The National Sample Survey demonstrated that tuberculosis is one of India's major public health problems, disease being equally prevalent in both rural and urban areas. To bring about the reduction of the tuberculosis problem in a limited time the programmes developed at National Tuberculosis Institute (NTI) must have the following characteristics: i) they must be firmly rooted in the general health services and contribute to their development. ii) they must be applicable to the large majority of the districts of India. The existing clinical knowledge of tuberculosis should be brought to the realm of public health application, for which NTI must accumulate a body of knowledge on the efficiency of various control programmes under field conditions and their operational feasibility.

Operations Research at NTI consists of following elements (i) Data collection on (a) epidemiological factors - by conducting base line and longitudinal surveys (b) operational factors by comparing Mass Campaign approaches and Community Development Approaches (c) Sociological and economic factors by studying the awareness of symptoms among TB patients, economic consequences of TB and acceptability of long term drug treatment (ii) construction of various epidemiometric and operational models to give information on the efficacy of various tuberculosis programmes (iii) test run - at the moment NTI is operating a District TB Programme (DTP) in Anantapur and a city programme in Bangalore. These programmes have been formulated to a large extent on the basis of preliminary data not organised in model form. Some provisional conclusions are beginning to emerge from the various elements of the Operations Research Programme operating for a year. The general health services are proving to be capable of playing their essential role in the diagnosis and treatment of tuberculosis, provided they are assisted, at district level, by a special tuberculosis service for planning, partial supervision, evaluation and referral. With existing chemotherapy the treatment organisation is the most crucial part of the tuberculosis services, and the decisive role is played by
the field organization engaged in preventing and curing treatment default. The most critical requirement of any control programme is an ample provision of drugs, to be supplied free of cost to the patients. Over half the X-ray active cases (including more than three quarters of the sputum positive cases) are aware of symptoms of the disease, and case-finding can therefore, for some time to come, be based on the self-advertising attraction of a free treatment service within a walking distance, associated with a simple sputum diagnosis at Primary Health Centre level and referral X-ray diagnosis at taluk or district level. NTI's task is formidable, its resources limited. We believe that through its Operations Research Approach, NTI utilises most effectively its limited facilities towards the solution of India's tuberculosis problem.

**KEY WORDS: OPERATIONS RESEARCH, CONTROL PROGRAMME, NTI, APPROACH.**


The purpose of the study was to establish the rate of emigration in a random selection of villages, with a view to forecast the likely loss of population in a follow-up study on BCG vaccination in the area. The study was carried out in the total population belonging to 35 villages of Channapatna, Devanahalli, Magadi and Nelamangala taluks of Bangalore district in April 1960. Demographic characteristics such as birth and death rates, immigration rates and proportion of persons temporarily absent, were also studied. The head of the household if absent, any other responsible adult was interviewed on a house-to-house basis, regarding the composition of the family, according to the National TB Institute manual for census takers. Estimation of migration was to be based on the registered population of the current day, the population exactly one year ago and all relevant events during the intervening year.

The thirty five villages surveyed were found to have a population of 13,838 persons at the time of interview. This figure includes: (A) 13138 persons in the household at the time of census taking also belonged to it one year ago. (B) 470 persons born during the past year. (C) 230 persons immigrated during the past year. (D) 200 persons dead during the past year. (E) 307 persons emigrated during the past year & (F) 770 persons temporarily absent. The net increase in the population from April 1959 to April 1960 was, 193 persons or 14 per thousand.

It was estimated that not more than 5% of the population
would be lost by emigration over a period of two years. About 1/3rd of the emigration is within the same taluk. Only a small portion of the emigrants are above 30 years of age. It is also found that a good proportion of women's migration is due to marriage. The study findings revealed that the hypothesis that large number of people leave the village every year, making BCG coverage impossible could hardly be upheld.

**KEY WORDS: MIGRATION, RURAL POPULATION, BCG ASSESSMENT.**


This study was undertaken in 34 villages and 4 town blocks where a few weeks earlier an epidemiological survey was carried out. All persons above 20 years whose photofluorograms were read as inactive, probably active, or active by at least one reader, were age-sex matched with an equal number of X-ray normals, to form the experimental and control groups respectively. Thus, a total of 2,106 were eligible for social investigation. Interview sheets, with particulars of the name and location of village, household number, and individual number and the identifiable data of the interviewees were made available to the social investigators at random for contacting and interviewing them at their homes. The interviews were non-suggestive in nature and deep-probing on the details of symptoms experienced by the respondent, which were fully recorded. About 79% of the experimental group and 83% of the control group were satisfactorily interviewed, which constituted the data further analysed. Of the numerous symptoms recorded, only that were associated with pulmonary tuberculosis were considered, of which cough occurring for one month or more, fever for a month or more, pain in the chest, haemoptysis and all combination of these four symptoms were analysed statistically.

