A PILOT HEALTH SURVEY IN WEST BENGAL—1955

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SUMMARY. Even in those countries which have shown considerable progress in medical and public health fields morbidity statistics had always remained somewhat inadequate and defective. In India a large mass of the population particularly in the rural areas do not avail of any medical care. It will, therefore, be too much to expect from the data obtained through hospitals and other official agencies to provide adequate and reliable statistics of the morbidity pattern in this country. For obtaining a comprehensive picture of the morbidity conditions one has, therefore, to depend upon other sources particularly sample surveys. The main object of this study was to evolve suitable procedures for the collection of morbidity and medical care statistics by sample surveys.

CHAPTER 1

Introduction

1.1. The promulgation of the Births, Deaths and Marriages Act in 1886 marked the beginning of registration of vital events on a voluntary basis throughout India. Since then, some of the States have passed Special Acts for the compulsory registration of births and deaths.

1.2. Although three-fourth of a century have elapsed since the enforcement of registration in the country, the machinery is still in its primitive stage with no appreciable improvement and is almost breaking down for apathy and lack of administrative vigilance. The defects inherent in the system still continue without being rectified. Although the reporting of vital events is a primary duty of the people, they are either ignorant of it or indifferent to it. Moreover, there is practically very little use of birth and death certificates at the present time. The chowkidar or the village headman whose responsibility it is to report the vital events occurring in rural areas is already overburdened by his revenue and police assignments with the result that the registration of vital events in rural areas does not get adequate care or attention. This has led to a gross under-registration of births and deaths which may be of the order of 50 per cent. In the urban areas also proper attention has not been paid for improving the system of registration.

1.3. Further, so far as death registration is concerned, the reporting of the cause of death by the chowkidar who is generally illiterate or semi-literate is anything but satisfactory. Apart from a few well-known and easily recognisable communicable diseases like small-pox and plague, the returns obtained are practically of no use for the purpose of health planning or research. The available vital statistics, therefore, are wholly inadequate and unreliable for carrying out any scientific research or effective health planning.

1.4. The deficiency in the existing morbidity statistics is still more glaring. Even in statistically advanced countries, the recording of such events could not be considered as absolutely perfect. Nevertheless, in those countries a ceaseless effort goes on to perfect the machinery responsible for the collection of such statistics by increasing the scope of notifiable diseases to include a larger number of diseases and by supplementing the available

morbidity data by highly specialised surveys. However, a change in the official attitude was discernible in this country since a decade or so and there has been an increasing realisation of the importance and value of vital and health statistics in the fields of health planning and research. The Government of India, realising the magnitude of the health problems, set up a committee in 1943 known as the Health Survey and Development Committee under the chairmanship of Sir Joseph Bhore to review the then existing health conditions and the status of vital statistics in the country, and to suggest ways and means for their improvement. The recommendations contained in the report which was the result of a painstaking and extensive fact-finding study, though accepted in principle, have not, however, been implemented in full. Nevertheless, the Planning Commission of the Government of India has considered some of the aspects implied in the recommendations and introduced them with suitable modifications in the country's development programmes.

1.5. A searching analysis of the available vital statistics has been made by the Committee. In the chapter on 'Vital Statistics', it says, "Preventive and curative work can be organized on a sound basis only on accurate knowledge regarding the diseases and disabilities prevailing in any area. . . . . The organization of morbidity statistics for the community presents a difficult problem even in countries in which the development of health services has advanced much more than India, and figures for deaths in view of their greater completeness are generally utilized to a greater extent for the study of health problems, even though the latter constitute more satisfactory material for such study. It is only when adequate medical services covering the whole population and offering protection to all irrespective of their ability to pay for such protection, becomes established and operates over a reasonable period of time, that morbidity statistics of the requisite quality and quantity will develop."

1.6. The available information on morbidity is chiefly confined to those diseases which are made notifiable to the health authorities. This fact together with the inadequate medical care available to the population greatly restrict the extent and accuracy of such returns. The situation has been adequately summed up in the Report of the Health Survey and Development Committee (loc. cit.) which reads, "There are considerable variations in the number of communicable diseases which are notifiable in the different provinces . . . there do not exist, even in the large cities, adequate facilities for ensuring that some of these diseases, for example, tuberculosis, will be notified in sufficient numbers to ensure that a substantial proportion of the actual occurrences will be brought on record."

1.7. The absence of reliable and adequate national statistics of the incidence of diseases and injuries is being keenly felt by the health authorities. Perfection in this direction can be achieved only in the long run. For some years to come one will have to depend on morbidity and mortality statistics collected from 'ad hoc' surveys either on sample basis or a complete investigation in selected areas to ensure reliability and adequacy of the statistical material.

1.8. Number of attempts have been made by public health organizations in recent years to assess the prevalence of certain chronic diseases such as tuberculosis, leprosy etc. Such surveys require trained medical personnel and elaborate laboratory facilities and in a country like India with limited resources the introduction of such investigational methods on a national scale would be beset with practical difficulties. Further, these surveys cover only the so-called chronic diseases and leave entirely the acute diseases which in India form the bulk of the total morbidity.

1.9. Apart from the above few studies of morbidity from specific diseases, no comprehensive survey concerning morbidity and medical care on a national basis has hitherto been attempted. The only general health survey ever done in this country was the Singur Health Survey in 1944 which was confined to a small compact rural area in West Bengal. The lack of enthusiasm on the part of the government to initiate comprehensive health surveys may be attributed to the meagre financial resources and to the shortage of trained personnel for carrying out such extensive undertakings. Even if these are forthcoming, a health survey by its very nature will still prove to be a difficult proposition due to the lack of knowledge of a suitable procedure for the collection of health statistics in the peculiar conditions obtaining in the country. Before launching full-fledged morbidity surveys, therefore, it is desirable to initiate small pilot studies and the experience gained by such studies may be utilized with advantage for planning more effectively in the future health surveys. With this end in view, the West Bengal Health Survey was sponsored by the Indian Statistical Institute in 1955, in conjunction with an enquiry into the employment conditions of the rural and urban populations purely as a pilot study to evolve suitable methodology for the collection of morbidity and medical care statistics.

1.10. In recent years, however, the National Sample Survey (NSS), the only organization in India collecting socio-economic statistics on a national scale, has included within the scope of its enquiry a few questions regarding the occurrence of certain vital events like births, deaths, marriages and diseases. The information, though useful for a broad analysis, is not adequate for a critical evaluation of the health conditions of the people. With its unique position in the country, the NSS is, perhaps, the most competent single organization which can undertake health surveys on a nation-wide basis. Advantage should, therefore, be made of this elaborate machinery for conducting health surveys in future for yielding optimum and quick results.

CHAPTER 2

Summary Findings

2.1. The West Bengal Health Survey was initiated by the Indian Statistical Institute in 1955 purely as a pilot study to evolve a suitable methodology for the collection of health and medical care statistics. A total of 1172 rural households distributed over 72 sample villages and 566 urban households distributed over 5 sample towns or cities were surveyed. The households selected in the sample were kept under observation for a period of 3 months by periodical visits. The information collected related to

(i) demographic particulars of the members of the household,
(ii) housing and sanitary conditions,
(iii) composition of the diet,
(iv) morbidity and medical care,
(v) specific details of current pregnancy terminations and
(vi) history of past pregnancy terminations of all ever-married women.

2.2. *Morbidity rates.* All illnesses whose duration exceeded 3 months were classified as chronic and those that prevailed for periods shorter than 3 months were

classified as acute. For the former, the morbidity rate has been expressed by its rate of prevalence, that is, the number of cases per 1000 population at an instant of time, and for the latter the morbidity has been expressed by its rate of incidence, that is, the number of new cases arising in a year per 1000 population. The total prevalence rate of chronic diseases observed among the urban population was higher than that observed among the rural population, the rates being 35 and 20 for the urban and rural populations respectively. In respect of acute diseases also the estimated incidence rate of the urban population was higher than that for the rural population, being 423 and 328 respectively.

2.3. Taking all illnesses and injuries together, a total of 100 cases per 1000 rural population and 150 cases per 1000 urban population were observed during the 3-month period of this survey. In a similar survey conducted in U.K. by the Ministry of Health (1946), a total of 5518 cases were observed among a group of 7000 persons during a three-month period, that is, 790 cases per 1000 population. The contrast between the estimates of West Bengal and U.K. is indeed very striking and the results suggest that the people of U.K. are less healthy than those of West Bengal, which contradicts the prevailing notion about the relative levels of health in these two communities.

2.4. Recall lapse could not possibly explain the huge difference between these two reported rates as we have kept a follow-up record for each family over the three-month period by visiting each household 4 times at intervals of 3 weeks. The reason must be largely ascribable to the low level of health consciousness of the West Bengal population which is essentially the result of their low level of living.

2.5. As there is no well-defined line of demarcation between the state of health and that of disease of an individual, it is likely that the morbidity returns obtained in an enquiry of this type will be influenced appreciably by the level of health consciousness of the community. The lower the level of health consciousness, the greater is the chance of overlooking minor ailments and of reporting only those illnesses that cause severe pain or disability.

2.6. In Tables 5.10 and 5.11 are shown the incidence and prevalence rates for each group of diseases. Among acute diseases, those of the respiratory system alone accounted for about half of the morbidity among the rural and urban populations. Dysentery, diarrhoea and other diseases of the digestive system occupy the second place in order of importance in the morbidity pattern of West Bengal.

2.7. Among chronic diseases taken individually, pulmonary tuberculosis, perhaps, is the most important disease particularly in the urban population. The prevalence rates for pulmonary tuberculosis among the urban and rural populations were 3.77 and 1.68 per 1000 persons respectively.

2.8. When the total morbidity for all types of illnesses were estimated, the only important source of error arose due to non-reporting of minor illnesses by the respondents. However, when one attempts to estimate the morbidity rates for individual groups of diseases, the error due to misclassification by causes of disease is bound to arise. The prevailing opinion among public health workers regarding the errors of misclassification is that it is likely to be enhanced considerably if the investigation is conducted by non-medical personnel. As the West Bengal Health Survey was conducted by non-medical investigators, it was considered desirable to assess the validity of the morbidity rates for specific groups of diseases. For this purpose, about 400 addresses of patients attending the O.P.D. of

the R. G. Kar Medical College Hospitals were collected, together with their diagnostic reports. The households to which these patients belonged were apportioned equally between two teams of investigators, one medical and the other non-medical, and the reports obtained by household canvass by these two teams were compared with the corresponding reports obtained from the hospital register. The results of such comparison are shown in Tables 5.1 to 5.7 of this report.

2.9. Two types of discrepancies in tallying the investigators' reports with the corresponding entries in the hospital register were observed, one arising out of failure to report the illness of the afflicted individual and the other arising out of misclassification of the cause of the disease. In respect of the first, the medical investigators' performance was slightly superior to that of the non-medical investigators, the percentage of cases missed being 6.5 and 11.6 respectively. As regards the error due to misclassification also, the overall rate of disagreement for non-medical investigators was higher than that of medical investigators, being 63.1 per cent and 57.3 per cent for the non-medical and medical teams respectively. Hence, from the results of this investigation it is quite apparent that so far as the validity of the disease classification is concerned, reports based on either type of investigating teams are almost equally unreliable. Caution must, therefore, be taken in interpreting the morbidity rates for individual groups of diseases, no matter by whom the investigation is carried out.

2.10. *Disability rates.* Diseases were classified as (i) non-disabling, (ii) disabling but not causing confinement to bed or hospital and (iii) causing confinement to bed or hospital. The second category being not very much recognisable in the case of infants and old age persons who generally have no assigned work, the analysis in these reports relate only to persons in the age group 15-59 years. Out of 332 cases of illnesses observed among the rural population of this age group, 113 cases or 35 per cent were of a non-disabling nature, whereas among the urban population out of 184 cases observed 49 or 27 per cent were non-disabling. Here also, the contrast with the estimates obtained from the health survey conducted in U.K. by the Ministry of Health is very striking. The observed percentage of non-disabling illnesses among the U.K. population was as high as 91 per cent, which again shows how often minor illnesses of a non-disabling nature are not even recognised as an illness by the local population.

2.11. The economic consequences of this can be assessed only if the duration of the disability resulting from such illnesses is taken account of. In the case of the urban population, the number of days lost due to disability from acute and chronic illnesses were 3.36 and 10.10 per year per person respectively, whereas the corresponding rates for the rural population were 3.12 and 4.55 respectively.

2.12. *Medical and Maternity care.* Out of a total of 604 cases of illnesses observed during the three-month period of survey among the rural population only 60 per cent availed of medical care from any recognised system of medicine, whereas out of 351 cases of illnesses observed among the urban population, 68 per cent availed of medical care from one type or another. The corresponding estimate of the percentage of cases which availed of medical care among the population of U.K. as estimated from the data of the health survey carried out by the Ministry of Health was 40 per cent. This does not mean that more often people in West Bengal go in for medical care than in U.K. On the other hand, a substantial number of cases of illnesses remains unreported due to the failure of the afflicted individuals to recognise the disease.

2.13. Of the three important systems of medicine practised in this country, namely, Allopath, Homeopath and Ayurved or Unani (Indian), the one most frequently resorted to is the allopathic system, 41 per cent of the cases among the rural and 51 per cent of the cases among the urban population availing of this system.

2.14. Those who did not avail of any sort of medical treatment were asked to state reasons for not availing medical care. 41 per cent of rural and urban patients stated that 'sickness was not serious' and 33 per cent of the rural and 6 per cent of the urban patients stated that 'medical care was too expensive'.

2.15. As regards maternity care, the present position seems to be very unsatisfactory. About 24 per cent of the rural deliveries and 20 per cent of the urban deliveries were without any sort of professional attendance. Those attended by untrained nurses (dhais) comprised 76 per cent of the rural deliveries and 25 per cent of the urban deliveries.

2.16. *Infant mortality.* For the purpose of relating the general health of the population to various factors such as nutrition, housing and sanitary condition etc., it was thought advisable to use one single index such as infant mortality rate. An analysis of infant mortality rate by level of nutrition and sanitation of the dwelling place shows a high association of these factors with the infant mortality rate. It was observed that among the class of population in a moderately good level of nutrition, the estimated infant mortality rate was 116 for the rural and 111 for the urban population, whereas among the under-nourished class, the estimated infant mortality rates were 171 for the rural and 150 for the urban population. Similarly, it was observed that among those in the urban sector whose housing condition was somewhat satisfactory the infant mortality rate was 85 as against 149 recorded among those whose housing condition was definitely unsatisfactory. Infant mortality rates were also analysed by certain socio-economic characteristics of the fathers of the infants and here also it was observed that the association of infant mortality rates to these factors was very striking. Though these factors may not directly determine the health conditions of the population, they serve as useful criteria in stratifying the population for obtaining optimum results in a general health survey of this kind.

2.17. *Reliability of the estimates.* It should be emphasised at the outset, that this survey being in the nature of an exploratory one, the estimates are not claimed to be very reliable. However, it would be useful to have an approximate assessment of the degree of accuracy of the estimates, at least of the marginal ones, as such estimates of error will help to formulate suitable sample designs in future. As this survey was conducted in conjunction with an employment survey no modification of the NSS design to suit specifically the collection of health statistics was attempted. It can, therefore, be expected that if in future the sample design is made in such a way as to conform to the requirements of an investigation of this kind, a greater degree of accuracy can be attained even with the same sample size.

2.18. The entire rural and urban samples in this survey were divided into two sets of interpenetrating sub-samples and some of the important estimates given in the body of the report have been obtained sub-samplewise and shown in Appendix 1.

2.19. It will appear from these estimates that the rural sub-samples which were comparatively large in size showed fairly close agreement in at least the marginal estimates. The urban sub-samples, however, showed considerable disparity even in the marginal estimates, which may be partly due to the smallness of the sample size and partly due to the greater heterogeneity among the urban sample units. The latter point clearly indicates that a more effective stratification is called for in the urban areas to obtain optimum results.

CHAPTER 3

Design of the Survey

3.1. As the present survey was undertaken with the main objective of developing a suitable methodology for the collection of health and medical care statistics, its coverage and scope were necessarily limited to that of a pilot study. This pilot study covered the rural and urban populations of West Bengal. For the sake of administrative convenience, the design adopted in the fourth round of the NSS was adhered to. The rural sample consisted of 1172 households spread over 72 villages selected from 16 strata and the urban sample consisted of 566 households spread over 40 town or city blocks in 4 towns and Calcutta City selected from 3 urban strata of which Calcutta City alone constituted one stratum. The rural and urban samples were then split into 2 interpenetrating sub-samples and allotted to separate teams of investigators.

3.2. The State of West Bengal has a population of about 26 million persons of which three-fourths live in rural areas and one-fourth in urban areas. The density of population is approximately 800 persons per square mile. The number of villages exceeds 35,000 and there are over 100 towns with population below 1,00,000 and 7 cities with population over 1,00,000. The percentage of literacy is of the order of 20. In addition to the above demographic features which characterise most of the densely inhabited areas of India, the large influx of refugees in recent times has accentuated the socio-economic problems of the State. Further, being one of the most industrialized States in the Indian Union, the health problems confronting a community as a result of industrialization are a special feature of this population. The study of the various aspects of this community, therefore, may be fruitful for application on a wider scale in future health surveys.

3.3. While the estimates obtained in the course of the analysis of the data can be taken as indicative of the general pattern or trend of certain vital events, no claims are put forward as regards the reliability of such estimates.

3.4. The items of information collected in this survey pertain to

(i) Demographic particulars of the members of the household,

(ii) housing and sanitary condition,

(iii) composition of diet,

(iv) morbidity and medical care,

(v) specific details regarding pregnancy terminations taking place during the reference period and

(vi) history of past pregnancy terminations of married women of the household.

3.5. The exact details of information falling under the above 6 main heads can be seen from the schedule, a facsimile of which is reproduced in Appendix 2.

3.6. *Method of investigation.* In general, there are two lines of approach to the study of illness in a population.

(i) The single visit survey by which records of illness for a sample population on the day of visit or for a specified period of time previous to the visit are collected and

(ii) keeping a sample population under continued observation over a period of time and recording of illnesses happening during that time.

