PONDICHERRY INSTITUTE OF MEDICAL SCIENCES

(A Unit of Madras Medical Mission)

DEPARTMENT OF COMMUNITY MEDICINE

Re-Orientation of Medical Education (ROME) Posting Report-2020

MBBS Batch-2017 Students

ACTIVE CASE FINDING FOR TUBERCULOSIS AND LEPROSY IN URBAN PUDUCHERRY

Survey done with the Support of RNTCP, Puducherry

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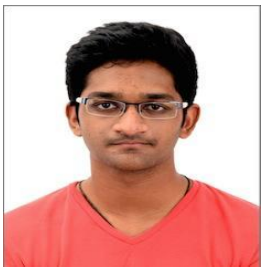

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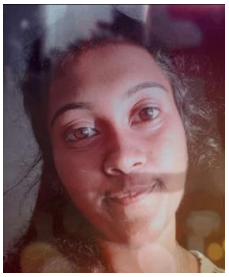

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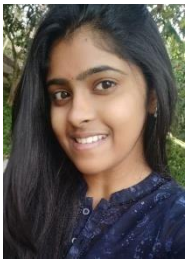

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CONTENTS

Introduction

Tuberculosis

According to World Health Organization, tuberculosis is one of the top 10 causes of death worldwide.(1)

It is caused by Mycobacterium tuberculosis, a bacterium that most commonly affects the lungs (pulmonary tuberculosis), and less commonly affects the other parts of the body like the spine, genitourinary tract, gastrointestinal tract. It is known to spread from person to person through air droplets during actions such as coughing, sneezing and spitting. In India nearly 1400 people die due to tuberculosis every day. Therefore, the Indian government is taking initiatives to control and eliminate TB.WHO defines TB elimination as less than 1 case for a population of million people. The National TB (NTP) programme was in effect in India from 1962 which was later revised as RNTCP. The RNTCP released the National Strategic plan 2017-2025.

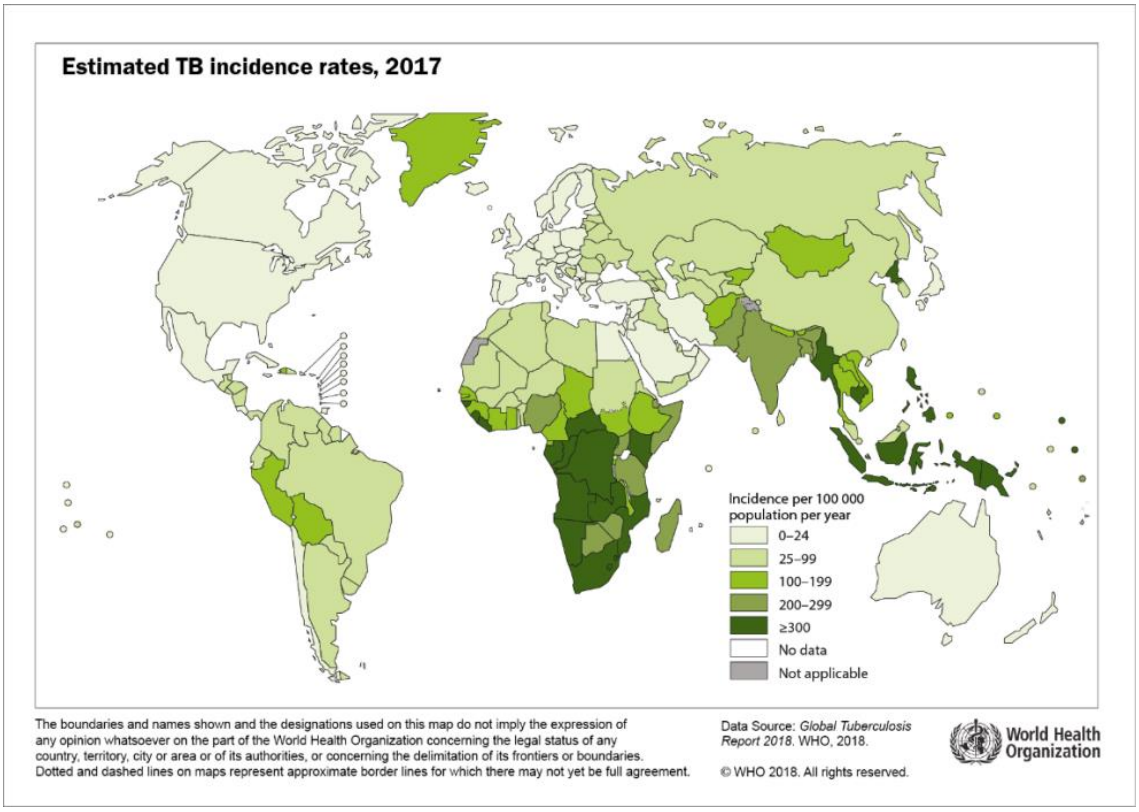
Tuberculosis is a disease which is known to have a major impact on the functioning and quality of an individual's life. It affects various aspects like general health perceptions, somatic sensation and psychological health. As tuberculosis treatment doesn't ensure the complete recovery of the patient it is known to decrease the life expectancy of the individual.

All age groups are at risk of developing tuberculosis; however, it mostly affects adults in their productive years. HIV and tuberculosis form a lethal combination, each speeding the other's progress. Those diagnosed with HIV are 20 to 30 times more likely to develop an active tuberculosis disease. According to WHO studies in 2017, about 0.3 million people died of HIV associated TB. There were an estimated 0.9 million new cases of tuberculosis amongst people who HIV positive, 72% of whom were living in Africa. The use of tobacco is another major risk factor which contributes to 7.9% of tuberculosis worldwide.(1)

According to WHO studies in 2017, 10 million people fell ill with tuberculosis and 1.6 million died from the disease (including 0.3 million among people with HIV).(2) An approximate of 1 million children became ill with tuberculosis and 230,000 children died of tuberculosis.

National TB prevalence surveys are taken into consideration as indirect estimates of prevalence suffer from considerable uncertainty, because they are derived

from incidence and assumptions about disease duration. In a group of countries with a large proportion of the world's TB burden, the National TB prevalence surveys are the best method to measure the burden of the disease. [2]



India being the world's second most populous country, accounts for a quarter of the world's annual incidence of Tuberculosis. India is the highest TB burden country with WHO statistics for 2015 giving an estimated incidence figure of 2.2 million cases of TB out of a global incidence of 9.8 million cases. Every year around 2 million people develop TB in India and 300,000 die of TB. Since the inception of Revised National Tuberculosis Control Programme (RNTCP) Over 15 million patients have been treated and 3 million additional lives have been saved. Over the last decade, the RNTCP adopted the WHO-DOTS strategy which consisted of five components- strong political will and administrative commitment, diagnosis by quality assured sputum smear microscopy, uninterrupted supply of quality assured short course chemotherapy drugs, Directly Observed Treatment(DOTS) and systematic monitoring and accountability. The DOTS strategy achieved and sustained the target decision rate of 70% of all estimated cases and a cure rate of85% was achieved in new cases. [3]

The vision of India's National TB control programme is that people suffering from TB receive the highest standards of care and support from healthcare providers of their choices. It is spelt out in the National Strategic Plan(2012-2017) to extend the umbrella of quality TB care and control to include those provided by the private sector. As of present, among the various states of India, Uttar Pradesh leads with around 217,000 cases per year. As of 2016, 5 lakh cases were unreported Active case finding program has been initiated in various states wherein doctors and/or healthcare professionals seek out potential/presumptive cases of TB in several rural areas. The following three TB risk groups should be systematically screened for active TB- Household contacts and other contacts, people living with HIV and current and former workers in workplaces with silica exposure. RNTCP aims total and complete elimination of TB by 2025. The decline in incidence of TB has been slow but mortality remains unacceptably high and the emergence of drug-resistant TB has become a major public health concern. [4]

Puducherry is a union territory of India, formed out of four exclaves of former French India. Puducherry is the third most densely populated of the states and union territories of India with a population of 14,12,191 people. [4] RNTCP was implemented in Puducherry on 20th February 2004 and the primary goal was to reduce the morbidity and mortality due to TB and cut transmission of infection until TB ceases to be a major health issue. [5]

The prevalence of TB in Puducherry population as on 2018 notified from the public sector is 1601 and the number of the cases of pulmonary TB reported is 1152 which amounts to 72% of the total expected cases of TB. The numbers of extra pulmonary cases reported are 449 that amounts to 28% of the total cases reported. The number of new TB cases reported for the year of 2018 is 1393 which is equivalent to 87% notification rate. The two main modalities used for the detection of tuberculosis were clinically diagnosed cases which accounted to 512 people ie. 32% and those that were confirmed microbiologically were 1088 cases ie.68%. [6]

Apart from the disease burden, TB also causes an enormous socio-economic burden to India. TB primarily affects people in their most productive years of life. While two-thirds of the cases are of male gender, TB takes a disproportionately larger

toll among young females with more than 50% of female cases occurring before the age of 34 years [7]

Tuberculosis kills more women in the reproductive age group than all causes of maternal mortality combined, and it may create more orphans than any other infectious disease.