Cough was found to be the most important single symptom. It was not only the most frequent symptom alone or in combination in the experimental group but was less frequent in the control group that 69% of sputum positive and 46% of radiological positive had cough while only 9% of the control group had it. Considerably fewer people had fever and pain in the chest. Pain in the chest appears to be non-specific, giving a ratio of only 2:1 among the experimental and control groups while fever was in the ratio of 6:1 and haemoptysis was 11:1. It was seen that 69% of the sputum positive cases, 52% of the X-ray active or probably active, 29% of the inactive and 15% of the normals (control group) had at least one of the above mentioned symptoms. In all the groups, the proportion of symptoms were higher among males than among females. In both
males and females the prevalence of symptoms was higher in the middle age groups than among the younger or older groups. This age variation was more marked in the females. The findings of the study were analysed further along with the data obtained from a couple of minor investigations, conducted in the rest of the 28 villages which formed the total of the villages surveyed epidemiologically. This brought out further that 95% of bacteriologically positive cases are aware of symptoms, 72% experience 'worry awareness' and 52% form the action-taking group. The above findings have been of considerable importance in planning further studies and in formulating the National Tuberculosis Programme.

**KEY WORDS:** SOCIAL AWARENESS, SYMPTOMS, SOCIAL ASPECTS, CASE, SUSPECT CASE.

077 Stig Andersen & D Banerji: A SOCIOLOGICAL INQUIRY INTO AN URBAN TUBERCULOSIS CONTROL PROGRAMME IN INDIA

Tuberculosis control by mass domiciliary chemotherapy is now being attempted on an increasingly large scale in the technically underdeveloped countries. The National TB Institute (NTI), Bangalore is an important centre for the development of such programmes and a study reported in this paper is an enquiry into the working of an urban tuberculosis programme which is operated under the auspices of the Institute. The excellent results of controlled clinical trials have lead to widespread belief that tuberculosis problem can be reduced significantly and rapidly by use of mass chemotherapy. However, the findings of such programmes elsewhere showed that by a long term continuous effort year after year, the removal of infectious cases can bring about a gradual reduction of the problem. Hence, it was necessary to study the treatment organisation of domiciliary chemotherapy on a large scale in respect of patients' behaviour towards the programme during the treatment period. Three types of problems encountered in an urban tuberculosis programme are dealt in this paper: (1) problems related to the patients who are under treatment at the Lady Willingdon TB Demonstration & Training Centre (LWTIDTC); (2) patients who prefer to take treatment from other institutions and (3) patients who come from outside the city. Study population consisted of 784 radiologically positive patients diagnosed at the LWTIDTC from March 61 to May 61. All the outpatients were submitted to a tuberculin test and examination by a 70 mm photofluorogram. Those who were X-ray positive were given bacteriological examination of a spot sample of sputum by both smear and culture on their second visit scheduled on the third day. Of the 784 persons 318 (54%) were found to excrete tubercle bacilli. All patients suffering from active tuberculosis and sputum positive disease were put on a treatment
regimen of 300 mg of isoniazid per day for a period of one year. During the course of the study a few of the sputum positive cases were given 10 gms of PAS in addition. The study population was interviewed by the Social Investigators of NTI: initially at the clinic immediately after their diagnosis, defaulters at their homes within four weeks of their defaulting and all patients after twelve months of treatment period. The coverage was 100%, 65% and 76% respectively.

The major problems identified and quantified were: Of the 784 patients under study, 84 (11%) did not even return to learn the results, 46 (6%) patients houses could not be traced, 138 (17%) resided outside the city, 48 (6%) emigrated during the treatment, 173 (22%) took treatment from outside sources, 156 (20%) took treatment regularly from the clinic and 139 (18%) also took treatment in the clinic but irregularly. Various reasons were given for defaults in drug collection, a sizable proportion of which could have been avoided through better organisation and administrative procedures and good initial motivation at the clinic. Default is a complex behaviour pattern and this study did not bring out any correlation between default and the economic, social, educational or other status of the patient. With changes in the system leading to a good treatment organization, it should be possible to have a higher percentage of regular patients than 20% as at present. About 64% sputum conversion among regular patients and estimated 25% among defaulters was observed.