3.7. Though both the methods yield valuable results, it has to be borne in mind that due to limitations of memory of the informants some of the illnesses particularly those of the respiratory and digestive systems which are of a minor nature and cause little or no disability are largely missed unless the period referred to is a short one. In any survey where probing into past events is a necessary feature of the investigational procedure, due safeguards have to be taken to eliminate or reduce to the minimum the effects due to memory lapse. This is an intricate problem as too short a period will considerably reduce the time coverage and too long a period will obviously result in serious recall lapse. Even in countries where the public health administration has attained a high level of efficiency the element of memory lapse has added considerably to the difficulties of carrying out morbidity surveys. The investigational procedure of this survey was designed in such a fashion that it was possible for the investigators to visit each household selected in this survey 4 times during the period of the investigation. The duration of observation extended over a period of 3 months commencing 14 days prior to the first visit and terminating with the date of last visit. As the period between successive visits was usually 3 to 4 weeks, a continuous record of vital events could be collected by this survey which may be reasonably assumed to be free from any major source of error arising out of recall lapse and at the same time providing a substantial coverage over time.

3.8. The schedule has been divided into 9 blocks and each block relates to a specific aspect of the survey. In the first visit all the blocks except block 9 were to be filled in. In the second and third visits only the information regarding the illnesses or injuries and medical care (block 7) and current terminations (block 8) were to be entered. In the fourth visit which was the final one, besides blocks 7 and 8, block 9 giving particulars of past terminations was to be filled in.

3.9. To avoid possible errors arising out of vague definitions of terms it is essential at the outset of any survey, to give precise definitions to certain categories included in the questionnaire. It may be even desirable at times to modify the conventional definitions of terms to suit the specific object in view, or to conform to the investigational procedure. For instance, the usual definition of a household as denoting a group of persons taking principal meals from a common kitchen for at least 16 days during the month preceding the date of enquiry, which is generally applied to socio-economic studies had to be slightly extended for the purpose of this survey to include within its scope three more categories, namely, (i) all children born during 14 days prior to the date of visit to members of the household, (ii) all persons dead during the 14 days prior to the date of visit, who, if alive, would have been classed as members of the household and (iii) all persons admitted into

hospitals and other institutions who, otherwise, would have been classed as members of the household.

3.10. The demographic characteristics of the household and its members are included in blocks 2 and 6 of the schedule respectively. It may be seen that block 6, besides containing items relevant to the present health study, contains additional demographic particulars regarding the individual members. These were collected in connection with the employment survey about which a reference has been made earlier. Only items falling under columns 1 to 5, 7, 14, 15 and 18 to 20 have been considered for the purpose of this study as these alone have a direct bearing on the health aspects.

3.11. The belief that some knowledge of the behaviour of certain factors like the weight, temperature, fatigue and appetite of individuals might eventually give a clue to hidden cases of tuberculosis prompted us to elicit information on these points and they were included in columns 18 to 20.

3.12. Carrying out a regular diet survey is beset with practical difficulties. In the absence of such a survey, the best approach to assess the nutritional level of the population would be to evolve an index which would be indicative of such a level. This was made possible by ascertaining the composition of diet consumed by the household in broad categories during the month previous to the first visit. Block 4 gives particulars in this respect.

3.13. Housing is as important as nutrition. Men spend, on an average, about one half of their time at home, women and children more. In block 5 were to be entered particulars of housing and environmental conditions.

3.14. Block 7 is meant for recording information regarding morbidity, mortality and medical care. These data were to be collected and recorded in all the 4 visits to the household. For each case of illness or injury a separate line was to be used in each visit. If more than one illness occurred to the same person at different times during the reference period, they were to be considered as different cases and entered in different lines. If, however, more than one illness operated simultaneously, then the entries were to be made in a single line. Any illness which prevailed during the time of visit was to be marked as 'P' in column 7 and followed up by entries in a separate line in the next visit. In each visit, new cases occurring in the respective reference periods were to be entered as 'new' and cases carried forward from previous visits were to be entered as 'old'' in column 2.

3.15. For each new case, the informant was asked to state the name of the disease as known to him and this was entered exactly in the same manner as given by him. When such names were given in the informant's own language, the investigator was not expected to substitute them by their English equivalents as it was thought that such a procedure might lead to misclassification of diseases, when non-medical investigators were employed for this purpose. Also the investigators were instructed not to ask questions regarding signs and symptoms of the disease, because it was feared that interrogations by non-medical investigators were bound to be incoherent and hence confusing to the respondent. If, however, details about signs, symptoms etc., of the disease were given by the informant of his own accord, they were then to be recorded in column 15, meant for the 'remarks'.

3.16. Diseases have been broadly divided into two classes, namely, acute diseases (duration not exceeding 3 months) and chronic diseases (duration exceeding 3 months). Such diseases which started during the reference period and continued throughout were

classified as acute or chronic with the help of expert medical advice. Each of these two classes was further subdivided into 3 groups according to the nature of disability caused, namely, (i) non-disabling, (ii) disabling but not causing confinement to bed or hospital and (iii) causing confinement to bed or hospital. In all non-bed cases disability to perform normal function as working, attending school etc., due to sickness was a readily recognizable fact, wherever it existed.

3.17. However, in cases of illness to those persons who have no such functions to perform as for instance, infants and aged persons, it is rather difficult to distinguish between the state of disability and non-disability. In such cases, the sickness was considered as disabling if the affected persons availed of either medical treatment or special diet. Here also, as before, the diseases were classified into 6 categories according to the nature of disability caused and the appropriate codes were entered in column 5.

3.18. The date of onset of a disabling disease was reckoned from the date on which the disability actually started and was entered in column 6. If the disease was a non-disabling one, no information on date of onset was sought. The date of recovery was the date on which disability ceased, and if the patient recovered within the reference period of a particular visit, the date of recovery with the prefix 'R' (for example, R—4th April) was entered in this column. If the illness resulted in death, the date of death with the prefix'D' (for example, D—4th April) was entered in this column. If illness was prevailing on the date of visit merely the letter 'P' was entered in this column, indicating that a follow-up was needed in the next visit.

3.19. The type of medical attendance availed for the illness under consideration fell under the categories of 'allopath', 'homeopath', 'ayurved', 'unani' and 'quack'. Appropriate codes were entered in column 9. In view of the fact that a significant proportion of the population, particularly in the lower social and economic levels, still seek or are forced by circumstances to seek the help of quacks, it was thought desirable to add this category also to the various types of medical attendance, though in any scientific discussion such cases are to be taken as equivalent to no medical care availed. In those cases where more than one type of medical help was availed, multiple codes were to be entered and those cases which were not medically attended were to be shown as having not received medical attendance. Obviously, for those belonging to the latter category, the attendance would not arise.

3.20. Details of expenditure on medical care incurred for each case during each reference period were to be entered in columns 10 to 12. Physician's fees and cost of medicines were to be entered in columns 10 and 11 respectively while column 12 was meant for writing down such expenses incurred towards hospital rent, nursing, transport etc. If the amount expended by the household was to cover more than one case of illness, then it was necessary to split the total amount and to allocate to each case its share.

3.21. It is generally known that a sizeable fraction of illnesses does not receive any medical attention at all. Such being the case, it was thought useful to elicit information as to why medical care was not sought. The probable answers such as 'hospital or physician not available', 'too expensive', 'no faith in treatment', 'sickness not serious', were codified and the appropriate code (s) was entered in column 13. If there were reasons other than those specified above, they were all lumped together and put under the general head 'other reasons' and given a separate code.

3.22. Name of the disease as stated by the informant and entered in column 4 together with the available details regarding the signs and symptoms of the disease given by the informant of his or her own accord formed the principal criteria for classification of diseases by causes. It was felt at the outset of the survey that without sufficient confirmatory evidence from factual experience it would be difficult to assess the accuracy or validity of the information on diseases thus collected. Hence, an attempt was made in this investigation itself to collect relevant material for a validity study. For this purpose, investigators were instructed to pick out cases which were medically attended and to enter the diagnostic report of the attending physician wherever such reports were accessible. Such a check was expected to give the necessary supporting evidence for the validity of the returns obtained in the survey.

3.23. Only such cases of child-birth occurring to members of the selected households during the four reference periods were to be entered in block 8. As the number of households covered by the sample was of the order 1750, it was not expected that more than 80 births would be recorded during the course of the observational period of 3 months. Hence, information on only a limited number of items pertaining to post-natal care have been collected.

3.24. The serial number of the women as given in block 6, whose pregnancy terminated during the reference period was entered in column 3 of this block and the nature of termination (live birth, still birth or abortion) and the date of termination were recorded in columns 4 and 5 respectively. If the termination resulted in live birth, the sex of the child was entered in column 6 and information regarding its survival and presence in the household at the time of visit was entered in column 7. The age of the child at the time of visit, or at death or at departure from the household, whichever was applicable, was recorded in column 8.

3.25. Since there was very little time-lag between the visit and the actual happening of the event, it was possible to obtain information on some more aspects pertaining to the event to a greater degree of accuracy than what it would have been if the event related to the remote past. The place of delivery, such as, this household, another household, hospital etc., and the type of attendance, such as, doctor, midwife or nurse, *dhai*, hospital, relative or friend, were to be recorded in columns 9 and 10. The definition of confinement adopted in this survey was the period of hospitalisation or in cases of home delivery, the period of bed-days and the period following confinement and terminating with the resumption of normal duties of the woman was termed as convalescence. These were entered in columns 11 and 12 respectively. The expenditure incurred towards confinement was to be distributed over 'physician's fees', 'midwife or *dhai's* fees', 'cost of medicines, tonics, etc'. and 'hospital charges'. These were entered in columns 13 to 16. In case the termination resulted in the death of mother, this was to be noted down in column 18. Any other relevant information pertaining to child-birth was to be put down by the investigator in the column headed 'general remarks'. If at the time of any visit the period of confinement or convalescence had not ended, the information contained in columns 13 to 16 were carried forward to the next visit. Exact periods of confinement and convalescence were to be given in columns 11 and 12 during the visits when such periods have come to an end.

3.26. The history of all past terminations relating to every 'ever-married' woman in block 6 was recorded in block 9 together with certain demographic characteristics of the

woman and her husband (living or dead). This block was filled up only in the last visit to the household since it was considered that in making such enquiries about the past histories of the woman a more intimate acquaintance with the household was desirable to enlist the full co-operation of the household. The information on the age of the mother at successive terminations and the result of each termination were entered in this block. In the event of the last termination of any woman taking place within one year prior to the visit, the month of birth and the result of the termination were to be recorded in columns 32 and 33 respectively. This was necessary because for such children who have not completed one year of age the period of exposure had to be separately estimated. Also in respect of such a termination, information on ante-natal care was to be collected and entered in column 34. A two-digit composite code, the left-hand digit indicating the type of attendance and the right-hand digit indicating the number of such attendances was to be used.

CHAPTER 4

Infant Mortality

4.1. One of the vital rates with a very wide range of applicability in the field of public health is the infant mortality rate. This is expressed as the number of deaths under one year per thousand live births. Apart from its practical utility in maternal and child health studies, its value as a general index of the health of a population group is in no way inferior to such mortality rates as standardized or life table death rates. Its high sensitivity to the general living conditions of the population to which it relates makes it an immensely valuable measure for comparison of health conditions of different population groups.

4.2. For the purpose of this survey, a household which has been selected as the ultimate sample unit is defined as a group of persons living together for a period of one month previous to the date of visit. Obviously, this is too short a period for studies of vital events like deaths, etc. This definition necessarily excludes from its purview the consideration of vital events relating to persons who were members of the household earlier but not at the time of survey. But the scope of the definition of the household had to be restrained in the above manner to obviate certain practical complications that might arise due to the mobility of the members of households. For example, it is not unlikey that with the death of the principal earner of a household his dependents are eventually absorbed as members of other households leading to a dissolution of the original household in which the death occurred. Such circumstances will naturally lead to gross under-estimation of deaths since the sample frame excludes households in which such events occurred. In this survey, however, a continuous record of births, deaths and illnesses occurring to the members of the selected households during a span of three months could be maintained since the survey was conducted by four visits at specified intervals. Even a period of three months, it is to be admitted, falls short of the requirements for obtaining sufficiently reliable estimates of the age-specific mortality rates which enter into the computation of standardized or life-table death rates.

4.3. Since married women belonging to the selected households formed a representative sample of all living married women in the population, the infant mortality rates relating to the live births which occurred to them during the past one or even two years could be

considered as adequately depicting the infant mortality conditions prevailing during the period. This is true because all children born during the period except those born to women dying during the period will be represented in the sample whether or not such infants could be considered as members of the household according to the definition. The fraction of women dying during the period of one or even two years being negligible, the infant mortality rate calculated on the basis of the surviving women is not likely to be significantly different from the one calculated by inclusion of the dying women.

4.4. The above considerations go to show that the infant mortality rate, apart from its usefulness as a general mortality index, has a definite advantage over other general mortality rates with regard to the statistical validity when the study is based on sample survey data. For this reason, the infant mortality rate has been utilized in this study as a general mortality index for the comparison of different social and economic classes. All live births occurring to each married woman of the household, the order of such births together with information on survival at the end of one year after birth can be obtained from block 9 of the schedule. For the computation of infant morthlity rates of different population groups, a short reference period of two or even five years would have been desirable because such a period has two advantages, namely, (i) infant mortality rate based on recent live births would be more appropriate to depict the recent health conditions of the population groups and (ii) the infant mortality rate would be statistically more valid as it would be relatively free from recall lapse. Due to the limitations in the present data, the choice of such a short reference period becomes almost impracticable and a much wider basis to include all live births that occurred upto the date of survey to each ever married woman was resorted to. The validity of the comparison on the basis of infant mortality rates thus obtained may be disputed as it was pointed out in the National Sample Survey Report No. 7 that the infant mortality rates relating to the pre-1930 marriage cohorts were inordinately low compared to the official rates for corresponding periods. As the NSS data were collected in the year 1952, it might be expected that about 40 per cent of the pre-1930 marriage cohorts might have died earlier to the date of survey with the result that this group got automatically excluded from the analysis. Since the cohorts thus excluded were likely to belong to the high mortality group, the infant mortality rate estimated from the surviving group might have been probably biased towards a lower value. Under the circumstances, it is difficult to attribute the entire difference between the NSS rate and the official rate to recall lapse.

4.5. In the following analysis, therefore, we have, in the first instance, limited our study exclusively to the group of ever-married women with at least five terminations. The live-births occurring to such women were arranged by parity and the infant mortality rate for each successive parity was estimated. The rates for the rural and urban samples are shown in Table 4.1.

4.6. The results given in the above table clearly show, as should be expected, that the infant mortality rates relating to the initial parities, particularly to the first two, are substantially higher than those recorded for subsequent parities. If recall lapse did really effect the infant mortality rates in the distant past, then the estimated rates for the initial two parities could not have exceeded those for subsequent parities both among the rural and urban populations to the observed extent. Moreover, since the infant mortality rates for the first five parities are based on births relating to the same group of women, and if

it can be assumed that the average time interval between the first and fifth parities is about 15 years, there seems to be not much ground to suspect a substantial reduction in the infant

TABLE 4.1. MORTALITY RATES FOR INFANTS BORN TO WOMEN HAVING 5 OR MORE TERMINATIONS

order of birth	rural	urban
(1)	(2)	(3)
1. 1st	244.00 (500)[1]	205.13 (156)
2. 2nd	228.00 (500)	202.53 (158)
3. 3rd	198.02 (505)	121.02 (157)
4. 4th	157.37 (502)	132.08 (159)
5. 5th	134.92 (504)	87.50 (160)
6. 6th	118.13 (364)	123.81 (105)
7. 7th	101.21 (247)	51.28 (78)
8. 8th & above	96.67 (300)	148.15 (108)
9. all orders	169.49 (3422)	139.69 (1081)

[1] Figures in parentheses refer to the numbers of live-births on which the infant mortality rates are based.

mortality rate due to recall lapse. In parities higher than the fifth, there would be a successive reduction from the initial set of women as some of them with fewer terminations are likely to drop out and as such their rates are not strictly comparable with the rates for earlier parities.

4.7. As the parity advances, the estimated infant mortality rates also correspond more and more closely to recent events and if recall lapse were significant there should have been a tendency for the estimates to rise with advancing parities. The estimates shown in Table 4.1, however, do not give any evidence of a rise.

4.8. If, on the other hand, a large fraction of the class of women included in the foregoing analysis were too advanced in age (say, 60 years or above), then even in the later parities, one should expect a number of births that took place so long ago as to be affected by recall lapse. It may, therefore, be argued that such comparisons as made above might hardly detect the existence of recall lapse unless the rates for advanced parities really relate to very recent events. As such, the births occurring to ever-married women of age 43 years and over were classified into two chronological groups, births occurring within

and earlier to the period of 15 years preceding the date of survey, and the infant mortality rates for these two groups were mutually compared. The results are given in Table 4.2.

TABLE 4.2. MORTALITY RATES FOR INFANTS BORN TO EVER MARRIED WOMEN AGED 43 YEARS OR OVER ACCORDING TO CHRONOLOGICAL GROUPS

period when births occurred	infant mortality rate	
	rural	urban
(1)	(2)	(3)
within 15 years preceding the date of survey	69.26 (231)[1]	119.05 (84)
15 or more years earlier to survey	160.28 (1984)	137.17 (678)

[1] Figures in parentheses refer to the numbers of live births on which the infant mortality rates are based.

4.9. Since the earlier parities are associated with higher infant mortality rates than the latter ones, the chronological comparison should have been attempted at corresponding parities. As this was impracticable with the data in hand, all parities were mixed together into one lot within each chronological group. As the recent chronological group is likely to be more heavily loaded with later parities one should naturally expect a lower infant mortality among them. Among rural births this is clearly indicated by the rates entered in Table 4.2. If recall lapse was operative, such striking difference in the infant mortality rates would not have been observed. As most of the women included in the urban sample were of advanced age, hardly 84 births occurred to them during the last 15 years and the remaining 678 births were classified in the older chronological group which naturally included a substantial number of later parities as well. The contrast between the infant mortality rates for the two chronological groups is, therefore, relatively less marked than that observed for the rural samples. In any case, it appears from the above analysis that the effect of recall lapse is not statistically very significant.

4.10. In this study, the estimates of infant mortality rates have been based on all live-births that occurred to ever-married women of the respective population groups upto the date of survey. The infant mortality rates have been estimated for the rural and urban sectors separately and the results are shown for each of the two sub-samples in Table 01.1 of Appendix I.