Nearly one -third of female infertility in India is caused by TB. The indirect impact of TB on children is considerable, as nearly 3 lakh children of tuberculosis patients, either leave the school or take up employment to help support their families. A patient of TB takes an average of 3-4 months to recuperate, losing that much income. This loss is disastrous for those struggling against poverty. They are most likely to be defaulters of the treatment. The vast majority of the economic burden of TB in India is caused by the loss of life rather than morbidity. [6]

In India, TB is mainly a disease of the poor. The target population are migrant laborers, slum dwellers, residents of backward areas and tribal pockets, construction workers, night shelters, refugee camps, homeless, street children, orphanage, smoker, slum, NACO identified HRG for HIV. Poor living conditions, malnutrition, shanty housing, and overcrowding are the main reasons for the spread of the disease.

The various factors that are the main cause of prevalence of this disease are :-

Age: - it affects all age groups but more prevalent in the productive years of life.

Sex :- More prevalent in males than females

Hereditary:-TB is not a hereditary disease but twin studies indicate that inherited susceptibility is an important risk factor.

Nutrition: - Malnutrition is widely believed to predispose to tuberculosis.

Immunity: - Man has no inherited immunity against TB.

TB is a social disease with medical aspects. It has also been described as a barometer of social welfare. The social factors include many non-medical factors such as poor quality of life, poor housing, and overcrowding, population explosion, malnutrition, smoking, alcohol abuse, lack of education, large families, early marriage, lack of awareness of cause of illness etc.

All these factors are interrelated and contribute to the occurrence and spread of TB.

In absolute number, India contributes to majority of missing number of tuberculosis in the world. India became signatory for elimination of TB on 2025. To keep this promise, identifying the missed cases and early initiation of treatment would play a major role. As a follow up measure, in the recent RNTCP operational guideline target for notification rate was revised to 85% from the existing 70% similarly the target for achieving cure rate was revised from 85% to 90%. Central TB division of India recently emphasizes on active case finding to augment the number of cases. Active case finding is a provided initiated activity to screen all people for Tuberculosis regardless of their signs of TB and health seeking behaviour. The RNTCP released the National Strategic plan 2017-2025. The National strategic plan was adopted to eliminate TB by 2025.(2)The vision of this Plan is TB free India with zero deaths, disease and poverty due to TB and goal of this plan is to decrease the burden, morbidity and mortality along with elimination of TB by the year 2025.Active case finding is a complementary strategy used for passive case findings for earlier detection and diagnosis of Tuberculosis.

Leprosy

Leprosy is one of the oldest diseases known to man in developing countries. Despite advances in all spheres of medical sciences, it continues to be a public health challenge in countries like India. Three countries made up 83% of the new cases detected worldwide, with India responsible for 58% of the cases, Brazil for 16%, and Indonesia for 9%. (8)

In India, the National Leprosy Eradication Programme (NLEP) is the centrally sponsored health scheme of the Ministry of Health and Family Welfare, Government of India. Due to their efforts, from a prevalence rate of 57.8/10,000 in 1983, India has succeeded with the implementation of MDT in bringing the national prevalence down to “elimination as a public health problem” of less than 1/10,000 in December 2005 and even further down to 0.66/10,000 in 2016. In addition to achieving the national elimination target by the end of 2005, India by the end of March 2016–2017 succeeded in achieving elimination at the state level in 34 states/UTs out of the total of 36 states/UTs. Only the state of Chhattisgarh and the UT of Dadra & Nagar Haveli were yet to achieve elimination. By the end of March 2016, 551 districts (82.36%), out of the total 669 in districts, in India had a

prevalence of <1/10,000 population which is the target of elimination as a public health problem. The number of districts with prevalence between 1 and 2/10,000 were 76, number of districts with prevalence between >2 and 5/10,000 were 39, and those between 5 and 10 were 2.

Despite the above successes, the fact remains that India continues to account for 60% of new cases reported globally each year and is among the 22 “global priority countries” that contribute 95% of world numbers of leprosy warranting a sustained effort to bring the numbers down. In the year 2007, new cases detected in India were 137,685, and nine years later in 2016, the number remained almost the same at 135,485, a significant increase over the 127,326 new cases detected in 2015.

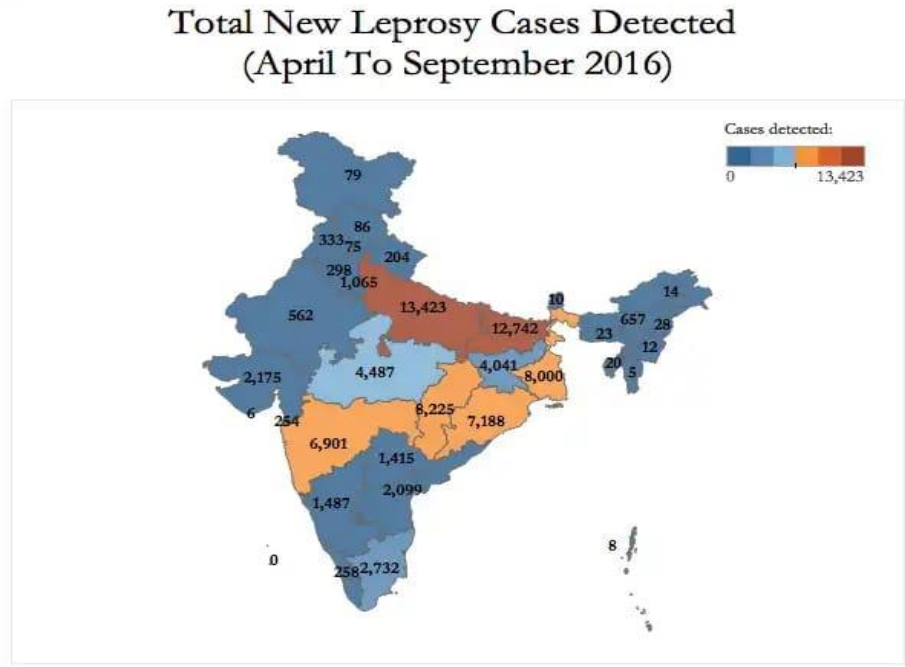


Figure1: showing the number of new cases of leprosy detected in India in the months of April to September in the year 2016.

This increase in new cases is attributed by NLEP to their recent strategy of innovative Leprosy Case Detection Campaign (LCDC), which resulted in the detection of 34 000 new cases in 2016 from highly endemic pockets, which accounted for 25% of annual new cases. Of the total new cases detected, almost 50% were multibacillary leprosy and the child rate was about 8.7%, which was similar to the previous year's figures, both indicating continued transmission of leprosy in the community. The LCDC also resulted in increasing the number of districts with a prevalence of >1/10,000 in the country, reminding us of the value of active case finding strategies.

NLEP annual reports of the last 4 years have consistently observed that the four states/UTs (Orissa, Chandigarh, Delhi, and Lakshadweep), which achieved elimination earlier in 2016–2017, have shown a prevalence of >1 per 10,000 population, which is a matter of concern for the programme. In addition, although the average national child leprosy rate is approximately 9%, the proportion of child cases was more than 10% of new cases detected in eleven states/UTs of India, with 6 of them (Tamil Nadu, Punjab, Dadra & Nagar Haveli, Bihar, Mizoram, and Arunachal Pradesh) showing very high rates ranging from 14% to 23%. In a few of these states, the high multibacillary proportion, and in others a difficult to reach terrain could contribute to continued transmission.(8)

In Tamil Nadu, during the year 1954-55, National Leprosy Eradication Programme (NLEP) was launched. The main objective of this scheme is to identify the cases early and cure them completely. The prevalence rate of the Leprosy in 1983 was 118 per 10,000 population. In 2005, the prevalence of leprosy declined to less than one per 10,000 population and the State achieved leprosy elimination status. The prevalence rate is 0.43 per 10,000 population as on February 2017. In 2016 - 17, Intensive activities are carried out in 31 high endemic blocks & 242 New Leprosy cases were detected where new case detection rate is more than 10 per 1, 00,000 population. Re-constructive Surgery has been done to 96 patients as on February 2017 and special varieties of chappals were given to 8201 patients. Self-Care kit to deformed Leprosy patients issued is 12748. At present, 5680 Leprosy affected persons are receiving pension of Rs.1000/- per month other than those already availing the pensions under the Old Aged Pension scheme.(8)