KEY WORDS: URBAN CONTROL PROGRAMME, SOCIAL INQUIRY, COMPLIANCE.

078 Stig Andersen: OPERATIONS RESEARCH IN PUBLIC HEALTH
Indian J Public Health 1963, 7, 141-51.

The research which is foremostly needed in the poor countries of the world is not inventive and experimental research; the demand of these societies is no longer for new techniques and new inventions to improve their human material. Their demand is for systems composed of largely known techniques which could improve the human material to a level they can now afford and give the optimal utilisation of scarce economic resources. Research that satisfies this demand can be called application research or operations research. The term Operations Research has been borrowed from certain other fields i.e., military and industry. The techniques have mainly been developed during the second world war military field operations and later on applied in the field of industrial management. The spectacular progress of public health in the developed countries during the last century was a result of interaction mainly between economic progress and the development of science and not as a result of application of operations research. Over a period of time a very large number of inventions and experiences
in techniques are available to apply in logical systems. This relative preponderance of technical knowledge over economic capacity is the social fact and many developing countries cannot choose the best and have to depend upon the utilisation of operations research in public health.

The following are the major seven phases in Operations Research applied to Public Health Services: i) formulation of the problem, ii) collection of data, iii) analysis and hypothesis formulation, iv) deriving solutions from the model, v) choosing the optimal solution and forecasting results, vi) the test run and the control system, vii) Recommending implementation. Operations Research can be a continuous process or even one time effort. For a country like India it could be a permanent feature of the national health services. The minimum composition of the Operations Research team is probably a public health administrator, an epidemiologist, a mathematician, a statistical and social scientist.

The essence of Operations Research is that logical thought combined with careful observation and methodological analysis, which should form the basis of decision making. Operations Research thus may be called as the science of common sense.

KEY WORDS: OPERATIONS RESEARCH, PUBLIC HEALTH, MANAGEMENT, METHODOLOGY.

079 D Banerji: TUBERCULOSIS: A PROBLEM OF SOCIAL PLANNING IN DEVELOPING COUNTRIES
Medical Care 1965, 3, 151-59.

The problem of tuberculosis in a developing country such as India must be considered in the overall social and economic context. Massive investment of money and resources to eradicate tuberculosis may interfere with other measures more important for the country's progress. But a limited investment in a suitably oriented tuberculosis programme could hasten the decline of the disease. Social planners thus face a special challenge in such countries. The problems are almost over-whelming, while the resources available are extremely limited; scientists will have to formulate programmes which will ensure that these resources are utilised to give a maximal return from the investment. Thus, in considering tuberculosis as a problem of social planning in developing countries it will have to be dealt with at three different levels:

(a) Recognising the implications of factors other than a specific tuberculosis programme on the incidence of the disease;
(b) devising methods that could offer the best possible returns from the available resources, both at any given point of time as well as at different time intervals; and (c) determining
priority for allocating resources in a socially applicable tuberculosis programme. The National Tuberculosis Institute, Bangalore has used operational approach for formulating a nationally applicable and acceptable tuberculosis programme for India. The sequence of steps that led to the formulation of tuberculosis programme in India can as well be applied to develop a similar programme in any developing country.

KEY WORDS: SOCIAL PLANNING, ECONOMIC ASPECTS.