4.11. In what follows, an attempt is made to study the association of infant mortality rate with such factors as nutritional level of the household, housing condition, educational and occupational status of fathers.

4.12. *Nutrition.* Nutrition being a vital factor of health, a separate block (block 4) was devoted in the schedule for entering the various items regarding the dietary composition of the households. The scope of the survey did not, however, permit a detailed study of the various items comprising the diet and assess the nutritional level of the household based on its departure from an ideal or balanced diet. It is well-known that the majority of the Indian households can hardly avail even the basic energy-giving food

articles like cereals, etc., for satisfying their hunger. This being the case, differentiation of diet can be effected even on the basis of the quantity of cereals consumed. If appropriate adult equivalents for various age and occupational groups were available, one could have classified the households by varying degrees of nutritional level on the basis of the quantity of cereals consumed. In this study, however, it has been assumed that a household which avails even a small quantity of milk, meat, fish, fruits, etc., for whatever it is worth, must be doing so only after satisfying its basic needs in respect of cereals. On this assumption, diets which are almost completely devoid of milk, fish, meat etc., have been placed in the category 'low level of nutrition' and the remaining diets in the category 'high level of nutrition'. The infant mortality rates observed in the above two dietary classes are shown separately for rural and urban sectors in Table 4.3.

TABLE 4.3. INFANT MORTALITY RATE ACCORDING TO LEVEL OF NUTRITION IN WEST BENGAL

nutritional level	rural		urban	
	no. of live births	infant mortality rate	no. of live births	infant mortality rate
(1)	(2)	(3)	(4)	(5)
1. high	155	116.13	659	110.77
2. low	5384	170.69	1186	150.08
3. total	5539	169.16	1845	136.04

4.13. In both the rural and urban sectors, the differences in the recorded infant mortality rates are significant, the difference being more pronounced in the case of the rural group. Inasmuch as the rate corresponding to the nutritional group classed as 'high' in the rural sector is based on an inadequate number of live births, the observed difference is to be accepted with a little caution.

4.14. *Housing.* Housing is an important factor affecting the health of a population. One of the objectives of this survey was to study the association between the sanitary assessment of the household and certain important health indices like infant mortality rate and thereby to evolve a suitable methodology for collecting information on housing and environmental conditions. Hence, a few questions relating to the housing and sanitary conditions of the household and its environment were included in block 5 of the schedule. Only such aspects which were more easily definable and less subjective in nature have been introduced in this block and as such it had to be necessarily short. Nevertheless, the survey revealed some shortcomings in the method of approach adopted, particularly, with reference to the rural sample.

4.15. In the rural area, most of the households were without latrines and as such no variation in the type of latrine used was ascertainable from the returns. The information obtained on ventilation of households though somewhat subjective in nature, proved to be defective for the rural and urban areas on account of the vagaries of the investigators. As regards the general sanitation the investigators relied more on the relative differences among the households allotted rather than on the objective classifications specified for the investigational procedure. In the rural sector particularly, where the village as a whole was

allocated to each investigator, the entries relating to this aspect for all the households were almost identical, the nature of such entries being determined largely by his personal impressions. In towns and cities, however, the households allotted to each investigator being situated over an area within which conspicuous differences in sanitary conditions existed, there was a greater degree of variation in the general sanitation codes entered by him. With regard to source of drinking water, taps, tubewells and ordinary wells were almost universal in the urban areas, whereas in the rural areas the majority of the people depended on wells or ponds. Hence, with the type of information available, it was thought that no useful classification of rural households could be possible on the basis of such characteristics as sanitary conditions of the dwelling place. For the classification of the urban households, information on latrine and general sanitation of surroundings alone could provide a valid basis. The households with code 1 for both 'latrine' and 'general sanitation' were classified as 'housing good' and the rest as 'housing bad'. The infant mortality rates in these two classes of the urban population are shown in Table 4.4 which clearly indicates that the population which avails better sanitary amenities in and around its dwelling place is associated with a lower infant mortality rate.

TABLE 4.4. INFANT MORTALITY RATE ACCORDING TO HOUSING CONDITIONS IN WEST BENGAL (URBAN)

housing condition	live births	infant mortality rate
(1)	(2)	(3)
1. good	366	84.70
2. bad	1479	148.75
3. total	1845	136.04

4.16. *Education.* No doubt, the two criteria considered above, namely, nutrition and sanitary condition are useful indices to study the state of health of a community. Data have also been collected in this survey on the literacy and occupational status of the population. Though these may not directly influence the health of the people, in earlier studies it has been noticed that such socio-economic factors as education and occupation bear a strong association with the infant mortality rate. Hence, these socio-economic factors can be used with great advantage in health studies for more effective stratification of the households for sample selection.

4.17. In so far as education improves the quality of maternal care and personal hygiene by raising the level of health consciousness of the community its association with infant mortality rate may be regarded as a direct one. Besides the above, its indirect relationship through such health factors as nutrition, sanitary condition etc., enhances the degree of such association. For a critical evaluation of the importance of education it would have been desirable to consider the education of mothers but under the prevailing circumstances this is not feasible as the large majority of women especially in the rural sector are illiterate. Hence, it was decided to take into account the education of fathers for the above analysis. Here again, due to the limited scope of the data only two broad categories were considered, namely (i) births relating to couples in which the male partners had matric or

higher qualifications and (ii) the remaining births relating to couples in which the male partners were either illiterate or under-matrics. The proportion of births belonging to the higher educational group (matric or above) to total births were roughly 22% in the urban and 2% in the rural sector. The estimated infant mortality rates for the two literacy classes are shown separately for rural and urban samples in Table 4.5.

TABLE 4.5. INFANT MORTALITY RATES ACCORDING TO LITERACY STATUS OF FATHERS IN WEST BENGAL

literacy status	rural		urban	
	live births	infant mortality rate	live births	infant mortality rate
(1)	(2)	(3)	(4)	(5)
1. matric and above	108	55.56	404	76.73
2. below matric including illiterates	5431	171.42	1441	152.67
3. total	5539	169.16	1845	136.04

4.18. The results are indeed very striking, the higher literacy group showing an infant mortality rate which is nearly one-third and one-half of the lower literacy group in the rural and urban areas respectively. This is a clear indication that literacy status is an excellent criterion for stratification of urban households in sample surveys of this nature. In view of the fact that only about 2% of the births in the rural areas correspond to the higher literacy group, a similar stratification is of doubtful utility in studies of this kind for rural populations.

4.19. *Occupation.* In order to study the behaviour of infant mortality rates in different occupational groups a similar analysis as above was carried out. Here again, the occupational classification had to be confined to those of the male partners only. Due to paucity of data the analysis had to be limited to four broad categories of occupational status for the urban and rural sectors as indicated below.

4.20. *Urban :* 1. Manual labour (mostly unskilled industrial labour, domestic servant, porter, hawker, rickshaw puller, artisan, etc.)

2. Lower professions and inferior business (clerk, school teacher, retail trader, shop assistant, skilled industrial labour, etc.)

3. Higher professions and superior business (doctor, professor, engineer, lawyer, wholesale trader, etc.)

4. Non-gainful occupations (rent receiver, remittance receiver, beggar, etc.)

4.21. *Rural :* 1. Agricultural and other rural labour (landless agricultural labour, artisan, fisherman, cooly, etc.)

2. Agricultural operations (cultivator owning land, share-cropper, etc.)

3. Professions and trade (teacher, doctor, priest, retail trader, etc.)

4. Non-gainful occupations (rent receiver, remittance receiver, etc.)

4.22. In both the urban and rural populations, the class 'non-gainful occupations' contains a highly heterogeneous social group as it includes all persons returned as 'not in the labour force', irrespective of their living standards.

4.23. The estimated infant mortality rates for the different occupational classes are shown in Tables 4.6 and 4.7 for the urban and rural populations respectively.

TABLE 4.6. INFANT MORTALITY RATE ACCORDING TO OCCUPATION OF FATHERS IN WEST BENGAL (URBAN)

occupation class	no. of live births	infant mortality rate
(1)	(2)	(3)
1. manual labour	492	170.73
2. lower professions and inferior business	1061	126.30
3. higher professions and superior business	155	45.16
4. non-gainful occupations	137	189.78
5. total	1845	136.04

TABLE 4.7. INFANT MORTALITY RATE ACCORDING TO OCCUPATION OF FATHERS IN WEST BENGAL (RURAL)

occupation class	no. of live births	infant mortality rate
(1)	(2)	(3)
1. agriculture and other rural labour	1486	154.10
2. agricultural operations	3120	183.33
3. professions and trade	429	158.51
4. non-gainful occupations	504	134.92
5. total	5539	160.16

4.24. In the lowest occupation class (manual labour) of the urban population the recorded infant mortality rate is as high as 170.73 per 1000 live-births, whereas in the highest social class (higher professions and superior business) it is as low as 45.16 per 1000 live-births and that for the intermediate class (lower professions and inferior business) it is 126.30 per 1000 live-births. From these results, it is quite apparent that the infant mortality rates tend to decrease as one goes up the social ladder. In rural areas, however, due to the inadequate number of sample households belonging to the higher professional group, they were merged with the lower professions to form class 3 (professions and trade). Due to the preponderance of the households belonging to the lower professions, infant mortality rate observed for this combined group was considerably enhanced. As regards social class 2 (agricultural operations), which includes every cultivator owning land, however small his holdings may be, and every share-cropper, howsoever small the area operated by him may be is certainly a heterogeneous group. For these reasons, the results

in Table 4.7 do not suggest any occupational differentials in the infant mortality rate. This, perhaps, indicates that for stratifying the rural population into social classes, it may be desirable to take cognizance of certain other relevant factors. May be, social differentiations based on either income or land operated or owned may be more appropriate for health studies as this will more closely correspond to the actual living standards of the households.

4.25. In this context, it may be appropriate to consider the Registrar General's figures of infant mortality rate by social class of father in England and Wales in 1939 (Table 4.8) and see how the social position of the community affects the infant mortality rate.

TABLE 4.8. INFANT MORTALITY RATE ACCORDING TO SOCIAL CLASS OF FATHER IN ENGLAND AND WALES IN 1939

	social class	infant mortality rate
	(1)	(2)
1.	class I—the professions, commissioned officers and well-to-do people concerned with finance, shipping etc.	26.8
2.	class II—intermediate between class I and skilled workers	34.4
3.	class III—skilled workers	44.4
4.	class IV—intermediate between skilled and unskilled workers	51.4
5.	class V—unskilled workers	80.1

4.26. The above figures exhibit a high degree of consistency and regularity in the changing pattern of infant mortality rate with changing social class. A similar feature is observed in the occupational classes in urban West Bengal. This clearly suggests that occupational or social status offers an excellent criterion for a more effective stratification of the urban population for sample selection in studies of this kind.

4.27. In conclusion, it may be stated that the higher level of nutrition and the higher level of literacy and occupational status are associated with lower infant mortality rates. It is also interesting to note from the results given above that when comparable groups are matched against each other the rural groups generally show higher infant mortality rates than their urban counterparts. However, the infant mortality differentials estimated from registration data indicate an entirely opposite picture. Even in respect of the overall estimate of infant mortality rate the value observed in this study for the rural sector appears to be higher than that observed for the urban sector. If this is true, it is obviously at variance with the accepted notion on urban-rural differentials based on registration data. Since official figures do not relate to allocated rates, further examination of the registration data is necessary before arriving at any definite conclusions.

4.28. It is a known fact that infants die at a faster rate during the earlier periods of their life. It can be reasonably assumed that in rural West Bengal about 40 per cent of the infants die before they complete one week. Possibly, the infant mortality rate observed in case of rural births may be largely attributable to deaths occurring during this stage of life due to inadequate and unsatisfactory maternity aid available to rural mothers.

CHAPTER 5

Morbidity

5.1. At present the statistical data collected on health aspects are so meagre and unreliable in our country that they can utmost provide a very crude and hazy outline of the health conditions of the nation. But these are not enough for sound public health administration which obviously has to be based on reliable and adequate factual data. In the past, a few special surveys relating to malaria, tuberculosis, leprosy, etc., have been attempted in selected areas only. Such surveys are useful, no doubt, in shaping the public health policy to some extent in these areas, but in order to plan for the improvement of health standards of the community as a whole, an appraisal of the disease and medical care pattern is essential and this can be done only by a general health survey.

5.2. The first general health survey to be conducted in this country was the Singur Health Survey (Lal and Seal, 1940). But this study, though comprehensive in nature, had to be necessarily confined to a small rural area in West Bengal comprising of the 4 union boards falling within the sphere of operation of the Singur Health Centre. It was expected that when the report of the above study was published, similar enquiries would be made in other parts of India to obtain a general picture of the morbidity and medical care pattern. But till the year 1955 no attempts were known to have been made in this direction.

5.3. The lack of initiative in sponsoring surveys of this kind certainly reflects the peculiar difficulties inherent in such surveys, especially in countries like India where more experiments in survey technique and procedure remain to be done before pushing through full-fledged health surveys on a vast scale. The West Bengal Health Survey, as has already been pointed out, is only such an experiment which was undertaken mainly for the purpose of developing a methodology for the collection of health and medical care statistics.

5.4. Certain experienced public health workers with whom the scheme of this survey was discussed, were rather critical of the approach that had been adopted in this survey. They raised pertinent questions regarding the validity of the morbidity statistics collected by such surveys relying mainly on non-medical investigators. The most serious objection centred round the correctness of the classification of diseases by causes. It may be mentioned that even in countries where medical care has become almost universal, the competency of the informants, generally the heads of households, to report the true cause of the disease which has become a thing of the past, is somewhat questionable. More reliance is, therefore, placed on prevalence rates for certain chronic diseases obtained by complete physical examination of the selected individuals including laboratory tests by trained medical personnel. Even if such a scheme were possible on a nation-wide scale for a country like India having only meagre resources, it could cover only some of the important chronic diseases and the question regarding the incidence of acute diseases which form a substantial bulk of the total morbidity of the country will still remain unsolved.

5.5. One of the chief objectives of this study, therefore, was to assess the extent of agreement between the reported causes of diseases and the diagnostic reports at the time of treatment wherever such reports were accessible to the investigators. Though the investigators were briefed to avail of the medical diagnostic reports wherever they were available, it was found that only 4 cases of illness were accompanied by such reports in spite

of the fact that about two-third of the cases were medically treated. Presumably, the odds against collecting such information were so great that the investigators could not possibly succeed in carrying out the instructions. Of the 4 cases for which medical confirmation was available, only 2 cases—one of 'appendicitis' and the other of 'pneumonia'—were found to be in complete agreement with the investigators' returns. For the remaining two cases which were medically declared as tuberculosis (pulmonary), the informants returned them as merely 'cough and fever'.

5.6. Though in a substantial number of cases, certain remarks regarding the nature of the diseases made by the informants of their own accord and entered in the 'remarks' column of block 7, were very helpful to the medical experts in arriving at a proper classification of the diseases, it has to be admitted that due to non-availability of confirmatory evidence from the attending physicians, no check on the validity of the returns could be made.

5.7. As the question of validity is an important one on which depends to a considerable degree the success of a morbidity study, a 'Validity Survey' was initiated in 1956. For the purpose of this survey, two teams of investigators, one medical and the other non-medical, were employed. The medical investigators were medical graduates with considerable professional experience. The non-medical investigators, on the other hand, did not have any particular training or knowledge in public health. Names of patients with addresses were collected from the medical out-patient department of the R.G. Kar Medical College Hospitals, which is one of the leading hospitals in Calcutta. These names were supplied to a set of pilot investigators for verifying the addresses as well as to note down the names of all members of the households. After this preliminary listing was done, the medical and non-medical investigators were given the names and addresses of the heads of the households. They were also given the names of all the members of the households to ensure that the particular person who had been to the hospital and about whose illness information was available, was not omitted from investigation. They were required to collect details about all illnesses occurring to the members of the households within a reference period of one month. The non-medical investigators were instructed to put down the cause of the disease as stated by the informants and supplement them with details of signs, symptoms etc., of the disease, if such information was forthcoming from them on their own initiative. The medical investigators, on the other hand, had a greater degree of freedom in that they could interrogate the heads of the households or the patients themselves for their views on the disease. This freedom was not allowed to the non-medical investigators because it was thought that the non-medical investigator by virtue of his not having any medical knowledge or training was not competent to suggest leading questions to arrive at a proper conclusion as regards the exact nature of the disease. No indication whatsoever was given to the investigators as to the source of these addresses. When these households have been contacted and necessary information gathered in the schedules specially designed for the purpose, the returns were compared with the hospital diagnoses. It would seem that the best way of doing this would have been to send both the types of investigators to the same households and compare their results. But this procedure did not appeal to us as in such a short time which was generally less than a month, it was not desirable to subject a household to a series of questions by different investigators, especially when a disease was prevailing in that household. Moreover, there might be a tendency for the first investigation to influence the result of the second.

5.8. In order to make an overall assessment of the relative merits of the two types of investigating teams, the cases diagnosed in each class of diseases were equally apportioned between the two teams. It could be seen that by the above arrangement if the extent of misclassification varied with the nature of disease, the odds were equally balanced between the two teams. A total of 390 cases could be contacted in their households and of these 198 were investigated by the medical investigators and the remaining 108 by the non-medical investigators. The investigator's returns were then compared with the corresponding reports obtained from the hospital register and the results of this comparison are shown in Tables 5.1 and 5.2 for medical and non-medical investigators. It may be mentioned here that the non-medical investigators' reporting of diseases being sometimes vague, they were allocated to proper disease groups by a panel of medical experts on the basis of signs, symptoms and other available particulars of such diseases.