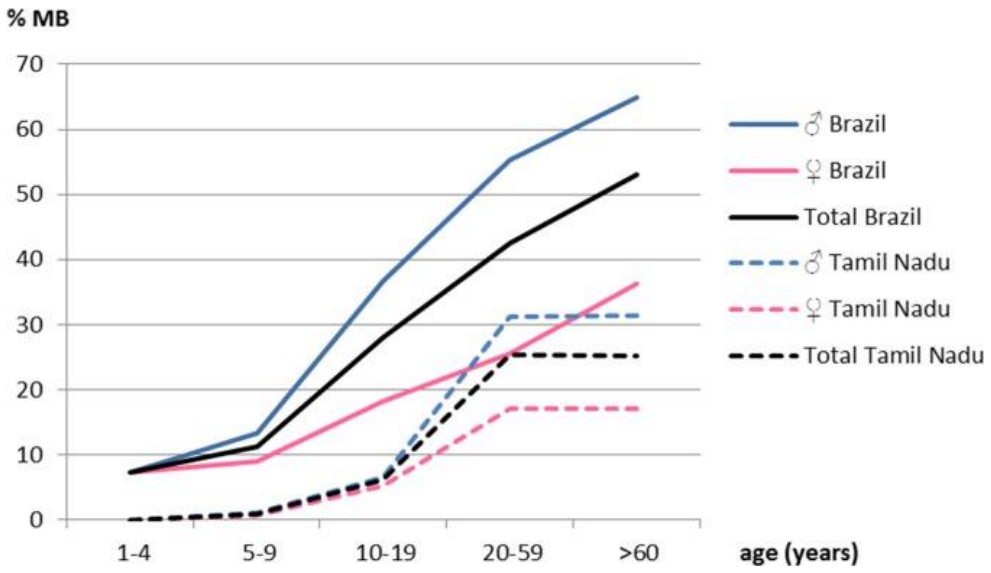


Figure 2: Proportion of multibacillary patients according to age and sex

Proportion of multibacillary patients according to age and sex are given for two distinct geographic areas in Brazil, 40,544 PB and 29,764 MB cases (Madrid classification) were declared over the 2006–2010 period (national data) in Tamil Nadu (India), during the 1962–1970 period, 3,963 PB and 1,258 MB cases were collected out of a total of 276,568 persons screened for leprosy (Madrid classification).

Though more prevalent in adults, the detection of new cases in children under 15 years of age reveals an active circulation of bacillus, continued transmission and lack of disease control by the health system, as well as aiding in the monitoring of the endemic. Among patients under 15 years of age, the most affected age group is children between 10 and 14 years of age, although cases of patients of younger than 1 year of age have also been reported. Household contacts are the primary source of infection, given that caretakers, such as babysitters and others, must be considered in this scenario. Among the age group of 15, boys have more prevalence than girls.(9)

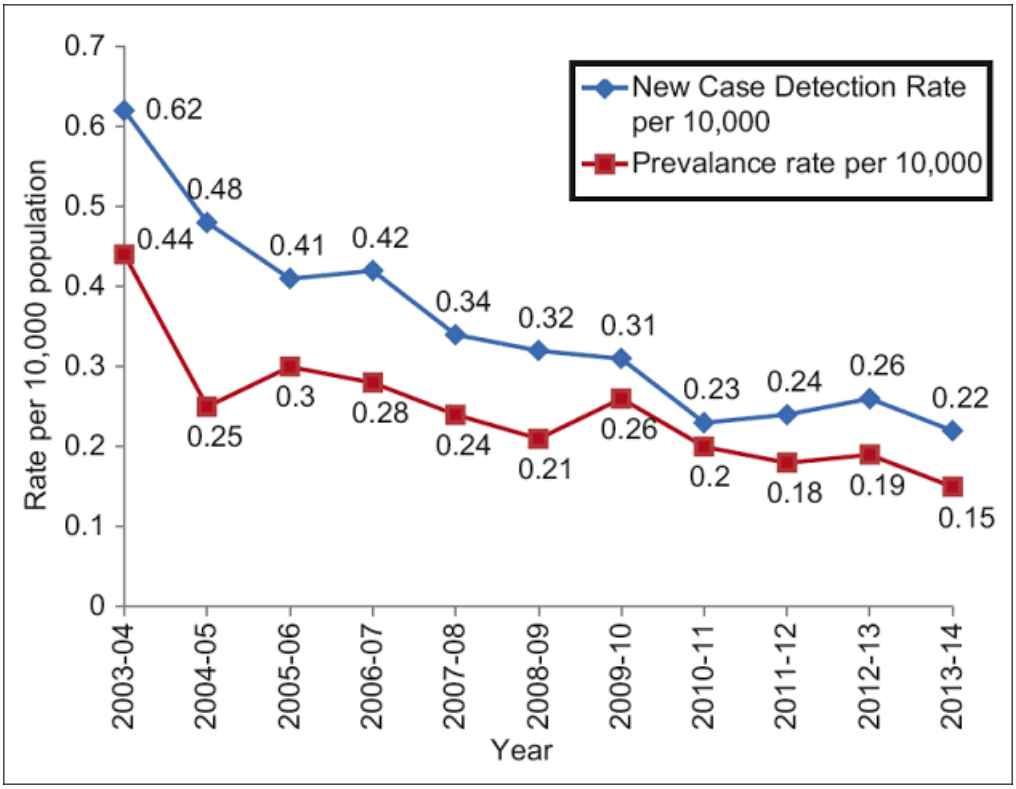


Fig 3 showing the declining prevalence rate and the number of new cases detected

Risk Factors

It has been established that contacts of patients with leprosy have a higher risk of developing leprosy than the general population. Several risk factors besides being a contact per se have been suggested, such as the type of leprosy of the index patient, the age and sex of the contact, and the genetic and physical distance of the contact to the patient. Contact tracing is an important intervention in leprosy control, but it is usually limited to immediate contacts, such as persons living in the same household. Beyond contact tracing and examination to diagnose and treat leprosy at an early phase, other possible interventions for contacts are chemoprophylaxis and repeated Bacille Calmette-Guérin (BCG) vaccination. From a review of the literature, it was concluded that targeted interventions should be aimed at close contacts both inside and outside the household, particularly when those persons are genetically related to the index patient, and that contacts of patients with paucibacillary (PB) leprosy should also be included. The independent contribution and relative importance of the various risk factors to the risk of developing leprosy, however, have never been studied in detail or sufficiently quantified. This is particularly the case for genetic and physical distance—2 important factors that have never been disentangled. (10)

Age of the contact, the disease classification of the index patient, and physical and genetic distance were independently associated with the risk of a contact acquiring leprosy. Contact surveys in leprosy should be not only focused on household contacts but also extended to neighbors and consanguinous relatives, especially when the patient has PB2–5 or MB leprosy. But recent studies have shown a significant decrease in the number of active cases in India.

Classification of Leprosy

Leprosy can be classified on the basis skin smear and clinical manifestations; Based on skin smears, patients showing negative smears at all sites are grouped as *paucibacillary leprosy*, while those showing positive smear at any site are grouped as having *multibacillary leprosy*. However, in practice most programmes use the clinical criteria, for classifying and deciding the appropriate treatment. (11)(12)

Despite of the recent recognition on the role of active case finding, there is dearth of literature on evidence related to yield and feasibility of conducting this activity in community based activity. In this context, this study was aimed to identify the cases of Tuberculosis and Leprosy through active case finding and to assess feasibility among people living in urban union territory of Puducherry.

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OBJECTIVES

1. To identify presumptive cases of Tuberculosis and Leprosy.
2. To confirm the diagnosis of presumptive cases of TB and Leprosy.
3. To encourage the confirmed patients to actively seek anti-tubercular and anti-leprosy treatment.
4. To create awareness in the community about TB and Leprosy.