080 GD Gothi & GVJ Baily: PROBLEMS OF TREATMENT OF TB PATIENTS IN RURAL AREAS
Indian J TB 1965, 12, 62-68.

At present most of the districts in India have a TB clinic at the district headquarters, where TB patients are diagnosed and treated. Most of the clinics serve the town population and only a small proportion of the rural population are able to attend the clinics due to long distances. The wide distribution of patients in rural areas will necessitate the provision of extensive anti tuberculosis services and they should be provided as near to the patients' home as possible. This cannot be achieved by creating large number of specialised services (TB clinics) in the district, as this will not only be beyond the resources but wasteful. As such, provision of anti tuberculosis services in rural areas can be achieved by integration of the primary health centres and dispensaries. The problems of treatment in rural areas are envisaged as technical, organizational and personnel. Under the technical problems, the choice of anti-microbials is considered. The anti-microbials should be effective, cheap and acceptable to the patients. INH-PAS, INH alone or INH-Thiacetazone are considered suitable. Streptomycin containing drug regimens are difficult for the health services to deliver them to the patients in rural areas. Even with oral drugs INH + PAS or INH alone, drug regularity are 26.3% and 24.6%. The other technical limitation of treatment is the probability of increase in drug resistance due to the wide application of drug treatment which might be irregular. This has not been considered as enough justification for withholding treatment to the vast majority of patients, as its epidemiological and clinical significance in India are yet to be fully understood. The District TB Programme provides a firm organisational structure on the basis of which improvement can constantly be introduced for smooth functioning, constant supervision, proper orientation training and demonstration of the programme by the District TB Centre if necessary.

The organisational problems listed are: irregularity of drug intake and drug collection; their identification, default at drug collection, intake and remedial action, maintenance of records, check up while on treatment and follow-up after
completion of treatment. The paper suggests that regular collection could be taken as an index of regular drug intake. Defaulter actions could retrieve about 30% of the defaulters. Check up during treatment as well as follow-up after treatment were found to be not acceptable to the patients due to a number of reasons. Training of staff to render services is also one of the biggest hurdles. The remedial measures are stressing tuberculosis as a community problem at the undergraduate and post graduate levels, training of the staff at every level of the programme and arrangement of seminars and group discussions with the administrators and medical personnel.

KEY WORDS: TREATMENT PROBLEMS, SELF ADMINISTERED REGIMEN, SUPERVISED REGIMEN, RURAL COMMUNITY, CASE HOLDING, CONTROL PROGRAMME.

081 DR Nagpaul, MK Vishwanath & G Dwarakanath: A SOCIO-EPIDEMILOGICAL STUDY OF OUT-PATIENTS ATTENDING A CITY TUBERCULOSIS CLINIC IN INDIA TO JUDGE THE PLACE OF SPECIALIZED CENTRES IN TUBERCULOSIS CONTROL PROGRAMME
Bull WHO 1970, 43, 17-34.

The study was carried out at Lady Willingdon Tuberculosis Demonstration & Training Centre, Bangalore to inquire into the epidemiological and sociological characteristics of patients attending a city TB clinic for the first time, to ascertain the reason for attendance and the nature of previous treatment if any. It was also to see whether there was a preference for seeking specialists and specialised services for alleviation of the symptoms experienced and whether there were any differences amongst the urban and rural attenders. A fifty per cent random sample of 2,658 out-patients during 6l working days, formed the study population. They were interviewed by using a questionnaire based on the above mentioned objectives. 247 were not eligible due to incomplete record and below 5 years of age.

Majority of the out patients were in 20-30 years of age and were wage earners. Nearly 80% were aware of their symptoms and contained 95% of the tuberculosis cases detected at the clinic. Most of them were having 2-3 symptoms. No difference in time of reporting was observed among urban or rural patients; 61% of the urban and 42% of the rural patients attended the clinic within 3 months from the onset of their symptoms. Distance is a major obstacle. Upto 4.8 km the number of new outpatients was large but the case yield was poor. As the distance increased the out patients decreased but the case yield was more, suggesting a selective process influenced by distance. It was also found that 20% of the out patients came of their own without any prior contact with any other source of treatment, 32% had previous contact with other health institutions, 31% were actually referred by them and 17% were advised by BCG
workers. Further analysis that of the 1,642 patients who had previous contact with health institutions, 84% were at general health institutions, 10% at specialised TB clinics and 6% were others. Of the remaining eligible 2,403 patients, 83% were from urban and 17% from rural areas. Sputum was collected from 2,308 patients. Of them, 179 (7.8%) were found to be positive by direct microscopy or culture or both and 169 were positive by culture (91% confirmation by culture). 131 (80%) were sensitive to isoniazid and 32 were isoniazid resistant.

The data obtained suggests that attendance at a specialized tuberculosis centre is not necessarily a function of awareness of symptoms and of the knowledge that such specialised services exist. It also does not support the theory that people prefer specialized institutions in cities. It is also seen than urban and rural patients behave in almost the same way in that their first contact for symptoms suggestive of tuberculosis, is initially at the general medical services and they should be strengthened with adequate means for diagnosis and treatment of tuberculosis.