TABLE 5.1. THE EXTENT OF AGREEMENT BETWEEN THE HOSPITAL DIAGNOSES AND RETURNS OF THE *MEDICAL* INVESTIGATORS

disease	complete agreement	no agreement	doubtful	not recorded	total
(1)	(2)	(3)	(4)	(5)	(6)
1. group I—tuberculosis (pulmonary)	—	6	—	—	6
2. group II—malaria	3	10	5	2	20
3. group III—dysentery	4	9	2	—	15
4. group IV—other infectious and parasitic diseases	6	5	—	—	11
5. group V—allergic, endocrine system, metabolic and nutritional diseases	7	2	3	—	12
6. group VI—diseases of blood and blood-forming organs	1	7	2	—	10
7. group VII—mental, psychoneurotic and personality disorders and diseases of the nervous system and sense organs	2	6	3	—	11
8. group VIII—diseases of the circulatory system	2	2	1	1	6
9. group IX—influenza	7	5	3	2	17
10. group X—bronchitis	11	10	6	1	28
11. group XI—other respiratory diseases	1	8	3	—	12
12. group XII—diseases of digestive system	18	15	2	4	39
13. group XIII—diseases of genito-urinary system	—	2	—	—	2
14. group XIV—diseases of bones and organs of movement	4	3	—	1	8
15. group XV—other diseases	—	—	—	—	—
16. total	67	90	30	11	198

TABLE 5.2. THE EXTENT OF AGREEMENT BETWEEN THE HOSPITAL DIAGNOSES AND RETURNS OF THE *NON-MEDICAL* INVESTIGATORS

disease	complete agreement	no agreement	doubtful	not recorded	total
(1)	(2)	(3)	(4)	(5)	(6)
1. group I—tuberculosis (pulmonary)	3	3	—	—	6
2. group II—malaria	6	10	3	2	21
3. group III—dysentery	1	12	—	2	15
4. group IV—other infectious and parasitic diseases	—	10	1	—	11
5. group V—allergic, endocrine system, metabolic and nutritonal diseases	2	9	—	1	12
6. group VI—diseases of blood and blood-forming organs	1	7	—	—	8
7. group VII—mental, psychoneurotic and personality disorders and diseases of nervous system and sense organs	2	9	—	—	11
8. group VIII—diseases of the circulatory system	2	2	—	1	5
9. group IX—influenza	5	6	1	5	17
10. group X—bronchitis	6	17	3	4	30
11. group XI—other respiratory diseases	3	11	—	1	15
12. group XII—diseases of digestive system	26	8	—	5	39
13. group XIII—diseases of genito-urinary system	—	—	—	—	—
14. group XIV—diseases of bones and organs of movement	5	2	—	1	8
15. group XV—other diseases	—	—	—	—	—
16. total	62	106	8	22	198

5.9. Two types of discrepancies are possible in this situation. The first is that the diagnosis entered in the hospital register does not tally with those obtained from the investigators' reports and secondly, certain individuals who were known to have attended the hospital in connection with certain definite illness were not reported by the investigators as having suffered from any illness during the reference period. The first type of discrepancy, therefore, is ascribable to misclassification of either the hospital or the investigator or by both. The second type of discrepancy is certainly an error ascribable to the method of investigation probably due to recall lapse. Occasionally, a person who attended the hospital in connection with a certain illness might have been ill due to another illness also during the reference period. In such a situation if the investigators' reports did not tally with the hospital reports, it would not be possible to state clearly whether it was a misclassification or an omission of the disease for which the enquiry was made. If, however, the date of onset of any disease reported by the investigators preceded the date of hospital attendance it was assumed that the report related to the disease for which hospital aid was sought. On the other hand, if the date of onset reported was later than the date of hospital attendance, it was difficult to decide whether the investigators' report related to the same disease as was treated in the hospital or to a different one. In the latter situation the discrepancies were

assigned in a separate column 'doubtful' in Tables 5.1 and 5.2. Further, there were certain cases where there was complete agreement between the investigators' reports and the corresponding entries in the hospital register, but the date of onset reported by the investigators was subsequent to the date of hospital attendance. But as these cases were either of a chronic or intermittent nature, it could be reasonably assumed that the investigators' reports related to the same diseases as were treated in the hospital. It may be seen from Tables 5.1 and 5.2 that out of 198 cases of illness 30 and 8 cases allotted to the medical and non-medical investigators respectively did not tally with the hospital entries for lack of knowledge, whether the investigators' reports related to the corresponding diseases for which the enquiry was made. Out of 168 cases for which medical investigators' reports could be tallied with the corresponding hospital entries, 11 were missed and 90 were misclassified, whereas for the non-medical investigators, out of 100 cases for which the reports could be tallied with the hospital entries 22 were missed and 100 were misclassified. The percentage of cases missed by the medical investigators is only 6.5 per cent as compared with 11.0 per cent missed by the non-medical investigators. This indicates that there will be more response obtained from the informants if medical investigators are employed. Among 157 cases reported by the medical investigators which could be tallied with hospital entries, 90 cases or about 57 per cent were misclassified, whereas among 168 similar cases reported by the non-medical investigators, 100 cases or about 63 per cent were misclassified. The above results suggest that both in respect of extent of response from the informants as well as in the extent of correct classification, the performance of the medical investigators seems to be slightly more satisfactory than that of the non-medical team. The extent of misclassification in the 15 groups of diseases individually are shown in table below.

TABLE 5.3. PERCENTAGE MISCLASSIFICATION AMONG THE MEDICAL AND NON-MEDICAL INVESTIGATORS IN DIFFERENT DISEASE CATEGORIES

disease	medical investigator	non-medical investigator
(1)	(2)	(3)
1. group I—tuberculosis (pulmonary)	100.0	50.0
2. group II—malaria	76.9	62.5
3. group III—dysentery	69.2	92.3
4. group IV—other infective and parasitic diseases	45.5	100.0
5. group V—allergic, endocrine system, metabolic and nutritional diseases	22.2	81.8
6. group VI—diseases of blood and blood-forming organs	87.5	87.5
7. group VII—mental, psychoneurotic and personality disorders and diseases of nervous system and sense organs	75.0	81.8
8. group VIII—diseases of circulatory system	50.0	50.0
9. group IX—influenza	41.7	54.5
10. group X—bronchitis	47.6	73.9
11. group XI—other respiratory diseases	88.9	78.6
12. group XII—diseases of digestive system	45.5	23.5
13. group XIII—diseases of genito-urinary system	100.0	—
14. group XIV—diseases of bones and organs of movement	42.9	28.6
15. group XV—other diseases	0.0	—
16. total	57.3	63.1

5.10. That the extent of disagreement in the reporting of the diseases varies with the type of diseases investigated is quite evident from Table 5.3. Moreover, the above table singles out such types of diseases which are likely to be more often misreported by the medical and non-medical investigating teams as well as such diseases for which the extent of agreement with the corresponding hospital diagnosis does not show conspicuous difference between the two investigating teams. For instance, diseases belonging to groups 6 (diseases of blood and blood-forming organs), 7 (mental, psychoneurotic and personality disorders and diseases of the nervous system and sense organs) and 8 (diseases of the circulatory system) show almost equal tendency to be misclassified by the medical and the non-medical investigators. On the other hand, diseases belonging to groups 1 (pulmonary tuberculosis), 2 (malaria), 11 (other respiratory diseases), 12 (diseases of the digestive system) and 14 (diseases of bones and organs of movement) are generally misreported to a greater extent by the medical investigators and diseases belonging to groups 3 (dysentery), 4 (other infective and parasitic diseases), 5 (allergic, endocrine system, metabolic and nutritional diseases), 9 (influenza) and 10 (bronchitis) are similarly misclassified by the non-medical investigators. These results are important in as much as they are suggestive of the quality of reporting by the medical and non-medical investigating teams with respect to different disease groups. In order to properly assess the validity of the rates obtained by the two types of investigators and to investigate the nature of misclassification, further examination of the data is essential. Tables 5.4 and 5.5 give the two-way comparison of the reports of the investigators with the corresponding entries in the hospital register.

5.11. In the above tables the diagonal entries represent those cases where there is complete agreement between investigators' returns and the hospital diagnoses. The figures in rows indicate the extent of misclassification occurring for each type of disease taken from the hospital register. If we assume for the purpose of argument that the reports obtained from the hospital register are correct as they were made during the time of treatment when the disease prevailed, the entries in each row divergent from the diagonal cell will show the extent of under-estimation of the morbidity rate for this particular group of diseases due to misclassification. On the other hand, the entries in any column diverging from the diagonal cell will indicate the extent of over-estimation of the morbidity rate due to inclusion of diseases of other categories in this group by the investigators. Of course, this assumption regarding the hospital diagnoses need not be true and, therefore, this study of the divergence between the two types of classification can be interpreted only as a lack of agreement and no further.

5.12. The direction in which the misreporting takes place and the ultimate effect of such a misclassification on the morbidity rates from different diseases are points which deserve consideration. In the following paragraphs an attempt is made to discuss briefly the net results arising out of misreporting of diseases.

5.13. There is a general tendency noticeable for pulmonary tuberculosis to be invariably misclassified as either asthma or bronchitis. Other forms of tuberculosis are also usually misreported. It is also found that the non-medical investigators have marked tendency to report non-tuberculosis cases as pulmonary tuberculosis cases resulting in an exaggeration of the pulmonary tuberculosis rate estimated from their returns.

5.14. Malaria is sometimes reported as influenza or other respiratory diseases or diseases of the digestive system and non-malaria cases are not generally returned as malaria

TABLE 5.4. COMPARISON OF THE *MEDICAL* INVESTIGATORS' RETURNS WITH THE CORRESPONDING HOSPITAL ENTRIES

(investigator)

disease	group 1—tuberculosis (pulm)	group 2—malaria	group 3—dysentery	group 4—other infectious and parasitic diseases	group 6—allergic, endocrine sys., met. and nutritional disorders	group 9—disease of blood and blood-forming organs	group 7—mental, psychoneurotic, nervous sys. etc.	group 8—disease of circulatory system	group 9—influenza	group 10—bronchitis	group 11—other respiratory diseases	group 12—disease of the digestive system	group 13—disease of genito-urinary system	group 14—disease of bones and organs of movement	group 15—other diseases	group 16—ill defined	total	doubtful	not recorded	grand total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. group 1—tuberculosis (pulm.)	·	·	·	·	1	·	·	·	·	2	1	·	·	1	1	·	6	·	·	6
2. group 2—malaria	–	3	1	–	–	–	1	1	12	1	12	1	1	1	2	1	13	5	2	20
3. group 3—dysentery	·	·	4	·	·	1	·	1	1	1	1	4	·	·	·	·	13	2	·	15
4. group 4—other infective and parasitic diseases				6		1			1	1	1	1	1	2	1	·	11	1	1	12
5. group 5—allergic, endo, meta. nut. disorders	·	·	·	·	7	1	·	·	·	1	·	·	·	·	·	·	9	3	·	12
6. group 6—diseases of blood and blood-forming org.	–	–	1	–	–	1	–	–	–	–	–	3	3	–	–	–	8	2	–	10
7. group 7—mental, psychoneurotic and nervous system	·	·	·	·	1	1	2	·	·	·	·	·	2	2	·	·	8	3	·	11
8. group 8—diseases of circulatory system	–	–	–	–	–	–	–	2	–	1	–	–	–	1	–	–	4	1	1	6
9. group 9—influenza	·	1	·	·	·	·	·	·	7	1	2	·	·	1	·	·	12	3	2	17
10. group 10—bronchitis	·	·	·	·	1	·	·	1	4	11	–	3	–	·	–	·	21	6	1	28
11. group 11—other respiratory diseases	·	·	·	·	1	·	1	·	1	3	1	·	1	·	1	·	9	3	·	12
12. group 12—diseases of digestive system	1	–	4	–	–	–	–	–	2	–	–	18	5	1	2		33	2	4	39
13. group 13—diseases of genito urinary sys.	·	·	1	·	·	·	·	·	·	·	·	1	·	·	·	·	2	·	·	2
14. group 14—diseases of bones and organs of movement	–	–	–	1	–	–	1	–	1	–	–	–	–	4	–	–	7	–	1	8
15. group 15—other diseases	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1		1	·	·	1
16. total	1	4	11	7	11	5	5	4	18	20	8	30	12	13	8	–	157	30	11	198

TABLE 5.5. COMPARISON OF THE *NON-MEDICAL* INVESTIGATORS' RETURNS WITH THE CORRESPONDING HOSPITAL ENTRIES

diseases (investigator)	group 1—tuberculosis (pulm)	group 2—malaria	group 3—dysentery	group 4—other infectious and parasitic diseases	group 5—allergic, endocrine sys., met. and nutritional disorders	group 6—diseases of blood and blood-forming organs	group 7—mental, psychoneurotic, nervous sys. etc	group 8—diseases of circulatory system	group 9—influenza	group 10—bronchitis	group 11—other respiratory diseases	group 12—diseases of the digestive system	group 13—diseases of genito-urinary system	group 14—diseases of bones and organs of move ment	group 15—other diseases	group 16—ill defined	total	doubtful	not recorded	grand total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. group 1—tuberculosis (pulm)	5	·	·	·	1	·	·	·	·	·	·	2	·	·	·	·	8	·	·	8
2. group 2—malaria	—	6	1	—	·	·	·	—	·	·	·	12	1	—	·	·	19	2	·	21
3. group 3—dysentery	—	1	2	—	·	·	·	—	·	·	·	12	·	—	·	·	13	·	2	15
4. group 4—other infective and parasitic diseases	1	·	·	1	2	·	·	—	·	1	·	1	·	2	·	·	10	·	1	11
5. group 5—allergic, endocrine, met. and nut. diseases	·	·	·	1	2	·	1	·	1	2	1	1	·	·	1	1	11	·	1	12
6. group 6—diseases of blood and blood-forming organs					1	1	—	—	1	—	—	2	1	·	1	1	8	—	—	8
7. group 7—mental, psychoneurotic and nervous systems	1	·	·	·	·	·	2	·	·	·	·	3	2	2	·	1	11	·	·	11
8. group 8—diseases of circulatory system	—	—	—	—	—	—	—	2	—	—	—	1	—	1	—	—	4	—	1	5
9. group 9—influenza	1	·	1	·	·	·	·	·	5	·	·	·	1	·	1	·	11	1	5	17
10. group 10—bronchitis	2	·	·	·	2	·	·	·	4	6	·	3	1	1	1	·	23	3	4	30
11. group 11—other respiratory diseases	1	·	·	·	2	1	·	·	2	3	·	3	1	·	·	·	14	·	1	15
12. group 12—diseases of the digestive system	—	—	—	1	2	—	1	—	—	—	—	26	2	—	—	—	34	—	5	39
13. group 13—diseases of genito-urinary system																				
14. group 14—diseases of bones and organs of movement	·	·	·	·	·	·	·	·	·	·	·	1	·	5	·	1	7	·	1	8
15. group 15—other diseases																				
16. total	10	7	3	7	9	3	9	3	14	12	7	53	9	13	5	4	165	8	22	195

cases by both the medical and non-medical investigators. Hence it seems that the malaria rate as obtained by a household canvass is likely to be an under-estimate.

5.15. Dysentery cases are usually misreported as some disease pertaining to the digestive system (group 12). The non-medical investigators seldom report non-dysentery cases as dysentery cases. Consequently, the incidence rate for dysentery obtained by non-medical investigarors will tend to be biassed towards a lower value than the true one. On the other hand, in the case of medical investigators the rate obtained may be regarded as almost nearly the true value mainly due to some of the non-dysentery cases being returned as dysentery cases.

5.16. The group 'other infective and parasitic diseases' is evidently a heterogeneous one. This includes all infectious and parasitic diseases other than pulmonary tuberculosis, malaria and dysentery. Naturally, one would expect much less discrepancy in this particular group. Curiously enough, the non-medical reports are totally descrepant from the corresponding entries in the hospital register. However, a number of diseases belonging to other groups have been reported by the non-medical investigators as diseases belonging to this group. The performance of the medical investigating team in respect of reporting diseases of this category seems to be somewhat satisfactory. About 55% of the cases are reported correctly and only one case belonging to another group has been brought into this category. It is likely, therefore, that the estimate obtained from the medical team will be erring on the lower side. The misclassification in this group usually arises due to neuritis cases being classified as rheumatism, enteric fever as bronchitis or other respiratory diseases. Probably, hospital staff have a tendency to enter any disease of unknown otiology as neuritis which on further examination is reported by the medical investigators as rheumatism or some other specific disease.

5.17. The performance of the medical team in respect of reporting diseases belonging to group 5 (allergic, endocrine, metabolic and nutritional diseases) seems to be fairly satisfactory. But the classification based on the returns of the non-medical investigators seems to be far from satisfactory, only about 16 per cent of the total number of cases allotted to them having been correctly classified. Nevertheless, the rate based on their reports is very nearly equal to the one based on hospital entries for the reason that a number of cases belonging to other groups have been brought into this category due to their peculiar nature of reporting.

5.18. Diseases of blood and blood-forming organs like anaemia are most often misreported as diseases of the digestive or genito-urinary system by the medical and non-medical investigators. There is less tendency on the part of the non-medical investigators to classify diseases belonging to other groups as diseases of this group with the result that the overall estimate of diseases of blood and blood-forming organs will still remain grossly underestimated.

5.19. Diseases belonging to group 7 (mental, psychoneurotic, nervous system etc.,) tend to be misclassified as diseases of the digestive or genito-urinary system or rheumatism though the rates are kept up by the inclusion of diseases of other categories in this group.

5.20. So far as the diseases of the circulatory system are concerned both the types of investigators show equal extent of disagreement with the hospital entries.

5.21. When diseases of the respiratory system (groups 9, 10 and 11) are considered individually the classification based on the reports of the medical investigators seems to be

only moderately good. A closer examination will reveal that the misclassifications are mostly confined within the three groups themselves so that if these three groups are combined into a single group representing all respiratory diseases, the reporting of the medical investigators tends to be more satisfactory. But in the case of non-medical investigators, the misclassifications appreciably extend beyond the three groups and the resulting rate obtained from their reports is likely to be an under-estimate as the losses to these groups are usually higher than the gains.

5.22. The diseases of the digestive system are very often misreported by the medical investigators as dysentery, or diseases of the genito-urinary system. However, this group gains at the expense of diseases like dysentery, anaemia and bronchitis. Hence, the overall rate obtained for this group seems to be very close to that obtained from the hospital register. There is a greater degree of agreement observed in the returns of the non-medical team. But the rate obtained from these reports appears to be grossly exaggerated due to the inclusion of a large number of cases of dysentery and respiratory diseases and to a lesser extent cases belonging to other disease groups in this category.

5.23. The number of cases of diseases of the genito-urinary system obtained from the hospital records being very few, the nature of misclassification cannot be assessed. However, a number of other diseases have been reported as diseases of this category both by the medical and non-medical teams, indicating that the rates obtained on the basis of these reports are likely to be grossly exaggerated.