Review of Literature

Tuberculosis

Active case finding (ACF) reduces the period of infectiousness and therefore transmission. Thus, ACF for TB has been recognized as an important complementary strategy to Passive case finding (PCF), in order to diagnose and treat patients earlier. ACF may also achieve substantial population-level TB control. (13)

Global:

Globally, tuberculosis (TB) continues to be a major public health problem. Despite the availability of effective chemotherapy, tuberculosis (TB) killed 1.3 million people in 2012. While the routine TB services are essential particularly for case management, it has proven inadequate to control TB because available services are not always accessible to poor and vulnerable population where TB often concentrates. Alongside HIV, it remains a top cause of death from an infectious disease. Global targets for reductions in the epidemiological burden of TB have been set for 2015 and 2050 within the context of the Millennium Development Goals (MDGs) and by the Stop TB Partnership. Achieving these targets is the focus of national and international efforts in TB control, and showing whether or not they are achieved is of major importance to guide future and sustainable investments. WHO Estimated 8.6 million incidence cases of TB in the world, equivalent to 122 cases per 100,000 populations. Western Pacific (58%), the African region (27%), the eastern Mediterranean region (8%), the European region (4%), and the region of the Americas (3%).(11)Tuberculosis (TB) notifications have increased 6-fold over the last two decades, largely as a result of increasing HIV prevalence. A total of 461,000 new cases of TB in 2007 reflected the one of the highest national TB notification rates in the world (948/100,000 population). An estimated 73% of these cases were co-infected with HIV, and South Africa alone accounted for approximately 25% of the global burden of HIV-associated TB. Prevalence of TB in children's of 853 per 100,000 populations. The researchers say that nearly one in five children in this population has TB infection. Worldwide, an estimated one in 28 children has TB infection according to a 2014 Lancet Global Health study. [14]

A cross-sectional study was conducted among 453 new pulmonary tuberculosis (PTB) patients, who met criteria of TB diagnostic delay in Arkhangelsk, Russia. There were 171 patients diagnosed by ACF and 282 by PCF. Patients who came by ACF had less time from the symptoms onset until TB diagnosis (1.0 weeks vs. 6.9 weeks)and less time TD (1.0 vs. 1.5)than those who had come by PCF. They concluded that patients diagnosed through ACF tended to under-report their TB symptoms and showed low attention to their own health. However, ACF allowed TB patients to be revealed earlier than PCF. In risk groups, ACF was more effective than PCF. (15)

A study done in South Africa, China, and India estimated the value of ACF and concluded that ACF can be a powerful and highly cost-effective tool in the fight against TB. Given that short-term assessments may dramatically underestimate medium-term effectiveness, current willingness to pay may be too low. ACF should receive strong consideration as a basic tool for TB control in most high-burden settings, even when it may cost over $1,000 to detect and initiate treatment for each extra case of active TB.(16)

A population based case control study was conducted in rural south India in 2004-2005, to investigate the extent to which smoking and/or drinking can increase the incidence of pulmonary tuberculosis (TB). A total of 1839 males and 870 females treated in 2000–03 by state TB clinics were interviewed at home about their education, smoking and drinking habits before the onset of disease. As controls, 2134 men and 2119 women without TB were randomly chosen from case villages and interviewed. This study demonstrates an increased incidence of pulmonary TB among those who smoke and among those who drink. [17]

Gender differences in TB treatment responses for the shorter regimens in the REMox TB study may be explained by poor outcomes in men with cavitation on the moxifloxacin-containing regimens. The study observed that women with cavities, or without, on the 4-month moxifloxacin regimens had similar outcomes to all patients on the standard 6-month treatment. The biological reasons for this difference are poorly understood and require further exploration. [18]

A recent study with 42 TB cohorts and 22 HIV cohorts were done. In the eight TB cohorts with controls, the IRR for TB was 7.9 (95% CI 4.5 to 13.7). HIV-infected children exhibited reduction in IRR of 0.94 (95% credible interval: 0.83–1.07) per percentage point increase in CD4%. TB incidence was 5.0 (95% CI 4.0 to 6.0) times higher in children with severe compared with non-significant immune suppression. TB incidence was lower in HIV-infected children on ART (HR: 0.30; 95% CI 0.21 to 0.39). Following initiation of ART, TB incidence declined rapidly over 12 months towards a HR of 0.10 (95% CI 0.04 to 0.25).[19]

The risk that Mycobacterium tuberculosis can be transmitted from patients with active tuberculosis (TB) to other patients and healthcare workers has been recognized for many years . The level of risk varies by setting, occupation, patient population, and effectiveness of TB infection control measures but is higher in facilities that manage large numbers of smear-positive TB patients who do not receive rapid diagnosis, isolation, and treatment, particularly in the absence of other infection control measures . A hierarchy of control measures, including administrative, engineering, and environmental controls and personal protection measures, has been recommended to reduce nosocomial TB risk . These recommended measures are implemented by healthcare facilities in high-income countries but given their high cost, few facilities in low-income countries can afford to implement them. [20]

A study was conducted among vulnerable communities in two districts of Karnataka during July-December 2013. An intensified case finding intervention detected 658 sputum smear positive TB cases. The number of smear-positive cases detected increased by 8.8% relative to the pre-intervention period (July–December 2012) in intervention communities as compared to an 8.6% decrease in communities without the ICF intervention. This study shows that an innovative, community-based, education/case finding intervention increases the number of TB cases detected and treated and brought TB diagnostic and treatment services closer to vulnerable communities, boosting awareness about RNTCP services. [21]

Brick kiln workers are a group of migrants who are exposed to smoke, heat and dust which makes them vulnerable for respiratory illness. A cross- sectional community based study was conducted in Thiruvallur, Tamil Nadu, South India from August 2011-June 2012 and a total of 4,002 individuals from 55 brick kiln chambers were

interviewed to determine the prevalence of chest symptoms and care seeking behaviour. Totally 377 chest symptomatic were identified and of the chest symptomatic identified 50.4% took action for relief from the symptoms. This study emphasize that TB control programmes should extend its hands to such hard to reach groups. [22]

ACTIVE CASE FINDING

An active case finding (ACF) survey conducted in urban slum areas of the R-south municipal wards of Mumbai city for a period of two months from June to July 2012. In the intensified active case finding survey 529,452 population living in 124,710 households of urban slum area of Mumbai were covered. A total of 278 suspects were identified, out of them 221(79.5%) patients got tested for sputum examination. Sputum positive TB was diagnosed in 29 suspects and sputum positivity was 13.1%. The findings of this study clearly suggest that tuberculosis care and control will definitely be improved on incorporation of the periodic ACF in the routine passive case detection. [23]

As per a study conducted between April 2013 and December 2014, 4.9 million households covering nearly 20 million people were visited. Of which 350,047 presumptive pulmonary TB cases (cough of ⩾2 weeks) identified, 187,586 (54%) underwent sputum smear examination and 14,447 (8%) were found to be smear-positive. Therefore, active case finding helps in detection of large number of presumptive TB cases. This was implemented by the Global Fund-supported Project Axshya, among high-risk groups in 300 districts under National Tuberculosis Programme. [24]

Similar cohort study conducted in peri-urban area of Delhi showed that the disease can get manifested through household transmission, during the active disease in index patient or even after 4–24 months of successfully treating the index patient. Most of the secondary tuberculosis cases in a household will develop within first four months of the active disease in the index patient. Therefore, timely and pro-active screening of the household contacts could be a very effective tool to break the transmission cycle of the disease and to achieve the goal of "TB-free" India. This study also found that fatality was significantly low in female population in a household set up and also those children who did not receive BCG vaccination in their childhood had increased risk of acquiring TB in adulthood. [25]

An Active Case Finding (ACF) was conducted in urban slum areas of municipal ward , Mumbai city for a period of two months from June to July 2012. Micro planning for survey was done by district TB officer and medical health officer. TB suspects were referred for sputum microscopy and those who were already diagnosed with TB were put on treatment. A total of 278 TB suspects were identified and 221 got tested and 29 samples were positive which was higher than Passive Case Finding (PCF). This suggests that ACF is better than PCF. [26]

The study was conducted during April- June 2012. Active case finding was conducted through awareness drives and field based TB screening in selected communities with lowest case detection rates. With the active case finding strategy the number of smear positive cases was increased by 11% relative to April- June 2011. Thus Active case finding brought TB services closer to the community and increased Tb case detection. So active case finding is better than passive case finding in house-house surveys for TB detection. [27]

The level of TB under-reporting found was context-dependent ranging around 15% in European countries, 20% in Africa, 30% in the Eastern Mediterranean region, and 50% in countries in Asia with a large private sector. Results were used by the NTP to inform the development of systems to improve linkages between laboratories and TB facilities and to track diagnosed patients who do not return for treatment in areas with the highest levels of under-reporting. In countries such as the UK, capture recapture studies have informed specific modifications to the surveillance system to decrease under-reporting. Under-reporting was also more likely in patients who were older, had scanty smear results, and were diagnosed at large or private facilities.[28]

A community based survey was conducted by groups of trained undergraduate medical students. During January 2018, all residents of study area were assessed for presence of presumptive symptoms related to tuberculosis. Feasibility was assessed using indicators namely household coverage, proportions of presumptive cases identified and undergone follow up investigations, number needed to screen for presumptive and confirmed cases of tuberculosis and average time spent per person. Of the 2252 houses, 1746 were covered resulting in a response rate of 77.5% and included 6606 residents. Of the 55 presumptive cases identified (55/6606) 51 underwent investigations. Two new cases of tuberculosis were diagnosed in this survey. To

identify one presumptive and confirmed case 120, 3303 people needed to be screened respectively. Thus, active case finding for tuberculosis is feasible provided the health system is able to invest adequate human resources and referral linkages to support peripheral centres.(29)