KEY WORDS: CONTROL PROGRAMME, SOCIO-EPIEMIOLOGY, SPECIALISED CENTRE.

082 K Padmanabha Rao, SS Nair, N Naganathan & R Rajalakshmi: ASSESSMENT OF DIAGNOSIS OF PULMONARY TUBERCULOSIS BY SPUTUM MICROSCOPY IN A DISTRICT TUBERCULOSIS PROGRAMME Indian J TB 1971, 18, 10-25.

In the District Tuberculosis Programme (DTP) the diagnosis is based on sputum microscopy. Majority of health institutions in the district are provided with microscopes for this purpose. In the Peripheral Health Institutions, the programme activities have to be carried out by its staff after a short period of training given by District TB Centre personnel on the spot. So the microscopy work in the PHIs is likely to be carried out by any paramedical personnel and not necessarily by a qualified laboratory technician. It is therefore, necessary to know whether the standard of microscopy carried out by these paramedical personnel after a short training will be up to the mark. To assess the efficiency of smear examination done by these individuals, a study was conducted in Bangalore district covering nine microscopy centres in various types of health institutions, a few months after the implementation of the programme. Under the DTP a spot specimen is collected from every chest symptomatic attending the health institutions and a smear is made and examined for the presence of AFB and all positive cases are put under treatment. The sputum specimens and the smears examined in these nine centres were brought to National TB Institute laboratory. The smears were examined by an experienced laboratory technician. Duplicate smears were
also prepared from these specimens and their results compared with results of re-examination and centre's examination. All specimens were cultured by swab method and all positive cultures were subjected to sensitivity and identification tests.

Analysis of the results based on culture showed that barring a few centres where the performance was poor, the standard of examination was fairly good. The under and over-diagnosis based on culture were 38.2% and 2.6% respectively, and these were within the limits observed generally. Comparison of results on re-examination of centre smears and duplicate smears indicated that both reading variation and defective smear preparations and staining could have influenced under diagnosis in these centres. The study has also thrown some light on methodology of assessment of sputum examination that could be adopted wherever a tuberculosis control programme is functioning.

**KEY WORDS:** CONTROL PROGRAMME, ASSESSMENT, DIAGNOSIS, SPUTUM MICROSCOPY.


The broad relationship between the extent and pattern of sickness in a south Indian rural community, attendance at the Area Health Centre (AHC) and service rendered to the sick at the centre were studied by National Tuberculosis Institute (NTI), Bangalore. The objectives were to study (i) point prevalence of symptoms of all kinds and their pattern (ii) attendance at the AHC and the pattern of symptoms among them: and (iii) number of visits for each spell of sickness, by nature of symptom, laboratory tests offered, and referral to better equipped health institutions. A 30,000 population served by the Bettahalasur Primary Health Centre (PHC) which is 20 km. away from Bangalore city was chosen. The selection of villages was done by random sample so that about 1000 persons from each of 5 field health workers' area was available for symptoms questioning. The out-patients at the PHC were questioned for symptoms by the PHC medical officer in a manner exactly similar to that for the community by the trained NTI para medical staff. The answers given by patients were recorded by NTI staff both at the centre and at the community. On revisits made for the same spell of sickness, the interval in days from the first visit, any laboratory tests done and reference to better equipped institutions were also recorded.

The point prevalence of sickness in the area was 9.5%; cough, pain and fever, in that order were the three cardinal
symptoms that accounted for 68% of the total sickness in the community. Only 1.3% of the sick, at any point of time, had attended the AHC but the attendance by the sick persons residing in the village where the health centre is located was 9.2%. The composition of the out-patients attendance was significantly different from that of the sick in the community in respect of age, sex and symptoms. Thus, women and the elderly persons who also constitute a major reservoir of tuberculosis, tended to disregard their symptoms while younger persons in the productive age group had availed the health centre facilities more freely. Among symptoms, cough was the most ignored. Of the total out-patients, 71% had attended only once, 18% twice and 11% three times or more for any particular episode of sickness. Only 7-9% were offered laboratory examination and an insignificant number were referred to better equipped health institutions.