5.24. In respect of diseases of bones and organs of movement, the extent of disagreement between the hospital diagnoses and the investigators' reports seems to be moderate for both the sets of investigators. But the rates obtained on the basis of their reports for this category of diseases are likely to be exaggerated appreciably due to the inclusion within this group of cases belonging to other groups.

5.25. In the preceding paragraphs it was shown that the extent of misclassification resulting from disagreement between the investigators' reports and the corresponding hospital entries was slightly less in the case of medical investigators than that of non-medical investigators. One may argue that the advantage of using a medical investigator is considerably lowered due to the inclusion of non-prevailing cases. Probably, if the cases were prevailing a more thorough examination of the cases could have been made by the medical investigators which would result in an appreciable improvement in the quality of their reports. If this were so, we may reasonably assume, that for the prevailing cases there should be an additional degree of agreement between the medical investigators' reports and the corresponding hospital diagnoses. For studying this aspect only the cases of diseases prevailing at the time of investigation have been considered and the evaluation of the agreement for the medical and non-medical teams have been made in Table 5.6.

5.26. The results show that an overall disagreement of 55.9 per cent have been recorded for the medical investigators as against 57.3 per cent for them when both the prevailing and non-prevailing cases were considered. When an assessment of the extent of disagreement is done disease-wise for the medical investigators, we find that the divergence is more or less the same as when the non-prevailing cases were also included for all the disease groups except for diseases of the circulatory system, influenza, bronchitis and diseases of the digestive system. In the case of influenza, it has turned out to be worse and in the case of diseases of the circulatory and digestive systems and bronchitis it has turned out to be better.

TABLE 5.6. PERCENTAGE MISCLASSIFICATION AMONG THE MEDICAL AND NONMEDICAL INVESTIGATORS IN DIFFERENT DISEASE CATEGORIES WHEN ONLY PREVAILING CASES WERE CONSIDERED

disease	medical investigator	non-medical investigator
(1)	(2)	(3)
1. group I—tuberculosis (pulmonary)	100.0	50.0
2. group II—malaria	80.0	100.0
3. group III—dysentery	72.7	91.7
4. group IV—other infective and parasitic diseases	37.5	100.0
5. group V—allergic, endocrine system, metabolic and nutritional diseases	22.2	77.8
6. group VI—diseases of blood and blood-forming organs	100.0	83.3
7. group VII—mental, psychoneurotic and personality disorders and diseases of nervous system and sense organs	83.3	88.9
8. group VIII—diseases of circulatory system	33.3	33.3
9. group IX—influenza	100.0	100.0
10. group X—bronchitis	33.3	66.7
11. group XI—other respiratory diseases	100.0	88.9
12. group XII—diseases of digestive system	33.3	22.6
13. group XIII—diseases of genito-urinary system	—	—
14. group XIV—diseases of bones and organs of movement	33.3	0.0
15. group XV—other diseases	—	—
16. total	55.9	64.0

5.27. The analysis in respect of the non-medical investigators revealed that the divergence compared fairly well with that observed when both the prevailing and non-prevailing cases were included in the analysis. However, for diseases like malaria and influenza the degree of disagreement was higher while for diseases of the circulatory system and of the bones and organs of movement the performance of the non-medical team was better when only prevailing cases were considered.

5.28. While it is to be admitted that the performance of the medical investigators seems to be slightly superior to that of the non-medical investigators, there is no indication that the degree of precision in reporting diseases will be enhanced if only the prevailing cases were investigated by the usual questionnaire method without taking recourse to other aids such as physical examination and laboratory tests.

5.29. So far the analysis of the data were based on 15 diseases or groups of diseases. A further condensation of groups though not desirable from the point of view of detail, is expected to result in a closer agreement between the returns of the investigators and the hospital diagnoses. In order to assess the improvement in reporting effected by grouping

the diseases on a still wider basis, the above 15 categories were reclassified into 9 broader categories of diseases. This type of grouping no doubt introduces a greater degree of heterogeneity within the groups. However, the results of the analysis based on such a broad classification will indicate the level to which the extent of disagreement could be brought down.

5.30. Table 5.7 gives the percentage of disagreement observed in the returns of the medical and non-medical investigators when they were compared with the corresponding hospital diagnoses.

TABLE 5.7: PERCENTAGE MISCLASSIFICATION AMONG THE MEDICAL AND NON-MEDICAL INVESTIGATORS IN DIFFERENT DISEASE GROUPS

disease group	medical investigator	non-medical investigator
(1)	(2)	(3)
1. group I—infective and parasitic diseases	67.4	64.4
2. group II—allergic, endocrine system, metabolic and nutritional diseases	22.2	81.8
3. group III—diseases of blood and blood-forming organs	87.5	87.5
4. group IV—mental, psychoneurotic and personality disorders, diseases of nervous system and sense organs	75.0	81.8
5. group V—diseases of circulatory system	50.0	50.0
6. group VI—diseases of respiratory system	26.2	47.9
7. group VII—diseases of digestive system	45.5	23.5
8. group VIII—diseases of bones and organs of movement	42.9	28.6
9. group IX—other diseases	66.7	—
10. total	49.0	53.0

5.31. Considering the diseases which have been merged to form broader groups, it could be said that as far as diseases of the respiratory system are concerned the performance of the medical investigators seems to be better than that of the non-medical investigators, while no appreciable difference is observed with respect to infective and parasitic diseases. Also the overall performance of the medical investigators seems to be slightly superior to that of the non-medical investigators. As expected, the adoption of this grouping has brought about a reduction of nearly 10 per cent in the disagreement rate in comparison to the rate observed when a more detailed classification of diseases (Table 5.3) was considered for both the investigating teams.

5.32. *Influence of social status of the informant on the accuracy of reporting the cause of disease.* To examine whether the social status of the informant has any bearing on the quality of reporting of diseases occurring among the members of his household, the distribution of the informants in each of the educational and occupational groups according to the nature of the disease classification has been obtained and presented in Tables 5.8 and 5.9 respectively for both the medical and non-medical investigators. As most of the patients attending the out patients' department of the hospital to which our data relate belong to the lower

social groups the occupational stratification adopted in the analysis cannot be expected to show significant class differentiation. For instance, it was necessary to include a few professionals in the same group consisting of clerical and other low income groups in order to obtain an appreciable number in the 'high' occupational class. The rest being mostly manual labourers living in bustees had to be allocated to the two classes 'medium' and 'low' according to the skill involved in the jobs.

TABLE 5.8. DISTRIBUTION OF INFORMANTS ACCORDING TO EDUCATIONAL STATUS AND NATURE OF DISEASE CLASSIFICATION

educational status	medical			non-medical		
	complete agreement	no agreement	total	complete agreement	no agreement	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. illiterate	4	5	9	10	24	34
	(44.4)	(55.6)	(100.0)	(29.4)	(70.6)	(100.0)
2. literate with no knowledge of English	22	30	52	27	49	76
	(42.3)	(57.7)	(100.0)	(35.5)	(64.5)	(100.0)
3. literate with knowledge of English	41	55	96	25	33	58
	(42.7)	(57.3)	(100.0)	(43.1)	(56.9)	(100.0)
4. total	67	90	157	62	106	168
	(42.7)	(57.3)	(100.0)	(36.9)	(63.1)	(100.0)

TABLE 5.9. DISTRIBUTION OF INFORMANTS ACCORDING TO OCCUPATIONAL STATUS AND NATURE OF DISEASE CLASSIFICATION

occupational status	medical			non-medical		
	complete agreement	no agreement	total	complete agreement	no agreement	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. low	17	27	44	19	50	69
	(38.6)	(61.4)	(100.0)	(27.5)	(72.5)	(100.0)
2. medium	25	35	60	23	38	61
	(41.7)	(58.3)	(100.0)	(37.7)	(62.3)	(100.0)
3. high	25	26	53	20	18	38
	(47.2)	(52.8)	(100.0)	(52.6)	(47.4)	(100.0)
4. total	67	90	157	62	106	168
	(42.7)	(57.3)	(100.0)	(36.9)	(63.1)	(100.0)

5.33. As far as the medical investigators are concerned, there is no evidence of any association between the accuracy of their returns and the educational or occupational status of the informants. This suggests that their method of interrogation was practically independent of what the informant stated about the nature of the disease as he understood from the attending physician. However, it can be seen from the above two tables that

the returns of the non-medical investigators were to some extent influenced by the social status of the respondent indicating thereby, that the persons belonging to the higher social class are frequently appraised of the nature of the disease by the attending physicians.

5.34. Two important factors emerge from the results of the Validity Survey discussed in the preceding paragraphs. First, the inaccuracy arising out of misreporting of diseases is considerable in an investigation of this type and second, the accuracy of the disease reporting is not appreciably enhanced by the employment of medical investigators for this purpose. Further, the results shown in Tables 5.4 and 5.5 indicate the directions in which misreporting of diseases takes place which may be fruitfully applied in interpreting morbidity rates in respect of different disease groups. But it is necessary to emphasize in this context that the above Validity Survey included within its scope only such cases of diseases which were attended by an hospital. If a health survey is carried out in a population, it may be observed that a substantial number of diseases occurring in the population do not receive any medical treatment. It is only reasonable to expect a greater degree of inaccuracy in the reporting of such diseases which will only tend to make the situation worse. Moreover, there are no means of checking the validity of non-attended cases except by a prevalence survey by trained medical personnel. But such a survey will have to be necessarily restricted to chronic diseases because they alone can be expected to prevail in appreciable numbers at the time of investigation.

5.35. Though the results of the Validity Survey discussed above give only a partial picture of the inaccuracies in the morbidity returns, it is assumed that they may be of considerable value in the interpretation of the morbidity rates estimated from the data relating to the West Bengal Health Survey. A brief discussion of these rates based on the results of the Validity Survey is attempted in the following paragraphs.

5.36. The West Bengal Health Survey showed a total of 604 cases of illnesses among the members of 1172 rural households and 351 cases of illnesses among the members of 666 urban households during the three-month period of observation beginning in March and ending in May, 1955. As could be expected, some of these illnesses had their onset earlier to the first reference period and some continued to prevail at the close of the last (fourth) reference period. In the former case, if the illnesses were chronic in nature, only the approximate month of onset rather than the exact date was noted in column 6 of block 7 of the schedule. As regards the latter, not even an approximate estimation of duration of illnesses could be availed

5.37. The allocation of illnesses into chronic and acute was done on the basis of their duration. All illnesses whose duration exceeded three months were classified as chronic and those illnesses which prevailed for periods shorter than 3 months were classified as acute. The classification of such illnesses which were prevailing during the last visit and whose duration fell short of 3 months till that date was carried out with the help of medical experts.

5.38. Since the exact time of onset and recovery of acute diseases are more or less abrupt and recognisable, it is customary to define the morbidity of the population in respect of such diseases by the incidence rate which implied the frequency of new cases arising in a given interval of time among 1000 population. This gives a more or less dynamic picture of morbidity and as such the preventive aspects are fully brought to light.

5.39. In the case of chronic diseases, however, no abrupt time of onset is recognisable and sometimes the diseases are clinically evident only at an advanced stage. It is rather impossible in such cases to calculate incidence rates and the best that can be done under the circumstances, is to define morbidity in terms of their prevalence. The prevalence rate is defined as the number of cases among 1000 population at a given instant of time. The prevalence rate is a useful measure of the extent of chronic diseases in a population prevailing at a given time regardless of the date of onset of the diseases. This measure, no doubt, gives only a cross-sectional picture of the morbidity of the population and it is very much influenced by the curative aspects such as effectiveness to reduce their duration and the stage at which they are diagnosed. The incidence and prevalence rates for acute and chronic diseases are presented in Tables 5.10 and 5.11 respectively. The reliability of the rates given in these tables can, however, be assessed by a comparison of similar rates obtained from two independent sub-samples shown in Tables 01.2 and 01.3 in Appendix I

TABLE 5.10. INCIDENCE RATES FOR ACUTE DISEASES CLASSIFIED ACCORDING TO DISEASE GROUPS IN WEST BENGAL

disease group	incidence rate per 1000 population in a year	
	rural	urban
(1)	(2)	(3)
1. group I—malaria	46.28	14.19
2. group II—dysentery	26.54	36.26
3. group III—diarrhoea, enteritis and other diseases of the digestive system	40.15	74.19
4. group IV—other infective diseases of intestinal tract e.g., typhoid, cholera, diseases due to helminths, etc.	10.21	23.65
5. group V—measles, mumps, small pox, chicken pox	25.86	22.07
6. group VI—common cold, tonsilitis, influenza, fever, pneumonia, bronchitis and other respiratory diseases	140.87	179.72
7. group VII—eye, ear, boil and abscess, cellulitis and dental diseases	25.18	36.26
8. group VIII—others (e.g. anaemias, v.d., vascular lesions affecting central nervous system, rheumatic fever, appendicitis, congenital malformations, accidents, etc.)	12.93	36.26
9. total	328.02	422.51

TABLE 5.11. PREVALENCE RATES FOR CHRONIC DISEASES CLASSIFIED ACCORDING TO DISEASE GROUPS IN WEST BENGAL

disease group	prevalence rate per 1000 population	
	rural	urban
(1)	(2)	(3)
1. group I—tuberculosis (pulmonary)	1.68	3.77
2. group II—diseases of the circulatory and nervous systems viz., arteriosclerotic and degenerative heart diseases, hypertension, disease of veins, rheumatic fever, psychoneurosis, diseases of nerves	3.60	2.62
3. group III—diseases of the eye, ear, skin, bones and joints	4.02	5.03
4. group IV—diseases of the stomach and duodenum except cancer	2.68	5.87
5. group V—asthma	3.52	4.61
6. group VI—diseases of the genital organs, fistula	2.85	4.61
7. group VII—others, (e.g., v.d., cancer, diabetes, avitaminosis, nephritis, congenital and functional diseases, etc.)	2.01	8.39
8. total	20.45	34.80

5.40. At the outset of the analysis it was our intention to strictly adhere to the International Statistical Classification of Diseases and Injuries (List C—Special List of 50 causes for tabulation of morbidity—W.H.O., 1948). Subsequently, it was found from the nature of the data collected that even such an abridged list was too detailed for obtaining any reliable morbidity rates. The classification of diseases in the above analysis had, therefore, to be considerably condensed without appreciably damaging the essential features of the prevailing morbidity pattern in West Bengal.

5.41. The most revealing feature of the above tables is that the diseases, whether acute or chronic, occur more often amongst the urban than in the rural residents, the only exceptions being malaria and diseases of the circulatory and nervous systems. Common cold, influenza and other diseases of the respiratory system are the most commonly reported diseases during the reference period both in the rural and urban areas.

5.42. The observed difference in the incidence and prevalence of diseases between rural and urban communities need not always be indicative of the real extent of variation. In interpreting results of this type, it is necessary to bear in mind the relative importance of the factors likely to influence morbidity returns. Amongst the factors may be mentioned the age-sex composition, the level of health consciousness and the organisation of medical care services in the communities to be compared. Such being the case, any hasty conclusion as to the relative healthiness of two areas without properly weighing these factors may be misleading. In addition to these factors the morbidity rates for specific groups of diseases are appreciably affected by errors due to misclassification as shown by the results of the Validity Survey.

5.43. The age-sex composition of the rural and urban samples are shown in Table 5.12.

TABLE 5.12. AGE-SEX DISTRIBUTION OF THE SURVEYED POPULATION

age (in years)		rural	urban
1. less than 1	persons	152 (2.55)[1]	53 (2.22)
	males	78 (1.31)	27 (1.13)
	females	74 (1.24)	26 (1.09)
2. 1—4	persons	770 (12.91)	273 (11.45)
	males	396 (6.64)	143 (6.00)
	females	374 (6.27)	130 (5.45)
3. 5—14	persons	1478 (24.77)	522 (21.89)
	males	808 (13.54)	278 (11.66)
	females	670 (11.23)	244 (10.23)
4. 15 and above	persons	3566 (59.77)	1537 (64.44)
	males	1804 (30.24)	888 (37.23)
	females	1762 (29.53)	649 (27.21)
5. all age-groups	persons	5966 (100.00)	2385 (100.00)
	males	3086 (51.73)	1336 (56.02)
	females	2880 (48.27)	1049 (43.98)

[1] Figures in parentheses are percentages

5.44. From the above table it appears that the rural and urban samples had more or less similar age-sex composition from which it follows that the urban-rural differentials in morbidity could not be ascribable to the difference in the age-sex composition of their populations.

5.45. A further breakdown of the morbidity rates by age, sex, living conditions, educational and occupational status would, indeed, be helpful in preventive public health work. This was not attempted here as the scope of the survey did not allow such a detailed study.

5.46. Lal and Seal (loc. cit.) have given morbidity rates for certain principal chronic and acute diseases. It may be of interest to make broad comparisons between the morbidity rates estimated from the data of West Bengal Health Survey, 1955, and the Singur Health Survey, 1944. It is well known that some of the acute diseases have a distinct seasonal pattern. It is, therefore, necessary to allow for this seasonal influence while estimating the total number of cases that may be expected during the whole year. No such adjustment for seasonal fluctuations need be made in respect of the Singur Health Survey data, because the information collected relates to one year.

5.47. The morbidity rates of certain important diseases estimated from the rural data collected in this survey have been compared with the corresponding rates obtained from the Singur Health Survey in Table 5.13. To make the comparison strictly valid for such diseases as have a seasonal pattern appropriate adjustments have been made. It could be observed that there is a fair degree of agreement between the two sets of figures. The incidence rate for malaria estimated from the present survey even after accounting

for seasonal influence, is strikingly low in comparison to the one obtained by Lal and Seal for Singur. It was stated earlier while discussing the Validity Survey results that malaria showed a tendency to be misreported as other diseases and that diseases other than malaria were less likely to be returned as malaria. The above tendency was observed to be operating to the same extent among the medical and non-medical investigating teams. It is, therefore, reasonable to assume that the difference in the types of investigators employed in the two surveys could not have resulted in a divergence of the magnitude shown in Table 5.13. Hence, it may be reasonably assumed that the difference between the two malarial rates observed is a real one. This is only natural because Singur during the forties was a highly malarial place, though today malaria has been practically controlled there. Moreover, there is a gap of about a decade between the two surveys during which time a reduction in malaria incidence in West Bengal could have taken place due to better health measures. As regards the incidence of measles, the Singur rate appears to be higher than the rate in this survey. The higher rate for measles observed in the Singur population might have been probably due to its high density of population and its proximity to such congested areas as Howrah and Calcutta

5.48. It has been pointed out earlier that the performance of the medical investigators was more satisfactory than that of the non-medical investigators in respect of respiratory diseases considered as a whole. The rate obtained from the reports of the latter was usually an under-estimate as diseases belonging to this group were more often returned as diseases belonging to other groups. It is, therefore, not unlikely that the rate estimated from the data relating to the West Bengal Health Survey for pneumonia and influenza falls short of the corresponding rate estimated from the Singur Health Survey data as the latter was based on medical investigators' reports. However, the difference in the rates shown in Table 5.13 is not statistically significant.