CONTACT ACTIVE CASE FINDING

Contact investigation is an established tool for early detection of tuberculosis (TB). The study was conducted in Rajnandganon district, Chhattisgarh, India. Household contact of 312 sputum positive TB cases were identified of which 148 (9.5%) were symptomatic. Among these 109 (73.6%) were evaluated by sputum examination resulting in 11 cases (10.1%) of sputum smear positive and 4 cases (3.6%) negative. This study identified household contact TB cases and offered an opportunity to initiate isoniazid chemoprophylaxis among children and initiate preventive measures among adults. [30]

The household contacts are at a higher risk of exposure than members of the general population. The information on the value and yield of household contact screening and the approaches used in high incidence settings like India are limited. A retrospective clinical based study conducted in Chennai, South India during period of 2007-2014, shows that a sequential screening algorithm with chest x-ray followed by symptom screen can be employed effectively to identify presumptive TB patients among household contacts . This active case finding strategy increases detection of Tuberculosis (TB) and is a key component of TB control programmes. [31]

A quasi-randomized controlled interventional study was conducted from January 2014 to June 2015 in Kashmir to analyze the influence of "Home-based interventional model" for active case finding among household contacts of index P-TB cases. Baseline data regarding factors associated with epidemiology of P-TB likely to influence effectiveness of intervention were collected and analyzed. The overall acceptance of intervention was 70.74% which was statically significantly influenced by gender ($p<0.0001$), age group ($p=0.0006$), education ($p<0.0001$), occupation ($p<0.0001$) and relationship of household contacts with index case ($p<0.0001$). Total 27 (4.51%) cases were detected among contacts by sputum positivity. This study gives

information on the factors which influences the application of this "home-based interventional model" in active case finding of TB.[32]

One study found significantly more cases of recent transmission of tuberculosis infection in aircraft crew exposed to an index case of tuberculosis than in a control group of non-exposed crew. Two studies found evidence of recent transmission of TB infection in airplane contacts of cases with tuberculosis disease, while three other studies found no conclusive evidence of recent transmission in airplane contacts of active TB disease cases. The duration of exposure to the index case was the factor most strongly associated with latent tuberculosis infection among exposed aircraft crew contacts.[33]

ACTIVE CASE FINDING IN PONDICHERRY

A community based two stage cross sectional study was done in Pondicherry for one year and eight months in 472 households of 157 'Index cases' registered in the State Tuberculosis Unit, Puducherry. 90 symptomatic cases (20.3%) were identified out of which 70 (72.9%) were symptomatic within two months of visit and 26 (27.1%) were found to have symptoms after eight months. The prevalence of TB in symptomatic household contacts was 4.3%. This study throws light on the fact that there is greater risk of transmission from index cases to household contacts in case of smear positive TB and also highlights on the need for earlier detection and prevent further spread of the infection in the local community. [34]

During the month of March 2013,a community-based active screening for symptomatic of pulmonary TB was conducted in two selected urban slums of Puducherry, Tamil Nadu, India. A house-to-house survey was conducted and informants were interviewed to obtain information on people aged 18 years and above with cough of any duration. Of 1,178 houses in two urban slums, which enumerated 3,564 adults (1,695 males and 1,851 females) from 1,107 houses. 382 (10.8%)participants reported cough of any duration and 203 (5.7%) reported cough for ≥2 weeks duration. Of 152 participants who had cough for ≥2 weeks with sputum production, 66 (43.4%) provided "spot" sputum sample and 51 (33.5%) provided both "spot" and "early morning" samples. Of 66 participants who provided at least one sputum sample, three individuals were diagnosed as smear positive TB, of which two individuals had a smear grading of 3+. Of 3,564 participants, past history of TB was

reported by 79 (2.2%) individuals and 17 (8.4%) individuals among 203 were chest TB symptomatics. The study gives an idea on how missing cases of tuberculosis could be identified in pondicherry. [35]

A recent study to detect the feasibility of active case finding for tuberculosis in a community based settings was done. Of the 2252 houses, 1746 were covered resulting in a response rate of 77.5% and included 6606 residents. Of the 55 presumptive cases identified (55/6606) 51 underwent investigations (51/55). Two new cases of tuberculosis were diagnosed in this survey. To identify one presumptive and confirmed case 120, 3303 people need to be screened respectively. Active case finding for tuberculosis is feasible provided the health system is able to invest adequate human resources and referral linkages to support peripheral centres.[36]

The "End TB" Strategy proposes 50% reduction in tuberculosis incidence and 75% reduction in mortality from TB by 2025. This study was aimed to assess whether the targets were feasible in three high burden countries. Aggressive scale up of any single intervention scenario could not achieve the "End TB" strategy in any country. However additional interventions, adapted to country specific tuberculosis epidemiology and health system are needed to reach the "End TB" strategy targets at country level.[37]

INVESTIGATIONS

This study aims at using serological tests for diagnosis of TB in India. Three systematic reviews were commissioned by the WHO Special Programme for Research and Training in Tropical Diseases (TDR). Two reviews evaluated the performance of commercial serological tests for the diagnosis of pulmonary TB and extra-pulmonary TB, and one review evaluated the performance of noncommercial (in-house) serological tests for pulmonary TB. Some of the advantages of serological tests are faster results, technological simplicity and modest training requirements and can be performed at peripheral health facilities without microscopy services. Disadvantages are time consumption for growth of Mycobacteria on solid culture media and also liquid media and nucleic acid amplification tests are expensive and complex to be used in TB control programmes in low income setting. The Xpert MTB/RIF assay provides

high sensitivity for detection of TB and rifampicin resistant cases. For all three reviews, studies with cross-sectional or case-control study designs were eligible for inclusion. This study suggests that serological tests for both pulmonary and extra-pulmonary TB are inaccurate. No test performs well enough to replace smear microscopy. Currently available commercial serological TB tests do not do any good because of the false-positive or false-negative tests results. [38]

The study was carried out in pulmonary tuberculosis patients from the local tuberculosis control programme, Mumbai. It examined the features of chest x-rays and their correlation with clinical parameters for possible application in suspected multi-drug resistant TB and to predict outcome in new and treatment failure cases. Overall the study has confirmed the correlation between various clinical parameters and chest x- ray manifestations. These findings support their use as a tool for earlier detection by shortening the interval between patient presentation and diagnosis. [39]

First automated molecular test for tuberculosis is Xpert MTB/RIF which is used in high burden settings. A study assessed the impact of Xpert MTB/RIF testing on detection of pulmonary tuberculosis (PTB) and rifampicin-resistant PTB (DR-TB) cases in India. It was implemented in 18 sub-district level TB programme units (TUs) covering a population of 8.8 million. In the 14 study TUs, which participated in both phases, 10,675 and 70,556 presumptive TB patients were enrolled in the baseline and intervention phase, respectively, and 1,532 (14.4%) and 14,299 (20.3%) bacteriologically confirmed PTB cases were detected. This shows that use of Xpert MTB/RIF as initial diagnostic test for TB significantly increases case notification rates of all bacteriologically confirmed TB by 39% and rifampicin-resistant TB case notification by fivefold in public health facilities. [40]

CO-MORBIDITIES

This literature studies the characteristics of TB patients in Puducherry and two districts of Tamil Nadu, India and calculates the population attributable fractions (PAF) of TB from malnutrition and alcohol. New smear-positive TB cases were enrolled into the Regional Prospective Observational Research for Tuberculosis (RePORT India) cohort. Census and National Family Health Survey data were used for comparisons. Data were analyzed for 409 participants enrolled between May 2014-June 2016; 307 (75.1%) were male, 60.2% were malnourished and 29.1% were severely malnourished.

Hazardous alcohol use (based on AUDIT-C score) was reported by 155/307 (50.8%) of males. Tuberculosis cases were more likely to be malnourished (62.6% v 10.2% males and 71.7% v 11.3% of females; both $p<0.001$), and male cases were more likely to use alcohol than male non-cases (84.4% v 41%; $p < .001$). The PAF of malnutrition was 57.4% in males and 61.5% in females; the PAF for alcohol use was 73.8% in males and 1.7% in females.Alcohol use in men and malnutrition are helping drive the TB epidemic in Southern India. Reducing the TB burden in this population will require efforts to mitigate these risk factors. [41]

This study was conducted in a motive to document the coexistence of DM and TB in persons with established TB under the Revised National Tuberculosis Control Program. This was a cross sectional study, descriptive observational study conducted at selected Directly Observed Therapy center in Gwalior North Central India among 550 patients with confirmed diagnosis of TB and on treatment. The study participants were screened for DM and diagnoses were made on the basis of the World Health Organization criteria. Clinical parameters were compared between persons with DM and those without DM. This study shows an important fact that diabetes mellitus is an important risk factor for TB and highlights the need to raise awareness on screening for Diabetes Mellitus in persons with TB. [42]