**KEY WORDS: SYMPTOM PREVALENCE, RURAL COMMUNITY, RURAL HEALTH SERVICES.**

084 SS Nair: INADEQUACIES OF THE HEALTH INTELLIGENCE SYSTEM IN INDIA AND SOME SUGGESTIONS FOR IMPROVEMENT


The Health Intelligence System has to provide information for the planning, monitoring and evaluation of the Health Services which are provided by the Health Care Delivery System in the country. The Health Intelligence System should also be in a position to provide information on the health needs and demands of the community so that the Health Care Delivery System can plan to meet the unmet demands and needs. Information available is quite often incorrect, incomplete and out-dated. Appreciable improvements can be effected only on the basis of a critical appraisal of the system. Some of the important reasons are lack of training, aptitude and sense of involvement in the work by the staff, improper reporting proformae, enforcement of targets, absence of discrimination between routine and special health intelligence, quantitative and qualitative data and lack of systematic & regular supervision by health administrators particularly at the district level. Suggestions for improvement are better utilization of collected data, simplification of proformae, adequate training to the staff in health intelligence, realistic variability of targets, integration of health intelligence for various components of the health care delivery system, bifurcation of data into two i.e., simple routine use and for use for special purposes and regular and systematic supervision and make suggestions for taking top level decisions. The major gaps and other problems listed in this paper and the suggestions made to overcome these are of such nature that these have to be considered at top levels and decisions taken, preferably on the basis of the observations and recommendations of a study group of experts set up for the
purpose. Until some basic changes are made, the Health Intelligence System will continue to be thoroughly inadequate for proper planning, monitoring and evaluation of the Health Care Delivery System.

KEY WORDS: HEALTH INTELLIGENCE, HEALTH SERVICES.


At present, case finding activity of tuberculosis through the self reporting chest symptomatics attending Peripheral Health Institutions, is at a low ebb. With the introduction of Multi Purpose Workers (MPW) scheme, a machinery has emerged through which this activity could be augmented. An operational study was therefore undertaken in five Primary Health Centres (PHCs) of Chittoor district, Andhra Pradesh in June 1978.

The study has revealed that if the MPWs collect sputum smears from the symptomatics of the age group of 20 years and above during their routine visits to each household of the specified population allotted to them and despatch the smears to the PHC for examination, there is a possibility of augmenting the existing case finding activity by 4-5 times. An intensive training of 2-3 days for this purpose seems adequate. The average work load for a MPW would be preparation of one smear a day initially for a couple of months and thereafter as a routine one smear a week. In an average PHC, the work load for the microscopist would be to examine 10 to 12 slides a day initially, the load will then progressively decline and subsequently as a routine it will not be more than 3-4 slides a day. An additional microscopist would probably be needed at PHC laboratory for examination of sputum smears as well as to assist the existing microscopist who at present is primarily engaged in malaria work. Meticulous supervision and regular flow of supplies and equipment is however a 'must' for the success of the scheme.

KEY WORDS: HEALTH WORKER, CASE FINDING, CONTROL PROGRAMME, PRIMARY HEALTH CARE.


National tuberculosis programme reaches people through PHCs and sub centres. A study was conducted to find out the
perception of illness and utilisation of health facilities by
the community. This study was conducted in a random sample of
48 villages selected according to Probability Proportioned to
Size within 5 Kms of the selected PHIs in Kolar District using a
Multi stage sampling technique. Information on socio-economic
status, availability of health services and their utilisation
was collected. 13,323 individuals were interviewed. 706 were
ill in a period of two months prior to survey. 71.3% had taken
allopathic system of treatment. 69.1% had approached government
hospital or PHC. 34 patients reported to have TB. All had
attended either DTC or PHC.

The study indicated that morbidity was perceived much early
and also followed by an action. Data indicates a high
percentage of preferring allopathic system in general and from
peripheral health centres and other Government hospitals in
particular. Data indicates that in spite of overall
backwardness of the study area and very limited economic
resources people have utilised the PHC to the maximum. The
reason could be either high acceptance of PHC or inevitability.

But, there is an evidence of higher utilisation of family
welfare and MCH services. The data shows all tuberculosis
patients have had exposure to standard regimens, all of them
have approached either PHC or DTC for treatment. This confirms
the felt need oriented concept of National Tuberculosis
Programme. Also high level morbidity among children below 4
years of age and action taken indicate an enhanced level of
demand for health services.

KEY WORDS: SOCIAL AWARENESS, MORBIDITY, UTILIZATION, HEALTH
SERVICES, RURAL POPULATION.