TABLE 5.13. COMPARISON OF THE RESULTS OF THE WEST BENGAL HEALTH SURVEY (RURAL) AND THE SINGUR HEALTH SURVEY

disease	annual morbidity rate per 1000 population		
	Singur Health Survey, 1944	West Bengal Health Survey, 1955	
		before adjustment for seasonal pattern	after adjustment for seasonal pattern
(1)	(2)	(3)	(4)
acute diseases			
1. malaria	260	46	154
2. dysentery and diarrhoea	38	56	69
3. measles	42	20	18
4. pneumonia and influenza	12	9	7
chronic disease			
5. tuberculosis (pulmonary)	1.09	1.68	
6. asthma	2.82	3.52	
7. diseases of the circulatory and nervous system	3.44	3.69	

5.49. With regard to certain chronic diseases also it was noticed that the prevalence rates estimated from the West Bengal Health Survey data were in close correspondence with those estimated from the data of the Singur Health Survey.

5.50. As before, it is necessary to interpret the prevalence rates obtained from the two surveys in the light of the results of the Validity Survey. It was found that the medical investigators misreported all the tuberculosis cases as belonging to some other diseases. The non-medical investigtors also misreported a substantial number of tuberculosis (pulmonary) cases. But they exhibited a tendency to include a number of cases of other diseases in the tuberculosis (pulmonary) group leading to an exaggerated prevalence rate for this group. Whatever may be the direction in which misclassification of tuberculosis (pulmonary) cases tend to occur, it seems that the only method of assessing accurately the prevalence of pulmonary tuberculosis is by complete physical examination of the population surveyed.

5.51. In respect of allergic diseases like asthma, etc., the medical investigators' performance was found to be far superior to that of the non-medical investigators. As regards diseases of the nervous and circulatory systems the extent of agreement seemed to be almost the same for both the groups of investigators. But the rates based on the non-medical investigators are likely to be exaggerated on account of including in each of the above groups, diseases belonging to other groups.

5.52. In diseases of a chronic nature such as T.B. where there is no abrupt onset of a diseased condition in the affected individuals the estimated morbidity rates should be taken as corresponding to clinically diagnosed diseases or those causing severe disability. Moreover, there are other reasons which tend to under-estimate the morbidity rates of such diseases. For instance, there is a certain amount of time-lag between the actual onset of a disease and the time when medical diagnosis is sought. The degree of disability or discomfort arising out of an affliction and the level of health consciousness of the subjects are among the important factors which largely determine the stage at which the disease is subjected to a medical diagnosis. It is, therefore, inevitable that some of the cases go unaccounted due to the operation of these and similar factors. In some acute diseases the subjects may fail to recognise the symptoms manifested by these diseases due to their ignorance and low health consciousness. Hence, interpretation of morbidity rates have to be based on a proper appreciation of the factors involved. In the report of the Sickness Survey conducted in U.K. by the Ministry of Health (1946), it was observed that out of a sample of about 7,000 population, 5,518 or 70% suffered from one or more illnesses or injuries during a three-month period. Pearse and Crocker (1944) in their study 'The Pekham Experiment— a study of the living structure of society' have also arrived at similar results. They estimated that only about 10 per cent of the population on which an health overhaul was done was without any sign of disorder and the remaining 90 per cent were either in disease or in whom disorder was associated with a sense of well-being. As against this, the estimated number of cases of illnesses or injuries during the three-month period in rural West Bengal was 604 out of a sample of 5,966 persons i. e., 10 per cent and in urban West Bengal the corresponding number was 351 out of a sample of 2,385 persons i.e., 15 per cent.

5.53. The contrast between the estimates of West Bengal and U.K. is indeed striking. The results suggest that the people of U.K. are less healthy than those of West

Bengal which contradicts the prevailing notion about the relative levels of health of these two populations. These findings have to be interpreted in the light of the health consciousness of the subjects which is essentially a concomitant of their levels of living. As there is no well defined line of demarcation between the state of health and that of disease of an individual it is likely that the morbidity returns obtained from an investigation of this type are influenced appreciably by the level of health consciousness of the community. In our country where the degree of health consciousness is known to be low, there is a natural tendency to overlook minor ailments and report only such conditions which cause pain, discomfort, or disability to the subjects. Hence, a substantial number of illnesses might not have been reported at all. As the morbidity data collected by means of interrogation of the individuals are affected by a considerable degree of subjectivity, the only means of assessing the extent of morbidity seems to be a prevalence survey carried out on the basis of a complete physical examination supplemented by laboratory tests, if necessary.

CHAPTER 6

DISABILITY

6.1. In the preceding paragraphs, discussion was chiefly confined to the frequency of incidence and prevalence of diseases among the rural and urban populations of West Bengal and their classification by causes. In what follows, an attempt is made to describe briefly the question of disability arising out of these diseases and their social consequences.

6.2. Though it is desirable to split the duration of disabling illnesses into days of disability and non-disability, it was not possible to do so with the data in hand. Hence, what is referred to as days of disability hereinafterwards is actually the duration of disabling illnesses.

6.3. As stated earlier, illnesses, both chronic and acute, were divided into three classes according to the nature of disability caused by them, namely, (i) non-disabling (ii) disabling but not causing confinement to bed or hospital and (iii) causing confinement to bed or hospital.

6.4. The illnesses which did not cause confinement to bed or hospital were classified as disabling (case (ii) above), if the illnesses led to either stoppage of usual work or availing of medical care or special diet. Otherwise, they were classified as non-disabling. Consequently, the concept of disability is somewhat less objective for children and for aged persons who generally do not have any particular assignment of work in or outside the household. Hence, for a critical evaluation of disability and its consequences, the discussion is limited to persons in the age-group 15–59 years. Moreover, since most of the persons belonging to this age-group are either in the labour force or engaged in domestic duties, the disability arising in this segment of the population may have inevitable economic and social consequences.

6.5. The total number of disabling illnesses and their proportion to total illness occurring to the rural and urban populations in the age-group 15–59 years are shown in

Table 6.1. The reliability of these figures can be assessed by a comparison of the sub-sample estimates shown in Table 01.4 of Appendix I.

TABLE 6.1. ILLNESSES OCCURRING DURING THE REFERENCE PERIOD CLASSIFIED INTO TYPE OF DISABILITY IN THE AGE GROUP 15–59 YEARS

sector	non-disabling illness	disabling illness	total illnesses	percentage of non-disabling illnesses
(1)	(2)	(3)	(4)	(5)
1. rural	115	217	332	34.64
2. urban	49	135	184	26.63
3. total	164	352	516	31.78

6.6. The proportions of non-disabling illnesses to total illnesses are about 35 per cent and 27 per cent for the rural and urban populations respectively. In the survey of sickness of the population of U.K. (*loc. cit.*) it was observed that out of 4667 cases of independent illnesses occurring to the adult population in the sample, 4237 or 91 per cent were of a non-disabling nature or had duration of disability for less than a day. In a morbidity study carried out in the Eastern Health District of Baltimore during 1938–43, it was observed that 53 per cent of total cases of all ages were non-disabling. A comparison of the West Bengal Survey results with those pertaining to the U.K. or Baltimore clearly indicates that a number of non-disabling illnesses have not been reported in the West Bengal Survey, a substantial fraction of which, it may not be unreasonable to attribute to the low level of health-consciousness of the people. If by some method this unknown number can be estimated and added to the already reported non-disabling cases, one could have had an approximate estimate of the number of people in an indifferent state of health, who could not pull their full weight in the economic activities in which they are engaged.

6.7. The results presented in Table 6.1 need not necessarily reflect the real extent of the social and economic implications of disability to the community. A better measure of this may be the duration of disability due to various causes and their frequency of occurrence indicating the extent of human wastage which otherwise could have been utilised for productive purposes. For this purpose, the duration of disability due to each kind of illness falling strictly within the reference period was cumulated over the four reference periods and inflated four times to yield annual estimate of number of days lost due to disability arising from each type of disease. No attempt was, however, made to adjust for the seasonal peculiarity of the survey period. In Table 6.2 are shown the total days of disability in a year for the age-group 15–59 years in the surveyed population. Similar results are given for the two sub-samples in Table 01.5 in Appendix I.

6.8. Of the acute diseases, malaria, dysentery, diarrhoea, enteritis and other diseases of the digestive system, diseases of the respiratory system and boil, abscess, cellulitis etc., are the principal diseases causing disability in both the rural and urban areas. As could be expected malaria accounts for a higher annual rate of disability in the rural areas than in the urban areas. Similarly, diseases of the digestive system (other than diarrhoea and enteritis) and boil, abscess, cellulitis etc., are associated with higher annual

TABLE 6.2. TOTAL DISABILITY DAYS IN A YEAR AND DISABILITY DAYS PER PERSON IN A YEAR IN THE SURVEYED POPULATION AGED 15-59 YEARS

disability due to	rural		urban	
	total disability days in a year	disability days per person in a year	total disability days in a year	disability days per person in a year
(1)	(2)	(3)	(4)	(5)
acute diseases :				
(i) malaria	1,108	0.34	372	0.26
(ii) dysentery	572	0.17	293	0.20
(iii) diarrhoea and enteritis	246	0.07	409	0.28
(iv) other acute diseases of digestive system	738	0.22	139	0.10
(v) acute diseases of respiratory system including fever	2,448	0.75	1,267	0.88
(vi) boil, abscess, cellulitis and other skin infections	3,183	0.97	692	0.48
(vii) other acute diseases	1,960	0.60	1,669	1.16
all acute diseases	10,264	3.12	4,841	3.36
all chronic diseases	14,965	4.55	14,600	10.10
all diseases	25,229	7.67	19,441	13.46

disability rates amongst rural persons. On the other hand, the rate of disability due to diarrhoea and enteritis is higher amongst the urban population. The rate of disability due to dysentery, however, does not show any sharp differential between the rural and urban groups.

6.9. The overall annual rate of disability in terms of days lost due to either acute or chronic diseases is more for the urban sector than for the rural sector. Comparing the estimate arrived at for the urban sector with those obtained for the Sickness Survey in U.K. (10.8 days per adult annually) and the morbidity survey in the Eastern Health District of Baltimore (15.0 days per person annually) the West Bengal figure seems to be an under-estimate. The rural-urban difference in the rates of disability due to acute diseases is not so pronounced as in the case of chronic diseases. For example, an urban adult on an average loses nearly twice the number of days on account of disability arising out of chronic diseases as compared with a rural adult. Thus, the chronic diseases which are relatively infrequent in terms of cases are particularly important to the community as well as to the individual patient in terms of days lost from usual activities especially in urban areas. As most of the reported illnesses, both acute and chronic, are preventable, it is possible with the successful application of public health measures to raise the level of health of the population. This will in turn increase its potential efficiency leading ultimately to a higher level of living.

CHAPTER 7

MEDICAL AND MATERNITY CARE

7.1. *Medical care.* The frequency with which diseases occur and their duration and the nature of disability in a community are no doubt of great value to the public health administrator. But they describe only one side of the health picture of the population. On the other hand, the amount of medical care available to the population roughly indicates whether such facilities are sufficient to cope with the morbidity situation. Secondly, the extent to which they are utilized by the afflicted individuals suggests how the process of recovery is affected. Thirdly, knowledge as to who are the actual beneficiaries of the existing medical set-up will considerably help in planning the distribution of medical benefits to the population.

7.2. Since the achievement of independence of India, the importance and urgency of providing adequate medical care in its curative and preventive aspects are increasingly realised. The Health Survey and Development Committee (*loc. cit*) rightly points out that 'a nation's health is perhaps the most potent single factor in determining the character and extent of its development and progress and any expenditure of money and effort on improving the national health is a gilt-edged investment yielding immediate and steady returns in increased productive capacity. . . . The provision of adequate health protection to all covering both its curative and preventive aspects, irrespective of their ability to pay for it, . . . are all facets of a single problem and call for urgent attention.'

7.3. The situation as it exists today is far from satisfactory. The high incidence of preventable diseases and the heavy toll of life taken by these diseases, the abnormal infant and maternal mortality, the widespread existence of malnutrition and under-nutrition, deplorable housing conditions, and grossly inadequate preventive and curative health services are important features of the present health picture of the population. A comparison of the existing medical facilities in our country with those available in the more progressive countries like the U.K. or the U.S.A. (Table 7.1) will reveal how inadequate the available facilities are.

TABLE 7.1. MEDICAL PERSONNEL AND HOSPITAL FACILITIES IN INDIA, U.S.A. AND U.K.

country	year	inhabitants per			
		physician	midwife	pharmacist	hospital bed
(1)	(2)	(3)	(4)	(5)	(6)
U.S.A.	1953	750	400[1]	1,600	100
U.K.	1951	1,150	4,550	3,500	90
India	1952	5,700	23,000	13,700	2,430

[1] Refers to graduate nurses in 1954.

7.4. It is clear from the above table that India lags far behind the U.S.A. and the U.K. as regards the availability of medical personnel and hospital beds. The worst sufferers

are the rural population of India. They form about 80 per cent of the total population but hardly 30 per cent of the doctors are available to them. The situation is equally bad with respect to hospital beds and dispensaries. Further, as the rural population is widely dispersed with no adequate transport facilities, accessibility to the medical personnel, hospitals or dispensaries is considerably restricted.

7.5. As an auxiliary to the present health survey, an investigation into the availability of medical facilities in rural areas was conducted in 69 villages selected for the survey. The results of the investigation shown in Table 7.2 help to evaluate approximately the extent of medical care available in rural West Bengal at present. A comparison with official figures for all West Bengal will reveal the rural-urban differential in respect of the availability of medical personnel.

TABLE 7.2. THE AVAILABILITY OF REGISTERED MEDICAL PRACTITIONERS IN THE SURVEYED RURAL POPULATION AND IN WEST BENGAL

population	no. of villages in sample	total population of villages	no. of regd. doctors		inhabitants per regd. doctor		
			allopath	all systems	allopath	all systems	all West Bengal, 1951 (allopath)[1]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. less than 1000	41	19,827	2	2	9,414	9,414	
2. 1000–1999	14	18,707	4	6	4,677	3,118	
3. 2000 and above	14	61,658	19	21	3,245	2,936	
4. total	69	100,192	25	29	4,008	3,455	1,318

[1] Statistical Abstract of West Bengal—1952.

7.6. The usual way of presenting the amount of medical facilities available to the population as in Table 7.1 cannot be considered as appropriate especially in countries like India where there is no national health service catering to the needs of the entire population as in the Western countries. In India where an overwhelming majority of the population cannot pay for medical care and the available free medical institutions run by the government or charitable societies are too inadequate to meet the needs of these people, a description of the facilities in terms of population cannot give a true picture of medical care at the disposal of the really needy. As the medical man-power like the rest of the population is attracted by areas of greatest economic and social advantage, the poorer sections of the population who are the vulnerable groups from the point of view of morbidity, might not be able to avail of any sort of medical treatment for pecuniary reasons. Therefore, to obtain a true picture of medical care pattern in a community, it is essential to have besides an assessment of such facilities available to the community, an assessment of the extent of facilities actually availed by the community.

7.7. During the course of the three-month observational period information on 482 illnesses of an acute nature and 122 illnesses of a chronic nature were gathered from the canvassed rural households. Similarly, during the same period, data on 268 acute illnesses and 83 chronic illnesses were collected from the canvassed urban households. The

proportion of illnesses receiving medical treatment and type of such treatment are given in Table 7.3. The reliability of these estimates can, however, be assessed by comparing similar estimates obtained from the two sub-samples shown in Table 01.6 of Appendix 1.

TABLE 7.3. PERCENTAGE DISTRIBUTION OF DISEASES OR INJURIES ACCORDING TO TYPE OF TREATMENT RECEIVED

type of treatment	rural		urban	
	acute	chronic	acute	chronic
(1)	(2)	(3)	(4)	(5)
1. allopath	39.42	46.72	42.54	70.62
2. homeopath	16.18	11.48	23.88	12.06
3. ayurved or unani	6.22	9.84	3.36	7.23
4. quack or no treament.	39.83	40.98	33.58	25.30
5. total	101.65[1] (482)[2]	109.02 (122)	103.36 (268)	124.10 (83)

[1] Percentages will add up to more than 100, as some cases received more than one type of treatment.

[2] Figures in parentheses are the numbers of cases reported during reference period.

7.8. It is found that about 41 and 51 per cent of the cases in the rural and urban areas respectively availed allopathic treatment whereas only about 7 and 4 per cent of the cases took recourse to the Indian system of medicine. About 15 per cent of the rural cases and 21 per cent of the urban cases availed homeopathic treatment. All these suggest that allopathic system of treatment is more commonly availed by the population even in the rural areas. Between the homeopathic and Indian system of medicine, the former is the more popular one judging from the proportion of cases treated. Of course, the popularity of any system of treatment is the combined effect of efficiency, cost and availability.

7.9. Another fact brought out clearly by the above table is regarding the proportion of illnesses medically attended. It is found that only about 40 per cent of the rural cases and about 32 per cent of the urban cases did not avail treatment from any recognised medical system. This is really surprising in view of the fact that even in such advanced countries like the U.K. or Canada where health services have reached a high level of development, the proportion of cases not seeking medical care is much higher. For instance, in the sickness survey done in the U.K., (*loc. cit.*) it was observed that about 60 per cent of the cases did not avail of any kind of treatment. In the Canadian Sickness Survey, 1950–51, it was estimated that out of a total of 29,471 complaint periods 21,134 or about 72 per cent received no health care. In contrast to these estimates, the West Bengal Health Survey has shown a very low figure for the proportion of cases, not availing any medical treatment. Considering that in West Bengal as in other parts of India, there is a paucity of medical personnel, hospital beds and other treatment facilities compared to those medically advanced Western countries, it is somewhat difficult to reconcile the observed result. The possible explanation for this, as has been stated earlier, may be found in the tendency to omit minor illnesses or injuries causing little or no disability and for which

perhaps no medical care was sought. If by some means it is possible to estimate such omissions, the proportion not availing any medical care is bound to go up.