PREVENTION AND CONTROL

Community based intervention for prevention and control of tuberculosis byArshad et al (2014). This study systematically evaluated the effectiveness of community based interventions(CBI) for tuberculosis prevention and treatment. Totally 41 case studies were taken for inclusion. On review of their findings suggested community based interventions are effective in TB detection and treatment but its role in prevention has not evaluated. Community based delivery of DOTS is more feasible and effective for TB case detection and treatment. Gender inequality, social stigma, and poverty are also recognized as important barriers for successful TB prevention and treatment. Thus there is a need to evaluate and address context specific barriers to community based implementation. [43]

As per a study published in October 2017, a survey was conducted among the health workers involved in DOTS course. Data regarding the General health beliefs, prevalent myths and misconceptions about TB in their respective localities were

collected. There is a significant increase in knowledge about TB during DOTS among patients as observed by the health workers. Regular interaction with people is required with the patients for treatment adherence. Media mix strategy can be very effective in creating awareness among the patients and the public.Face-to-face communication with community members, patient-provider discussions, and information through television are very effective techniques. Exclusive communication materials should be designed for family members of the patients. Smart phones can be used for effective implementation of TB control programs. [39] HIV is a potent risk factor for paediatric TB, and ART is strongly protective. In HIV-infected children, early diagnosis and ART initiation reduces TB risk.[44]

END TB STRATEGY

The "End TB" Strategy proposes 50% reduction in tuberculosis incidence and 75% reduction in mortality from TB by 2025. This study was aimed to assess whether the targets were feasible in three high burden countries. Eleven independently developed mathematical models of tuberculosis transmission reflected the epidemiological impact of currently available tuberculosis interventions. Models were calibrated with data on TB incidence and mortality on 2012 which included screening for symptoms, active case finding and preventive therapy. Major reductions in tuberculosis burden seem possible with current interventions. Aggressive scale up of any single intervention scenario could not achieve the "End TB" strategy in any country. However additional interventions, adapted to country specific tuberculosis epidemiology and health system are needed to reach the "End TB" strategy targets at country level. [45].

LTBI was estimated to be present in approximately one third of 10 year old children, one half of adolescents aged 15 years, two-thirds of 20 year olds and three quarters of 25 year-olds.(12) RS patients were defined as subjects complaining of cough and/or sputum for a period of 2 or more weeks. Outpatients and their companions were approached while the waited in the outpatient care areas of the hospital to detect RS. Two samples from different days or 2 samples taken 2 hours apart on the same day were collected. Fifty-seven patients (46.7%) had at least one sputum sample analysed. Three patients presented a positive smear and 2 were culture positive; neither had upper

airway symptoms. None of the patients with productive cough and upper airway symptoms had a positive smear.(46)

In Russia, Active Case Finding (ACF) for certain population groups has been practiced uninterruptedly for many decades, but no studies comparing ACF and passive case finding (PCF) approaches in Russia have been published. ACF patients used self-treatment more often than PCF patients (90.1% vs. 24.6%) and 36.3% of them were alcohol abusers (as opposed to only 26.2% of PCF patients). The median patient delay (PD) in PCF was 4 weeks, IQR (1–8 weeks), and less than 1 week in ACF. Twenty-three per cent of the PCF patients were seen by a medical provider within the first week of their illness onset.(47)

Since 2005, the Myanmar National Tuberculosis Programme (NTP) has been implementing active case finding (ACF) activities involving mobile teams in hard-to-reach areas. This study revealed the contribution of mobile team activities to total tuberculosis (TB) case detection, characteristics of TB patients detected by mobile teams and their treatment outcomes. Among total cases examined by microscopy, 6.4% were sputum smear positive TB. Treatment success rate was high as 91.8% in study townships compared to national rate 85%.(48)

India

Against the backdrop of renewed efforts to control tuberculosis (TB) worldwide, there is a need for improved methods to estimate the public health impact of TB programmes. Such methods should not only address the improved outcomes amongst those receiving care but should also account for the impact of TB services on reducing transmission. Results suggest that between 1997 and 2016, there were 7.75 million lives saved by RNTCP.(49)

There is limited evidence on whether active case finding (ACF) among marginalised and vulnerable populations mitigates the financial burden during tuberculosis (TB) diagnosis. The prevalence of catastrophic costs in ACF and PCF was 10.3 and 11.5% respectively. Adjusted analysis showed that patients detected through ACF had a 32% lower prevalence of catastrophic costs relative to PCF.(50)

Northern India

Drug-resistant pulmonary tuberculosis (DR-TB) is a significant public health issue that considerably deters the ongoing TB control efforts in India. The purpose of this review was to investigate the prevalence of DR-TB and understand the regional variation in resistance pattern across India from 1995 to 2015, based on a large body of published epidemiological studies. 40% of 45,076 isolates suspected for resistance to any first-line anti-TB drugs tested positive. Prevalence of pre-XDR TB was 7.9%.(18) Tuberculosis (TB) is the most common serious opportunistic infection in HIV positive patients and is the manifestation of AIDS in more than 50% of cases in developing countries. TB can occur at any time during the course of HIV infection. This study showed 172/1012 (17%) prevalence of pulmonary tuberculosis among HIV positive patients.(51)

Diabetes mellitus (DM) is recognized as an important risk factor to tuberculosis (TB). India has high TB burden, along with rising DM prevalence.DM prevalence among patients with established TB is 15.5%.(52)

Southern India

Tobacco smoking is an important prevalent risk factor for TB. Nearly one-fifth of the world's population smokes tobacco or uses other tobacco products.2 Most cigarettes are smoked in countries with a high prevalence of TB. Currently, substantially large proportions of tobacco smokers (82%) live in low- and middle-income countries with a high burden of TB as well.3Smoking increases the risk of latent TB by a factor of 1.9 [95% confidence interval (CI): 1.6 to 2.3], that of active tuberculosis by 2.0 (95% CI: 1.5 to 2.6), and that of death from TB by 2.6 (95% CI: 1.8 to 3.6), after adjustment for socioeconomic status.4 Smoking also enhances the risk of treatment failure, the risk of relapse, and the number of defaults. These moderate increases in individual risk of TB due to smoking might translate into a large impact at the population level, because India has a high prevalence of smoking in both urban and rural sections. In India, 38% of deaths from TB among middle-aged men are attributed to smoking, costing the Indian economy three times its TB budget. 1,593/2,350 patients (67.78%) were never smokers. Current and ex-smokers numbered 757/2,350 (32.21%).(21) In India, to increase tuberculosis (TB) case detection under the National

Tuberculosis Programme, active case finding (ACF) was implemented by the Global Fund-supported Project Axshya, among high-risk groups in 300 districts. Between April 2013 and December 2014, 4.9 million households covering ~20 million people were visited. Of 350 047 presumptive pulmonary TB cases (cough of 2 weeks) identified, 187 586 (54%) underwent sputum smear examination and 14 447 (8%) were found to be smear-positive.(53)

There is limited evidence on whether active case finding (ACF) among marginalised and vulnerable populations mitigates the financial burden during tuberculosis (TB) diagnosis.

Puducherry:

Diabetes and Tuberculosis often present together and complicate each other at many levels. A collaborative framework for care and control of diabetes and tuberculosis developed by World Health Organisation and International Union against Tuberculosis and Lung Diseases emphasizes routine bi-directional screening for the two diseases. The prevalence of diabetes in tuberculosis patients was found to be 29%.(23) Tuberculosis (TB) continues to pose a major global health problem and thus intensive action is needed to control and ultimately eliminate the disease.

A total of 278 TB suspects were identified on enquiring on the presence of symptoms suggestive of TB. Out of them 221(79.5%) patients got tested for sputum examination. Sputum positive TB was diagnosed in 29 suspects and the sputum positivity rate was 13.1%, which was slightly higher than the passive case finding norms of 10% as prescribed under Revised National TB Control Program.(54)

LEPROSY

Global Prevalence of Leprosy:

Santos Das, et al in their study found that there was a prevalence of 2,696 cases predominately male (56.05%); brown (46.2%); age group 35-49 (30.16%); urban residents (90.12%) and 5^{th} to 8^{th} grade incomplete elementary school (25.89%).(55)

Christiane Moschioni, et al conducted a study on Risk factors for physical disability among 10,000 leprosy positive patients in Brazil .The Male patients presented deformity more than females, individuals above 15 years old are strong risk factors for

disability. They Concluded the risk for grade 2 disability was 16.5 fold increase in lepromatous leprosy, 12.8 fold higher in Borderline compared to indeterminate leprosy.(56)

In a study by Pescarini JM, et al in India, Brazil & Bangladesh concluded the Descriptive synthesis indicated that increased age, poor sanitary and socioeconomic conditions, lower level of education, and food-insecurity are risk markers for leprosy. Additionally, in pooled estimates, leprosy was associated with being male (RR = 1.33, 95% CI = 1.06-1.67), performing manual labor (RR = 2.15, 95% CI = 0.97-4.74), suffering from food shortage in the past (RR = 1.39, 95% CI = 1.05-1.85), being a household contact of a leprosy patient (RR = 3.40, 95% CI = 2.24-5.18), and living in a crowded household (≥5 per household) (RR = 1.38, 95% CI = 1.14-1.67)(57)

