males in the age period 20 to 30 years was 23·5 and for females it was 47·2. It is not unreasonable to suppose that childbearing is a major factor, which contributes either directly or indirectly or both, to the different rates in the two sexes. The other important factor is tuberculosis, and the two interact with one another.

Early marriage is often blamed for the high female death rate and there is evidence for its adverse effect on maternal mortality, but the results are not immediately obvious ; it is not so often in her first or even in her second pregnancy or labour that the very young mother dies, but later when worn out by too early childbearing and child-rearing and often by too rapidly repeated pregnancies, she succumbs as a multipara, to anæmia, sepsis, hæmorrhage or perhaps most frequently of all, to tuberculosis, when she is between 20 and 30 years of age. This is the time when the evil effects of very early marriage can be demonstrated.

An extensive survey was conducted by Major-General Sir John Megaw in 1933. He investigated certain public health aspects of village life and estimated that the maternal mortality rate in India as a whole was not less than 24·5 per 1,000 births.

More definite information is available in regard to causes of maternal deaths in hospital cases. Dr. Margaret Balfour in 1925-26 conducted an enquiry under the auspices of the Indian Research Fund Association. She collected particulars relating to 11,343 deliveries in hospitals in different parts of the country. Amongst these deliveries there were 244 maternal deaths. A few years later the Council of the Association of Medical Women in India, recognising how much valuable information on the subject of maternal morbidity and mortality was obtainable from the records in women's hospitals, began, in the year 1933, to collect annual returns from a number of hospitals staffed by members of the Association. These hospitals were scattered widely over the country and provided samples of conditions existing in many of the provinces and States. Since 1935 these returns have been submitted in a

uniform manner which has made it possible to tabulate them and classify the maternal deaths according to the International List of causes. In the course of 4 years 1935 to 1938 information relating to 125,428 deliveries and details regarding 3,032 maternal deaths have become available (Appendix A, Table 3). The frequency distribution of deaths by causes in a hospital series of cases is by no means an exact reflection of conditions in the whole population, but with certain minor modifications a fairly true picture is believed to be obtained. These hospital returns have shown that, while puerperal sepsis is the most frequent cause of maternal death, as is the case in other countries, *anaemia* comes second in importance, and indeed is so often a contributing cause that it may be considered an equally important factor in contributing to maternal mortality in this country. Remarkable variations in the frequency of anæmia, eclampsia and osteomalacia in hospitals in different parts of the country suggest important avenues of future research.

Two maternal mortality surveys have been carried out in Madras Presidency. The Madras Public Health Department in 1927-28 collected figures in four of the largest municipalities of the Province excluding Madras and showed a maternal mortality rate of 18.5 per 1,000 total births. Later, in 1930-31, Dr. A. L. Mudaliyar carried out a detailed investigation of 436 maternal deaths which occurred during a 12 month period in Madras city. He found a maternal mortality rate for that city of 16.6 per 1,000 total births.

Another survey was made in Assam in 1932 by Dr. Margaret Balfour who collected information relating to maternal mortality amongst coolie women working in 31 tea gardens. The maternal mortality rate in connection with 9,733 deliveries over a 3-year period was found to be as high as 42 per 1,000. Anæmia was stated to be the cause of death in 50 per cent. of cases. Subsequent investigation by Dr. L. E. Napier, of the forms of anæmia amongst tea garden coolies in Assam, suggests that both iron deficiency and megalocytic anæmia are prevalent.

Information regarding maternal deaths in rural areas in India is almost non-existent. In 3 rural health units under the direction of the Rockefeller Foundation during the period of the Calcutta Enquiry, 31 maternal deaths were reported in association with 5,807 births. This gives a maternal mortality rate of 5 per 1,000 total births. These figures are very small and until further information is available no conclusions can be drawn, but it is probable that rural maternal mortality rates (except in areas where such conditions as osteomalacia or anæmia are very common), will be found to be lower than urban rates.

The need for more accurate knowledge based on whole population studies caused the Maternal Mortality Advisory Committee of the Indian Research Fund Association in 1935, to recommend that a grant be provided for the first of a series of enquiries into the causes of maternal mortality. The enquiry was conducted in the All-India Institute of Hygiene and Public Health in Calcutta for the period of a year in 1936-37 and the information collected has provided the material for this report. A series of 887 maternal deaths was investigated which gives a maternal mortality rate for Calcutta of 24 per 1,000 registered live births. This figure must, however, be accepted with reserve for reasons that are discussed in the text.

The report which follows was written in the first place as a record of facts which were ascertained by the courtesy of superintendents of institutions and private practitioners and from information given by relatives and attendants of the women who had died. It was, however, considered by

the members of the sub-committee of the Maternal Mortality Advisory Committee, to which the report was submitted, that it would serve a more useful purpose if it contained a critical survey of the existing maternity services in Calcutta and recommendations based on the findings of the enquiry. These sections have therefore been added later. I wish to express my thanks to Dr. C. L. Houlton, Dr. J. M. Orkney and Dr. K. C. K. E. Raja, members of the sub-committee to which the report was submitted, for their very helpful criticisms and suggestions.

This enquiry was financed by the Indian Research Fund Association but was only possible with the help of the Public Health Department in Calcutta and the co-operation of many other individuals in public and private capacities and this assistance is gratefully acknowledged. We owe much to Dr. L. M. Biswas, Health Officer, Calcutta Corporation, for assistance, without which the work could not have been attempted with only two research assistants, and to the Sub-Registrars of the Calcutta Corporation on whom certain extra duties devolved. We also thank the superintendents of hospitals, maternity homes and welfare centres for so kindly putting their records at our disposal, and those private practitioners who spent a considerable time in giving us the information that we required.

I am very much indebted to Dr. K. C. K. E. Raja, not only for arranging for the mechanical analysis of the findings in the Vital Statistics Department of the All-India Institute of Hygiene and Public Health, but for generous help given on many occasions and particularly for his expert advice on statistical points. I also thank Mr. S. Swaroop for so kindly writing the statistical notes on the seasonal incidence of certain complications of pregnancy.

I am very grateful to Dr. Houlton, C.M.O., W.M.S., who lent the services of two temporary (now permanent) officers of the Women's Medical Service as research assistants; also to Dr. Lal, Acting Director of the Institute of Hygiene for his help, and to General Mills, Surgeon-General with the Government of Bengal, for supplying information relating to existing hospital facilities in Calcutta.

Lastly, I want to thank my assistants, Dr. Massick, Dr. Pandit and Dr. Shaw, who were entirely responsible for the actual work of following up cases and collecting information, and to say how much I appreciated the persistence, patience and tact with which they pursued a difficult and often depressing task; also Mr. A. P. Das Gupta, for his very reliable work in the matter of tabulation and calculations required for this report.

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