7.10. The same situation could be viewed from another angle to ascertain the real extent of medical care availed. It is not unreasonable to assume that the morbidity rate in West Bengal is higher than that of the U.K. or the U.S.A. and that almost all cases medically treated in West Bengal are generally reported. Under the circumstances, the ratio of treated cases to the total population will furnish a better appraisal of the extent of medical care availed. In West Bengal it was found that 650 cases out of a total of 955 cases occurring in a period of 3 months in 8351 persons comprising the rural and urban populations, received some kind of medical attention. In other words, 7.8 per cent of the population could avail of medical care. The corresponding figure as revealed in the Sickness Survey in U.K. (*loc. cit.*) is about 31 per cent and that of the Canadian Sickness Survey, 1950–51 (*loc. cit.*) is about 53 per cent. That is suggestive of the fact that the number actually seeking medical advice is significantly low inspite of indications to the contrary that about two-thirds of the cases are medically attended.

7.11. It would have been useful to analyse the data used in Table 7.3 by further breakdowns for disease groups, occupations etc., for a proper appreciation of the medical care pattern availed by the community. The scope of the available data, however, restricts an analysis of this nature.

7.12. Those who did not avail of any sort of medical treatment during their illness were further asked to state the reason(s) for not doing so. In both the rural and urban groups about 41 per cent of such persons attributed it to sickness being 'not serious'. About 33 per cent of the unattended rural cases stated that 'medical care was too expensive' whereas the comparable figure for the urban group was only 6 per cent. It is natural that the abject poverty of the rural population only tend to make medical care too expensive.

7.13. Another important aspect of medical care is regarding the expenses incurred on medical treatment. Here again, a detailed analysis showing the average expenditure incurred with respect at least to the more commonly occurring diseases will be really useful. But for reasons stated earlier such an analysis is not attempted.

7.14. The cost of medical care in terms of expenditure incurred is higher for an urban case than for a rural case. This is evident from Table 7.4 which gives the expenditure incurred per case during the observational period of three months for different types of treatment. Some idea of the reliability of the estimates can be had by comparing the two sub-sample estimates given in Table 01.7 of Appendix I.

7.15. The higher cost of medical care in towns and cities may be primarily due, among others, to the superior quality of medical facilities available to the urban population. Also, there is a natural tendency for cases when they become advanced in stage to migrate to urban areas in quest of better treatment. Obviously, a higher expenditure is involved in the treatment of such cases.

7.16. It is probably reasonable to bear in mind while interpreting these figures that they are likely to be exaggerated because the usual tendency is to include not only the actual expenses incurred during the period under review but also expenditure relating to some previous period cleared off during the reference period.

TABLE 7.4. MEDICAL EXPENDITURE (IN RS.) INCURRED PER ILLNESS DURING THE REFERENCE PERIOD ACCORDING TO NATURE OF ILLNESS AND TYPE OF TREATMENT AVAILED

type of treatment	rural		urban	
	acute	chronic	acute	chronic
(1)	(2)	(3)	(4)	(5)
1. allopath	8.87 (190)[1]	36.89 (57)	28.96 (114)	75.90 (66)
2. homoopath	4.65 (78)	15.70 (14)	13.45 (64)	45.38 (10)
3. ayurved or unani	5.30 (30)	33.23 (12)	80.11 (9)	37.93 (6)
4. quack or no treatment	1.51 (192)	2.70 (50)	7.28 (90)	7.39 (21)
5. total	5.18 (482)[2]	23.46 (122)	20.66 (268)	70.43 (83)

[1] Figures in parentheses are the numbers of cases on which the estimates are based.

[2] Totals will not tally as some cases received more than one type of treatment.

7.17. *Maternity care.* Considerable attention is being paid in recent years for the promotion and protection of the health of the mother and child. Comprehensive schemes have been launched for the training of maternal and child health personnel like *dhais*, midwives, health visitors, nurses etc., in appreciable numbers in order to raise the existing maternity services to a satisfactory level in a short time. The Second Five Year Plan envisages the establishment of numerous health centres to look after the interests of the mother and child.

7.18. Data have been collected in this survey to assess the extent and type of maternity services availed by the population and the results are briefly summarised in the following paragraphs.

7.19. Those pregnancies terminating during the three-month observational period were referred to as current terminations in block 8 of the schedule. Only for such terminations detailed information regarding maternity care received have been collected. This restriction had to be imposed because such detailed information could not be elicited if the events related to the distant past. However, by the above restriction the sample became extremely inadequate to yield any reliable estimates. For such studies, therefore, a special survey has to be carried out including only those households in which births are known to have occurred.

7.20. Of the 45 births taking place during the period under review, 25 births took place to rural mothers and 20 births to urban mothers. The inadequacy of trained professional assistance available at deliveries, particularly in rural areas, is clearly revealed by Table 7.5 which gives the distribution of deliveries according to agencies attending them.

TABLE 7.5. PERCENTAGE DISTRIBUTION OF CURRENT TERMINATIONS ACCORDING TO TYPE OF ATTENDANCE

sector	doctor	midwife or nurse (qualified)	dhai	hospital	relatives and friends	total[1]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. rural	8.0	0.0	76.0	0.0	24.0	108.0
2. urban	25.0	10.0	25.0	35.0	20.0	115.0

[1] Percentages will add up to more than 100 as some deliveries received more than one type of attendance.

7.21. As may be seen from the above table, *dhais* attended about three-fourth of rural deliveries and one-fourth of urban deliveries. All the rural deliveries were non-institutional, whereas 35 per cent of urban births took place in hospitals. Professional service of doctors, and qualified midwives or nurses were availed only in 8 per cent of rural cases. The corresponding figure for the urban cases was 35 per cent. No professional assistance was called for in 24 per cent of the rural cases and 20 per cent of urban cases. Though these estimates are based on small numbers there is no gainsaying that rural populations have to rely largely on primitive and untrained agencies for this purpose.

7.22. It was observed that as high as 96 per cent of the rural births and 85 per cent of the urban births were delivered within the same district.

7.23. On an average, medical expenses which may include payment for the services of a doctor, hospital, midwife, nurse, or *dhai* or cost of medicine was about Rs. 9 in the case of a rural birth, and Rs. 22 in the case of an urban birth. The higher average cost incurred in towns or cities is natural because the services available there being of a superior nature are more expensive.

7.24. The average periods of confinement and convalescence were about 11 days and 18 days for a rural mother and 6 days and 13 days for an urban mother. The lower periods of confinement and convalescence of an urban mother need not necessarily reflect that she received less effective post-natal care than her rural counterpart, nor does it indicate that urban mothers attained normalcy earlier. The longer periods of confinement and convalescence observed in the case of rural mothers merely reflect the wider prevalence of social taboos among them.

CHAPTER 8

RECOMMENDATIONS

8.1. The present study has highlighted certain features of methodological importance in the conduct of a health survey which may be given due consideration while planning similar studies in future.

8.2. In a general health survey the main emphasis obviously is on the collection of information on the frequency of the incidence or prevalence of illnesses (or injuries) and

classification by either individual causes or groups of causes. Hence, to make an accurate assessment of the morbidity pattern, two conditions require to be satisfied. First, completeness of the morbidity returns and second, correctness of the classification by causes. The results of the Validity Survey have indicated the possibility of some illnesses being not recorded at all. For instance, about 9 per cent of the cases who had sought hospital aid for some ailment had been missed by the investigators. If this could be attributed to the failure of memory of the respondent to recall the event, then it could reasonably be expected that in a health survey of the general population in which a substantial bulk of the afflicted individuals go without any sort of medical attendance, illnesses are liable to be missed to a greater extent. If the households are contacted only once, some information is likely to be lost unless the period of reference is of a short duration. This would inevitably lead to insufficient coverage over time. This difficulty can be got over by planning the survey in such a manner as to make it possible to visit each selected household a number of times at reasonably short intervals.

8.3. It is known that the incidence of certain diseases exhibit a well-defined seasonal pattern. It is, therefore, desirable to spread the survey period over a complete year. Such a long period of observation would necessarily entail an inconveniently large number of visits to the same households which might perhaps create practical difficulties. To avoid this it is desirable to divide the year into 4 typical seasons of 3 months each. The total sample of households may also likewise be split up into 4 sub-samples and each sub-sample allotted to each season.

8.4. This study has indicated that the value of a health survey by the usual questionnaire method to assess the extent of morbidity with respect to diseases like pulmonary tuberculosis is of a questionable nature. Reliance, therefore, has to be placed on prevalence surveys making use of diagnostic facilities including laboratory tests for a proper evaluation of the prevalence of such diseases.

8.5. That a good deal of misreporting of diseases occur is evident from the results of the Validity Survey. Hence, in order to make a reasonably correct interpretation of the results of morbidity returns, it is suggested that a validity survey to assess the extent and direction of misclassification of diseases be simultaneously attempted.

8.6. In an investigation of this kind the personal error of the investigators is nonetheless a major factor in determining the reliability of the results. An internal check of the sample which takes account of not only the sampling variance but also the personal error of the investigators is, therefore, necessary to establish the reliability of the final estimates. This is easily provided by dividing the entire sample into a series of interpenetrating subsamples.

8.7. Socio-economic factors like education and occupation have been found to be useful criteria for stratifying urban populations. However, they have their limitations when applied to rural populations. For a social stratification of rural households, therefore it may be desirable to take into consideration such factors as size of holdings or other suitable economic characteristics closely related to the actual living levels of the households.

8.8. This pilot survey comprises of about 1200 rural households selected from about 3.8 million households in rural West Bengal, i.e., one in every 3,000 households. As far as gross morbidity rates were concerned, this sample was found to be adequate to give fairly

precise estimates. But for a detailed analysis with finer breakdowns, the sample size proved to be inadequate.

8.9. If a nation-wide morbidity survey is attempted and the same sampling fraction as above is maintained, then it would be possible to obtain precise estimates of morbidity rates by finer breakdowns at the all-India level, and at the same time State estimates of gross morbidity rates could be obtained with fair degree of precision.

8.10. The urban sampling procedure requires modification to suit the special features of a general health survey to obtain a more economical design. However, it may not be possible to suggest an adequate sample size for the urban population until some more pilot surveys are conducted.

8.11. General health surveys are not expected to provide adequate data for a detailed study of various aspects relating to maternity unless the sample is made unduly large. For such studies it is desirable that the sampling frame consists of households where births are known to have occurred during a recent specified period.

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APPENDIX I

Comparison of two independent sub-sample estimates

TABLE 01.1. INFANT MORTALITY RATE PER 1000 LIVE BIRTHS FOR TWO SUB-SAMPLES

sector	sub-sample 1		sub-sample 2		combined	
	no. of live births	infant mortality rate	no. of live births	infant mortality rate	no. of live births	infant mortality rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. rural	2,909	173.60	2,630	164.26	5,539	169.16
2. urban	911	153.87	934	116.70	1,845	136.04

TABLE 01.2. INCIDENCE RATES FOR ACUTE DISEASES CLASSIFIED ACCORDING TO DISEASE GROUPS FOR TWO SUB-SAMPLES

disease group	incidence rate per 1000 population in a year					
	rural			urban		
	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. group I—malari	38.81	54.44	46.28	20.04	8.63	14.19
2. group II—dysenter	16.82	31.52	26.54	45.38	28.70	36.26
3. group III—diseases of the digestive system [1]	49.16	30.08	40.15	104.72	48.04	74.10
4. group IV—other infective and parasitic diseases [2]	7.76	12.89	10.21	24.43	23.03	23.65
5. group V—measles, mumps, small pox, chicken pox	31.05	20.06	25.86	34.90	11.52	22.07
6. group VI—respiratory diseases [3]	129.00	153.28	140.87	169.57	195.77	179.72
7. group VII—eye, ear, boil and abscess, cellulitis and dental diseases	19.41	31.52	25.18	62.83	14.40	30.26
8. group VIII—other diseases [4]	11.64	14.33	12.93	27.02	43.19	36.20
9. total	303.65	348.12	328.02	431.09	374.27	422.61

[1] Diarrhoea, enteritis, etc.

[2] Typhoid, cholera, diseases due to helminths etc.

[3] Common cold, influenza, pneumonia, bronchitis, tonsillitis etc., including fever.

[4] Anaemia, v.d., vascular lesions affecting central nervous system, rheumatic fever, congenital malformation accident etc.

TABLE 01.3. PREVALENCE RATES FOR CHRONIC DISEASES CLASSIFIED ACCORDING TO DISEASE GROUPS FOR TWO SUB-SAMPLES

disease group	prevalence rate per 1000 population					
	rural			urban		
	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. [group I—tuberculosis (pulm.)	0.96	2.47	1.68	2.78	4.59	3.77
2. group II—diseases of the circulatory and nervous systems[1]	3.19	4.24	3.69	3.71	1.53	2.62
3. group III—diseases of the eye, ear, skin, bones and joints.	3.83	4.24	4.02	4.64	5.36	5.03
4. group IV—diseases of the stomach and duodenum except cancer	2.55	2.83	2.68	5.57	6.12	5.87
5. group V—asthma	3.19	3.89	3.52	5.57	3.83	4.61
6. group VI—diseases of the genital organs	3.51	2.12	2.85	4.64	4.59	4.61
7. group VII—other diseases[2]	2.55	1.41	2.01	8.34	8.42	8.39
8. total	19.78	21.20	20.45	35.25	34.44	34.80

[1] Arteriosclerotic and degenerative heart diseases, hypertension, rheumatic fever, diseases of veins, psychoneurosis, diseases of nerves etc.

[2] V.D., cancer, diabetes, avitaminosis, congenital and functional diseases, etc.

TABLE 61.4. ILLNESSES OCCURRING DURING THE REFERENCE PERIOD CLASSIFIED INTO TYPE OF DISABILITY IN THE AGE-GROUP 15–59 YEARS FOR TWO SUB-SAMPLES

sector	sub-sample 1				sub-sample 2				combined			
	non-disabling illness	disabling illness	total	percentage of non-disabling illness	non-disabling illness	disabling illness	total	percentage of non-disabling illness	non-disabling illness	disabling illness	total	percentage of non-disabling illness
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. rural	63	113	176	35.80	52	104	156	33.33	115	217	332	34.64
2. urban	30	58	88	34.09	19	77	96	19.79	49	135	184	26.63
3. total	93	171	264	35.23	71	181	252	28.17	164	352	516	31.78

TABLE 01.5. TOTAL DISABILITY DAYS IN A YEAR AND DISABILITY DAYS PER PERSON IN A YEAR IN THE SURVEYED POPULATION AGED 15–59 YEARS FOR TWO SUB-SAMPLES

disability due to	rural						urban					
	total disability days in a year			disability days per person in a year			total disability days in a year			disability days per person in a year		
	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
acute diseases												
1. malaria	535	553	1108	0.32	0.35	0.34	299	73	372	0.45	0.09	0.26
2. dysentery	156	416	572	0.09	0.27	0.17	65	228	293	0.10	0.29	0.20
3. diarrhoea and enteritis	172	74	246	0.10	0.05	0.07	281	128	409	0.43	0.16	0.28
4. other acute diseases of digestive system	615	123	738	0.36	0.08	0.22	76	63	139	0.12	0.08	0.10
5. acute diseases of respiratory system including fever	939	1,509	2448	0.54	0.97	0.75	416	851	1267	0.64	1.07	0.88
6. boil, abscess, cellulitis, and other skin infections	777	2,406	3183	0.45	1.54	0.97	179	413	592	0.43	0.52	0.48
7. other acute diseases	1,209	760	1969	0.70	0.49	0.60	524	1145	1669	0.80	1.45	1.16
8. all acute diseases	4,421	5,843	10,264	2.56	3.75	3.12	1,940	2,901	4,841	2.97	3.66	3.36
9. all chronic diseases	9,125	5,840	14,965	5.28	3.74	4.55	5,475	9,125	14,600	8.38	11.52	10.10
10. all diseases	13,546	11,683	25,229	7.84	7.49	7.67	7,415	12,026	19,441	11.35	15.18	13.46

TABLE 01.6. PERCENTAGE DISTRIBUTION OF DISEASES OR INJURIES ACCORDING TO TYPE OF TREATMENT RECEIVED FOR TWO SUB-SAMPLES

type of treatment	rural						urban					
	acute			chronic			acute			chronic		
	sub-sample 1	sub-sample 2	com-bined	sub-sample 1	sub-sample 2	com-bined	sub-sample 1	sub-sample 2	com-bined	sub-sample 1	sub-sample 2	com-bined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. allopath	35.98	42.80	39.42	46.77	46.67	46.72	50.72	33.85	42.54	60.53	95-56	79.52
2. homeopath	17.57	14.81	16.18	14.52	8.33	11.48	26.09	21.54	23.88	10.53	13.33	12.03
3. ayurved or unani	8.79	3.70	6.22	11.29	8.33	9.84	5.07	1.54	3.36	10.53	4.44	7.23
4. quack or no treatment	40.59	39.09	39.83	40.32	41.67	40.98	23.91	43.85	33.58	26.32	24.44	25.30
5. total	102.93[1]	100.40	101.65	112.90	105.00	109.02	105.79	100.78	103.36	107.91	137.77	124.10
	(239)[2]	(243)	(482)	(62)	(60)	(122)	(138)	(130)	(268)	(38)	(45)	(83)

[1] Percentages will add up to more than 100, as some cases received more than one type of treatment.

[2] Figures in parentheses are the numbers of cases reported during the reference period.