Elimination of Leprosy

In a study by Blok DJ et al in India, Brazil &Indonesia concluded that by 2020 the incidence of leprosy will decrease by 6.2, 6.1 & 3.3 per 1, 00,000 population. The incidence of leprosy in 2020 is predicted to be 16.2,21.2,19.3 per 1,00,000 population in Chhattisgarh, Para &Madura population.(58)

NEW CASE DETECTION:

Dony Christine Castilho De Campos, et al conducted a study on previously undiagnosed cases of leprosy among healthy individuals in Brazil. They found that new cases were detected from a case group but not from the control group out of which 44 individuals of case group were reported of presence of spots on some part of the body. In control group 26 individuals are positive. (59)

Moura ML et al conducted a cross sectional study in Brazil in a community based setting in 2010 with a sample size of 719 individuals (258 households), out of which 82 individuals had a previous history of leprosy, 209 household contacts and 428 lived in neighbouring residencies and 15 new leprosy cases were confirmed, revealing a new case detection rate of 2% of people examined.(44)Blok DJ et al forecasted a new case detection rate of leprosy in 4 states of Brazil in comparison of model approaches in

2017 and all models agree that the trends of NCDR will continue to decrease until 2040 in all states.(60)

RISK FACTORS OF LEPROSY:

A leprosy cohort study was done by Sales AM, et al among contact leprosy patients and leprosy positive individual in Brazil. Out of 6158 contacts of 1201 leprosy patients with an average of 5.12 contacts per patient. Among the contacts 452 new cases of leprosy were diagnosed in which 89.4% were multibacilary,74.5% paucibacilary & 65.8% borderline tuberculoid.(61)

INDIA

BURDEN OF LEPROSY:

Katoch k, et al conducted a study to assess the new case disease burden of leprosy in India among 2,50,000 individuals . Out of this 2161 cases were founded in which 1300 are pauci bacillary & 861 are multi bacillary were detected. Disabilities observed in these cases were 2.05/10,000 population and 13.9% in new cases. Self stigma in patients with disabilities was reduced.(62)

P.S.S.Rao, et al did a study on the topic "Disability adjusted working life years of leprosy affected persons "in states of Uttarpradesh, West Bengal and Chhattisgarh among 150 individuals and suggested there is reduction in disability among the youngest individual than the older one. On an average above 30% of leprosy affected persons work life is lost due to disability. (63)

Adhikari B, et al in their study about the factors affecting perceived stigma in leprosy affected individuals in Western Nepal. They concluded that among 135 leprosy affected persons the median score of perceived stigma was 10 while it ranked from 0-34. Higher perceived stigma score was found in illiterate persons.(64)

A Kumar, et al conducted a study on the burden of new leprosy cases in two states (Haryana and Uttar Pradesh) among 36000 individuals, they concluded that in UP 276 cases were detected & NCDR is 6.91/10000. Out of this 2.54% were self reported cases and the rest were new untreated or previously undiagnosed cases and in Haryana 79 cases were detected &NCDR is 1.95/10000 of this 7.59%were self reported.(65)

Ganesan DK, et al did a cross sectional study including individuals above 18 years in rural block in Tamil Nadu,India. This study was carried out among 171 people affected with leprosy shows the prevalence of disability was 88.3%.(66)

ELIMINATION OF LEPROSY:

Shukla LK, et al in their study in Gujarat (Vadodara district) found that out of this population 76% surveyed and screened. 358 clinically confirmed cases of leprosy. Out of which 225 were Pauci bacillary &113 were Multi bacillary. (14 had deformities and 37 were children).(67)

Subramanian M et al conducted a secondary research analysis on situations of leprosy in endemic states of India and it infers that NLEP should adopt a more realistic approach towards reaching the elimination goal.(68)

ACTIVE CASE FINDING:

PN Rao, et al conducted a study on future implications of leprosy India (Hyderabad) among 2, 00,000 individuals. They suggested that the risk of grade 2 disability is more among children. The programme in India also saw a reduction from a prevalence rate of 57.8/10,000 in 1983 to less than 1/10,000 by the end of 2005 when India declared to have reached the World Health Organization (WHO) target of elimination as a public health problem. They implicated more on the current situation of leprosy both in India and worldwide(69).

In a Study by Shetty VP, et al in Rural and Urban areas of Maharashtra concluded that 120 individuals are diagnosed with leprosy out of which 65 were pauci bacillary and 55 were multi bacillary among 2,00,000 population.(70)

Joshua conducted a cross sectional study in a community based setting in the period of 2015-2017 in India with a sample size of 10,000 using Bayesian space period model and spatial effects varied between 0.579 and 1.52.(71).

METHODOLOGY

Study design: Community based cross-sectional study

Study Setting: Pondicherry is a union territory with population of 12, 47, 953 residing in 150 wards and 62 villages. There are 27 PHCs, Villianur PHC being one of them with 29,636 residents in its catchment area. This PHC has 62 villages and 6835 households. The study was done in 8 areas under the Villianur primary health centre field practice areas. The following areas were allotted in this survey,

Group	Area Allotted	Population size	Total houses
A	Pudunagar	5840	1050
B	Manaveli	8685	1520
C	Sultanpet, Villianur town	7316	1304
D	Pitchaiveeranpet, Uthravaginipet, Periyapet	7795	1198
	Total	**29636**	**5072**

This area caters to the population of 29636. The area is well connected to all the three types of health system. Primary health centre is situated approximately 3 km away and the tertiary care government and private facilities are within 10kms distance. In all type of health facilities diagnosis, lab investigations such as sputum examination, chest X-ray and treatment are provided at free of cost. Also this area has access to intermediate reference laboratory for CB-NAAT within the reach of 10 km distance. Once the patient is diagnosed to have pulmonary tuberculosis, after initial investigation they would be started Anti tuberculosis regimen under RNTCP, through DOTS providers like Multiple Purpose Workers and ANM workers.

Discussion with STO, MO of Villianur PHC and ANMs

Study Period: The survey was carried out for a period of one month, starting from 7th January to 3rdFebruary 2019.

Study Participants: The study included participants of all age groups in the community.

Inclusion Criteria: All individuals who were available in their houses at the time of two consecutive visits and willing to participate in the study.

Exclusion Criteria: All individuals who are not willing to participate in the study and not available in their houses even after two repeated visits.

Data Collection Tools: A predesigned pre-tested questionnaire to collect information from study participants using a mobile application called Epicollect5 which consisted of a structured questionnaire comprising the following sections:

A) Demographic details
B) History and examination of Leprosy
C) History and examination for anaemia
D) Criteria for presumptive TB
E) History of TB
F) Investigations

Sampling technique: Universal sampling

Data Entry and Analysis: The data were collected using the Epicollect5 app installed in smart phones, were uploaded in cloud and exported for analysis using SPSS software version 21.

Ethical Considerations: The survey was conducted with the active support of State Tuberculosis & Leprosy Officer, Government of Puducherry. Verbal consent was obtained from each participant before collecting the information from the participant. The information collected was securely entered in the Epicollect5 and the confidentiality of the collected data was maintained throughout the survey period. Nowhere the information of the participants was disclosed. During the survey, if any participants were in need of any healthcare, the participant was referred to the concerned health centre for appropriate care.

Operational Definitions

Tuberculosis: Outcomes: The main outcomes were rates of cured, treatment completed, loss to follow up, treatment failure, death.

Cured: A pulmonary TB patient was bacteriologically confirmed TB at the beginning of treatment who was smear or culture negative in the last month of treatment and on at least one previous occasion.

Treatment completed: Relapse patients who have been previously treated for TB were declared cured or treatment completed at the end of their most recent course of treatment and now diagnosed with the recurrent episode of TB (either a true relapse or a new episode of TB caused by reinfection).