TABLE 61.7. MEDICAL EXPENDITURE (IN RUPEES) INCURRED PER ILLNESS DURING THE REFERENCE PERIOD ACCORDING TO NATURE OF ILLNESS AND TYPE OF TREATMENT FOR TWO SUB-SAMPLES

type of treatment	rural						urban					
	acute			chronic			acute			chronic		
	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined	sub-sample 1	sub-sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. allopath	8.02 (80)[1]	9.57 (104)	8.87 (190)	30.70 (29)	43.30 (28)	36.89 (57)	29.30 (70)	28.42 (44)	28.96 (114)	98.31 (23)	79.96 (43)	75.90 (66)
2. homoopath	5.57 (42)	3.58 (36)	4.65 (78)	20.97 (9)	6.16 (5)	15.79 (14)	17.83 (36)	7.82 (28)	13.45 (64)	61.88 (4)	34.38 (6)	45.38 (10)
3. ayurved or unani	4.78 (21)	6.41 (9)	5.30 (30)	47.07 (7)	13.85 (5)	33.23 (12)	87.14 (7)	55.50 (2)	80.11 (9)	41.25 (4)	28.35 (2)	37.95 (6)
4. quack or no treatment	1.52 (97)	1.50 (93)	1.51 (192)	1.25 (25)	4.33 (25)	2.79 (50)	4.30 (33)	9.00 (57)	7.28 (90)	8.91 (10)	6.01 (11)	7.39 (21)
5. total	4.00 (239)[2]	5.45 (243)	5.18 (482)	23.22 (62)	23.70 (60)	23.46 (122)	24.96 (138)	16.10 (130)	20.66 (268)	54.55 (38)	33.72 (45)	70.43 (83)

[1] Figures in parentheses are the numbers of cases on which the estimates are based.

[2] Totals will not tally as some cases received more than one type of treatment.

APPENDIX 2

INDIAN STATISTICAL INSTITUTE

A PILOT HEALTH SURVEY IN WEST BENGAL: MARCH–MAY 1955; HOUSEHOLD SCHEDULE 1.1

Instructions to Investigators

03.1. (*Block 2*): Item 3. Household means of livelihood—As in industry—occupation code list (six digit code)

03.11. Item 4. The monthly expenditure per capita is to be worked out by first ascertaining the monthly household expenditure on consumer goods and dividing it by the number of members of the household.

03.12. Item 5. Religion—Hindu–0; Muslim–1; Sikh–2; Christian–3; Tribal–4; Others–5.

03.13. Item 6. Mother tongue—Bengali–0; Hindi–1; Urdu–2; Nepali–3; Tribal–4; Punjabi–5; Others–6.

03.14. Item 7. Purdah code—If women in the household do not observe purdah, enter code–1, and if they do, enter code–2.

03.15. Item 8. Informant's relation to head—head–0; spouse–1; son–2; daughter–3; father–4; mother–5; brother–6; sister–7; other relation–8; non-relation (household member)–9; others–10.

03.16. Item 9. Informant's ability—poor–0; average–1; good–2.

03.17. Item 10. Informant's willingness—hostile–0; unwilling–1; indifferent–2; helpful–3.

03.2. (*Block 3*): For each of the four visits enter date and signature.

03.3. (*Block 4*): Enter quantities consumed during the last 30 days in seers for items like rice, wheat, other cereals, ghee, oil, sugar and gur, milk, meat and fish (if the quantity is less than a seer enter–1). For consumption of eggs enter number and for fruits and vegetables enter values in rupees and annas. If consumption of the latter two items is from home production impute values at current local prices.

03.4. (*Block 5*): Item 1. Type of house—code–1—pucca house with brick walls, code–2—all other types of houses.

03.41. Item 2. Number of rooms—includes all living rooms and excludes those used for bath, cooking and store.

03.42. Item 3. Floor space—space under living rooms as well as those covered by verandahs if they are used for the same purpose as the living rooms. Give the figure in square feet.

03.43. Item 4. Ventilation—If the smoke has no good outlet and there is no possibility of free circulation of air, enter code–1; otherwise enter code–2.

03.44. Item 5. Water (drinking, washing)—The codes are same for drinking as well as washing water.

code 1—tap water, code 2—tubewell water,

code 3—well water, code 4—other types of water.

03.45. Item 6. Latrine code—

code 1—sanitary privy, code 2—service privy,

code 3—pit privy, code 4—others

03.46. Item 7. General sanitation—

code 1—surroundings clean, drainage good and open space

code 2—surroundings clean, either drainage is not good or lacks open space,

code 3—surroundings unclean, covered with garbage and flies.

03.5. (*Block 0*) : Who are the members of the family?

(a) All persons who have lived in the household and eaten from the household kitchen for at least 16 days during the month preceding the date of survey.

(b) All children born within 14 days prior to the date of visit to members of the category (a).

(c) All persons dead during the period, 14 days prior to date of visit, who if alive, would have been classed as (a).

03.51. Column 2—Relationship—(three-digit code)—head-0; spouse-1; son-2; daughter-3; father-4; mother-5; brother-6; sister-7; other relation-8; non-relation-9.

03.52. Column 3—Sex—male-1; female-2.

03.53. Column 4—Age—age last birthday.

03.54. Column 5—Marital status—never married-1; spouse living but divorced or separated-2; married-3; spouse dead-4.

03.55. Column 6—Nature of stay—For all persons present in this household throughout the whole year preceding the date of visit enter code-1. If the person has not stayed for the whole year ask—(i) whether present on the date of survey, (ii) whether stayed in the household for most of last fortnight and (iii) whether stayed in the household for most of last year and enter codes as follows :

code	present on date of visit	stayed for most of last fortnight	stayed for most of last year
2	yes	yes	yes
3	yes	yes	no
4	yes	no	yes
5	yes	no	no
6	no	yes	yes
7	no	yes	no
8	no	no	yes
9	no	no	no

For children below 1 year of age, enter code 1, if ever since birth, they were in this household.

03.56. Column 7—Educational status—(two digit code)—

Left hand digit—education, general :

Illiterate-1; literate but below primary-2; primary-3; middle-4; matric-5; intermediate-6; graduate in science-7; graduate in arts-8; post-graduate in science-9; post-graduate in arts-0.

Right-hand digit—education, technical :

no technical or professional qualification-1; technical or professional skill only, without degree or equivalent diploma but with or without certificate or diploma of lower order-2; holder of equivalent degree or diploma in teaching-3; engineering-4; agriculture-5; medicine, allopathic-6; other medicine-7; veterinary-8; law and commerce-9; other technology or profession-0.

03.57. Columns 14 and 15—Principal means of livelihood—As in industry-occupation code list (six digit code)

03.58. Column 16—Weight code—code 1—constantly losing weight, code 2—not constantly losing weight.

03.59. Column 19—Temperature code—code 1—constantly feeling feverish or rise of temperature.

03.5.10. Column 20—Health code—ask whether the person is constantly feeling fatigued and constantly lacking appetite and enter code as follows :

	constant fatigue	*constant lack of appetite*
code 1	yes	yes
code 2	yes	no
code 3	no	yes
code 4	no	no

03.6. Blocks, 1, 2 and 4 to 6 need be filled up only in the first visit. However, in subsequent visits some alterations might have to be made in block 6 for additions and exits of household members. Such entries may be made with an asterisk and footnotes given.

03.7. (*Block 7*): This has to be filled up only for such members of the household who were sick during the reference period. If a person fell sick more than once, for each sickness of the same person a separate line of entries is to be made. Cases of child birth, though medically treated should not be considered as cases of sickness.

03.71. Column 1—visit no.—for each sickness during the reference period of the 1st visit, enter 1 and for each sickness during the 2nd reference period enter 2 and so on.

03.72. Column 2—If any sickness was prevailing in the individual in this as well as in the previous reference period enter code 2. If it is a new case not prevailing during the previous visit enter code 1.

03.73. Column 3—Enter serial number of the affected person as entered in block 6. If he falls ill more than once during the reference period repeat his number for every sickness of his.

03.74. Column 4—Put down name of the disease as stated by the informant. If further particulars of the disease are given by the informant of his own accord, they may be entered in column 15 meant for 'remarks'.

03.75. Column 5—Some diseases are chronic i.e., they last for a long period of time and have no abrupt time of onset. Examples are T.B., heart diseases, diabetes, asthma, etc. Some diseases are acute and are of shorter duration with an abrupt time of onset and recovery if the result is not death. Examples are malaria, typhoid, cholera, dysentery, etc. It is also possible for certain diseases like malaria and dysentery to manifest as either acute or chronic. Another aspect of a disease is the degree of disability it causes on the stricken individual. If the affected person is not disabled from performing the usual assignment of work the disease is non-disabling. If it prevents him from doing his usual work, it is called disabling, the latter in extreme case may necessitate confinement to bed or hospital. In the case of old men, women and children not going to school it may be difficult to distinguish disability from non-disability unless the former is of a degree needing confinement to bed or hospital. For these people disability simply means taking of medicine or special diet. Based on these two aspects of the disease 6 codes for the nature of disease are given below:

Chronic: non-disabling—code 1; disabling but not confined to bed or hospital—code 2; confined to bed or hospital—code 3.

Acute: non-disabling—code 4; disabling but not confined to bed or hospital—code 5; confined to bed or hospital—code 6.

03.76. Column 6—Date of onset is the date on which disability starts—for all non-disabling diseases (acute or chronic) insert a dash in this column. For non-working persons date of onset is the date on which medical treatment or special diet starts.

03.77. Column 7—Date of recovery is the date on which disability ceases. If the person recovered on 15th March enter R—15th March and if he died on 15th March, enter D—15th March, the letter R or D preceding the date indicating the result of the disease. If the illness prevailed on the date of visit enter code 'P'.

03.78. Column 8—Period of sickness to be entered in terms of months, days.

03.79. Column 9—Code for type of attendance. If the case was attended by an allopath enter code 1 and if attended by homeopath or ayurved or unani or quack enter codes 2, 3, 4 or 5 respectively. If attended by none enter code 6.

03.7.10. Columns 10 to 12—All fees paid to physicians such as those for consultations, visits, operations, etc., are to be lumped up and entered in col. 10 and all expenses on medicines to be entered in col. 11 and all other expenses such as those for tonics, hospital rent, fees paid to

nurses and *dhais* etc., to be entered in col. 12. If the amount expended by a certain household is to cover more than one case of sickness it is necessary to allocate the respective proportion to the individual cases of sickness.

03.7.11. Column 13—Why medical care was not availed?
codes 1—no hospital or private physician available, 2—too expensive; 3—no faith in treatment; 4—sickness not serious; 5—other reasons.

03.7.12. Column 14—Reference period: for first visit the reference period is always 14 days. But for subsequent visits the actual number of days reckoned from the date of last visit to this one must be entered in the column.

03.8. (*Block* 8): The entries in this block pertain to only those women who have been delivered during one of the reference periods. As the survivalship of children born during any reference period has to be observed till the termination of the entire period of survey it is necessary to enter this item of information again in visits subsequent to the one in which the live birth was noted.

03.81. Columns 1 to 3: as in block 7.

03.82. Column 4—There are three types of termination. The codes are as follows: code 1—live birth, code 2—still birth and code 3—abortion.

03.83. Column 5—Date of delivery should be entered irrespective of the nature of termination.

03.84. Columns 6 to 8—If entry in col. 4 is code 1, then enter sex code of the child in col. 6, survival code (surviving–1, dead–2, left the household and not likely to return before the end of survey–3, left the household and is likely to return before the end of survey–4) in column 7, and age in (months, days) at present or at death or at departure in col. 8. For columns 7 and 8 entries are required in subsequent visits also.

03.85. Column 9—Place of delivery, code 1—delivered in this household, code 2—delivered in another household within district, code 3—delivered in hospital within district, code 4—delivered in another household outside district, code 5—delivered in hospital outside district.

03.86. Column 10—Attendance type: code 1—doctor, 2—midwife or nurse (qualified), 3—*dhai*, 4—hospital, 5—none, includes attendance by relatives and friends.

03.87. Column 11—Period of confinement—enter either period of hospitalisation or if home delivery enter period of bed-days. If on date of visit the woman is still lying on bed enter code 'bed' and in the next visit enquire again about the total bed-days and enter this item alongside of entries in columns 7 and 8.

03.88. Column 12—Period of convalescence—this means the period of disability following bed-days. If the woman is still convalescing enter code 'conv'. The method of entry is same as in col. 11.

03.89. Columns 13 to 16—Cost of medical care is split into four parts—column 13 gives expenses incurred towards physicians' fees for consultation, visit, operation etc. Column 14 gives fees paid to midwife or *dhai*. Column 15 gives expenditure on medicine and column 16 gives cost of hospitalisation.

03.8.10. Column 17—Reference period—enter as in block 7.

03.8.11. Column 18—Survival of mother—code 1—mother alive, code 2—mother dead.

03.8.12. In block 8 if any woman has given birth to twins two consecutive lines must be entered.

03.9. (*Block* 9): Every woman married, widowed, separated or divorced must have an entry in this block. Her serial number as in block 6 must be entered in column 1.

03.91. Column 2—Age at present should be copied from block 6.

03.92. Column 3—Age at marriage is the age at first marriage for women married more than once.

03.93. Column 4 to 9—Enter codes for educational status, economic status and means of livelihood for the woman and her last husband.

03.94. Columns 11 to 33—These give the age of the mother and the result of termination for successive orders of terminations. If the last termination occurred within last one year the age of the mother and the result of termination should not be given in the columns appropriate to its order but columns 31 to 33 must be entered. Column 31 gives the order of this last termination, column 32 gives the calendar month in which the termination took place and column 33 are, code 1—live birth, child surviving on date of visit, code 2—still birth, code 3—abortion, and if the result was a live birth but the child is dead then enter 'D-N' where N stands for the completed months of life (say, if the child died after 3 months of life enter 'D-3'). If the last termination took place at least one year ago, then entries in columns 31 to 33 should not be made. Such a termination should be entered as the previous ones. Against age give the age of mother at the time of termination and against result enter codes as follows:

code 1—live birth, and child survived first year of life,
code 2—live birth, child died within first month of life,
code 3—live birth, child died after one month but before one year of its life,
code 4—still birth, code 5—abortion.

Example 1: (1) Woman's present age-35, (2) age at marriage-18, (3) total terminations-2, (4) 1st termination occurred at age 20, child died at 6 months of life, (5) 2nd termination occurred at age 22 and resulted in still birth.

Since the woman's age at present is 35 and her last termination occurred at 22, i.e., 13 years ago no entries are needed in columns 31-33.

The entries are:

col. 2	col. 3	col. 10	col. 11	col. 12	col. 13	col. 14	col. 31	col. 32	col. 33
35	18	2	20	3	22	4	—	—	—

Example 2: (1) woman's age at present 28, (2) age at marriage 20, (3) total terminations 4,(4) 1st termination at age 22, live birth child survived first year of life, (5) 2nd termination at age 24, child died before 1 month of life, (6) 3rd termination at age 26, still birth, (7) 4th termination at age 28, child died after one month but before 1 year of life. Since the last termination occurred at age 28 and the woman's present age being 28 this termination must have occurred within last year. Ask for the calendar month of this termination and the age at death in completed months. Suppose the answer is 'May, 1954' and age at death is 6 months. Then the entries are:—

col. 2	col. 3	col. 10	col. 11	col. 12	col. 13	col. 14	col. 15	col. 16	col. 17	col. 18	col. 31	col 32	col. 33
28	20	4	22	1	24	2	26	4	—	—	4	May	D-6

Column 34—Information on ante-natal care is to be collected only in respect of terminations occurring during the last 1 year.

Two-digit code—left hand digit indicating the type of attendance—
no attendance-0; hospital-1; welfare centre-2; qualified practitioner-3; qualified midwife-4.

Right-hand digit—number of such attendance.
If there is more than one type of attendance, only the predominant type need be recorded.

APPENDIX 2

INDIAN STATISTICAL INSTITUTE

WEST BENGAL HEALTH AND EMPLOYMENT STUDY[1] MARCH—MAY 1955

Household Schedule

(1) identification : village	identification : block	(2) classificatory characters		
1. district	1. district	1. name of head of h.h.	6. mother tongue	
2. thana	2. town		7. purdah code	
3. village	3. sample town no.	2. household size	8. relation to head	
4. sample thana no.	4. sample block no.	3. h.h. means of livelihood		
5. sample village no.	5. sample h.h. no.	4. monthly exp. per capita	9. ability	
6. sample h.h. no.		5. religion	10. willingness	

(2) investigation particulars			(4) diet						(5) housing condition
visit no.	date	investigator's signature	consumed during last 30 days						1. type of house
			rice	wheat	other cereal	ghee	oil		2. number of rooms
									3. floor space
			sugar & gur	milk	meat	fish	eggs (no.)		4. ventilation
									5. water drinking washing
									6. latrine code
date		inspector's signature	fruits (val.)	vegetb (val.)	diet code				7. general sanitation
									8.

(6) family composition

serial no.	relationship	sex m-1 f-2	age	marital status	nature of stay	educational status	economic status	industrial status				means of livelihood					health			
								primary			secondary	principal			subsidiary					
								code	intensity	stability		sector	description	code	sector	code	weight code	temperature code	health code	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

[1] Employment portion not appended here.

(7) morbidity and mortality—reference period 2 weeks for 1st visit and period since last visit for all subsequent visits

visit no.	new or old case	serial no.	name of disease	nature of illness	date of onset	date of recovery/death	period of sickness	attendance type	expenses on medical care			why medical care was not availed	reference period	remarks
									physician	medicine	other treatment expenses			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)

(8) current terminations—reference period 2 weeks for 1st visit and period since last visit for all subsequent visits

visit no.	new or old case	serial no.	nature of termination	date of delivery	if live birth: sex of child	if live birth: survival & presence	if live birth: age now or at death or at departure	place of delivery	attendance type	period of confinement	period of convalescence	cost of medical care: physician	cost of medical care: midwife or dhai	cost of medical care: medicine	cost of medical care: hospital	reference period	survival of mother	general remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)

(9) history of terminations

serial no.	age: present	age: marriage	educn: own	educn: husband	econ. stat.: own	econ. stat.: husband	l.hood: own	l.hood: husband	total termination	1st: age	1st: result	2nd: age	2nd: result	3rd: age	3rd: result	4th: age	4th: result	5th: age	5th: result	6th: age	6th: result	7th: age	7th: result	8th: age	8th: result	9th: age	9th: result	10th: age	10th: result	termination last year: order	termination last year: month of birth	termination last year: survival cond.	termination last year: antenatal care
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)