Loss to follow up: A patient whose treatment was interrupted for two consecutive months

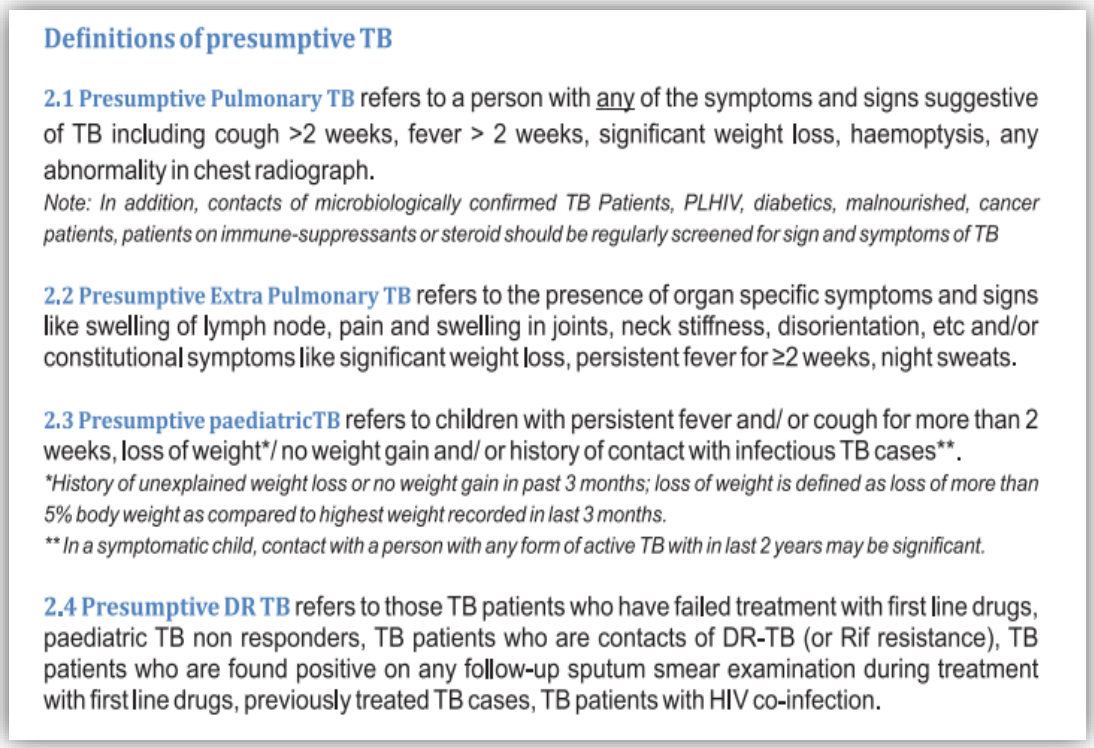
Treatment failure: A patient who is sputum smear or culture positive at five months or later after initiation of anti TB treatment.

Died: A diagnosis of TB at death is defined as “when TB is investigated after a patient dies or if a live patient on one or less anti TB medication died and is subsequently diagnosed with TB disease”.

Study Tools: Epicollect5: Epicollect5 application (developed by Imperial college London funded by the Wellcome Trust) was used in ROME 2019 training programme to design a questionnaire. The data were collected using the installed Epicollecte5 app in smart phones of undergraduate students.

We used following definitions to identify TB cases

Box 1: Definitions of Presumptive TB



Definitions of presumptive TB

2.1 Presumptive Pulmonary TB refers to a person with any of the symptoms and signs suggestive of TB including cough >2 weeks, fever > 2 weeks, significant weight loss, haemoptysis, any abnormality in chest radiograph.

Note: In addition, contacts of microbiologically confirmed TB Patients, PLHIV, diabetics, malnourished, cancer patients, patients on immune-suppressants or steroid should be regularly screened for sign and symptoms of TB

2.2 Presumptive Extra Pulmonary TB refers to the presence of organ specific symptoms and signs like swelling of lymph node, pain and swelling in joints, neck stiffness, disorientation, etc and/or constitutional symptoms like significant weight loss, persistent fever for ≥2 weeks, night sweats.

2.3 Presumptive paediatricTB refers to children with persistent fever and/ or cough for more than 2 weeks, loss of weight*/ no weight gain and/ or history of contact with infectious TB cases**.

**History of unexplained weight loss or no weight gain in past 3 months; loss of weight is defined as loss of more than 5% body weight as compared to highest weight recorded in last 3 months.*

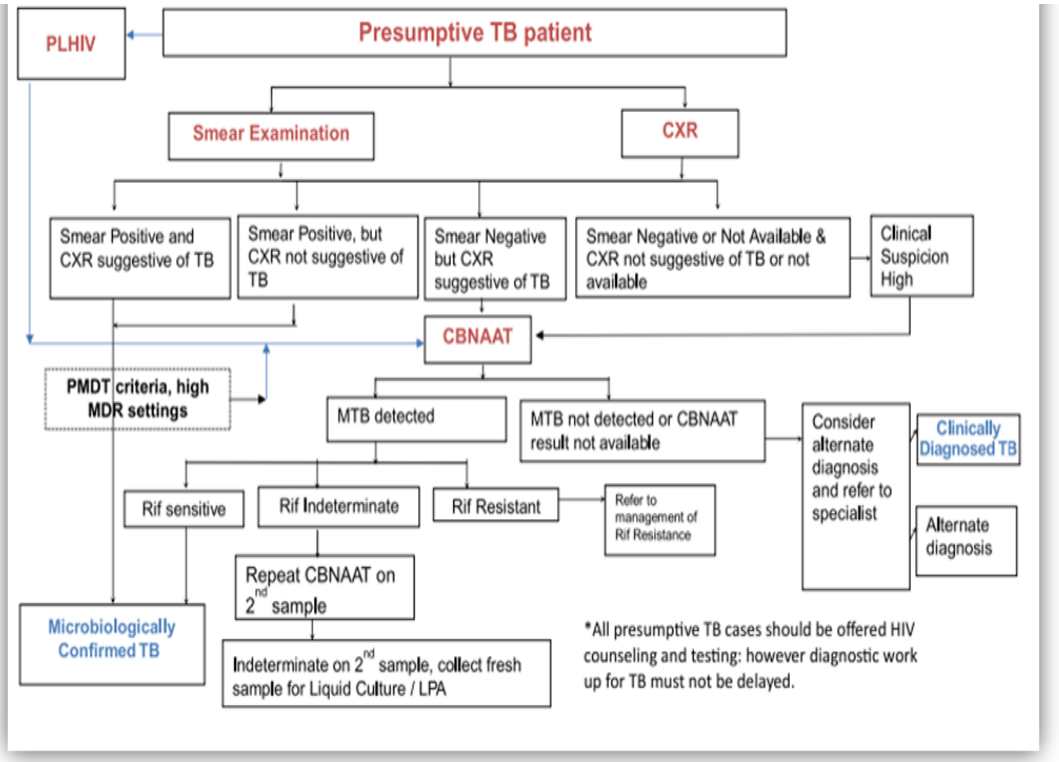
*** In a symptomatic child, contact with a person with any form of active TB with in last 2 years may be significant.*

2.4 Presumptive DR TB refers to those TB patients who have failed treatment with first line drugs, paediatric TB non responders, TB patients who are contacts of DR-TB (or Rif resistance), TB patients who are found positive on any follow-up sputum smear examination during treatment with first line drugs, previously treated TB cases, TB patients with HIV co-infection.

Source: TOG-Chapter 3-Case finding & diagnosis strategy :: Ministry of Health and Family Welfare [Internet]. [cited 2019 Feb 7]. Available from: https://tbcindia.gov.in/showfile.php?lid=3216

House to house visits were carried out and participants were recruited in the study after seeking verbal consent. Each time we identified a presumptive TB person, we followed the below given algorithm to investigate presence of TB in these persons.

Box 2: Diagnostic algorithm for pulmonary TB



Falcon Tubes were distributed to collect two sputum samples from persons with persistent cough (>2 Weeks)

(Falcon Tubes used for Sputum Sample Collection)

Leprosy:

Characteristics	Paucibacillary (PB)	Multibacillary (MB)
Skin lesions	1-5 lesions with definite loss of sensation	6 and above with definite loss of sensation
Peripheral nerve involvement	No nerve/ only one nerve	More than one nerve
Skin smear	Negative at all sites	Positive at any site

Data Collection

The undergraduate students were briefed and trained for the survey with the help of faculty, post graduates of Department of Community Medicine, during the orientation training the students were taught about the type of study, area to be studied and Epicollect5 app was downloaded and pre–tested.

Data was collected by interview method using the Epicollect5 application, by house to house visits. All the members of a family, of all ages, were surveyed. Oral consent was received.

If any individual was found to be positive for presumptive tuberculosis, their sputum was collected in labelled Falcon tubes. These samples were then sent to PHC Villianur for
CB-NAAT. In case the individual is unable to cough out sputum then chest X-Ray is recommended at the Chest Sanitorium, JIPMER. After processing the samples, the individuals found to be positive for tuberculosis were informed and referred to PHC Villianur for further treatment.

If any individual was found to be leprosy suspect, was sent to PHC Villianur and was notified to State Leprosy Officer.

In case of non-availability of a member of the family, two visits were made in the subsequent days for the survey.

DATA COLLECTION


45
40
35
30
25
20
15
10
5

RESULTS

Group A

Results are organised as per the following headings:

1. Characteristics of the study participants.
2. Characteristic of presumptive cases.

Characteristics of the study participants

Totally 4798 people were residing in 1248 households that we visited. The average family size was four individuals per family. Of these, a total of 3013 individuals were available for the interview. About 117 refused participation citing different reasons.

Figure 1: Distribution of study population in Pudunagar village in Villianur

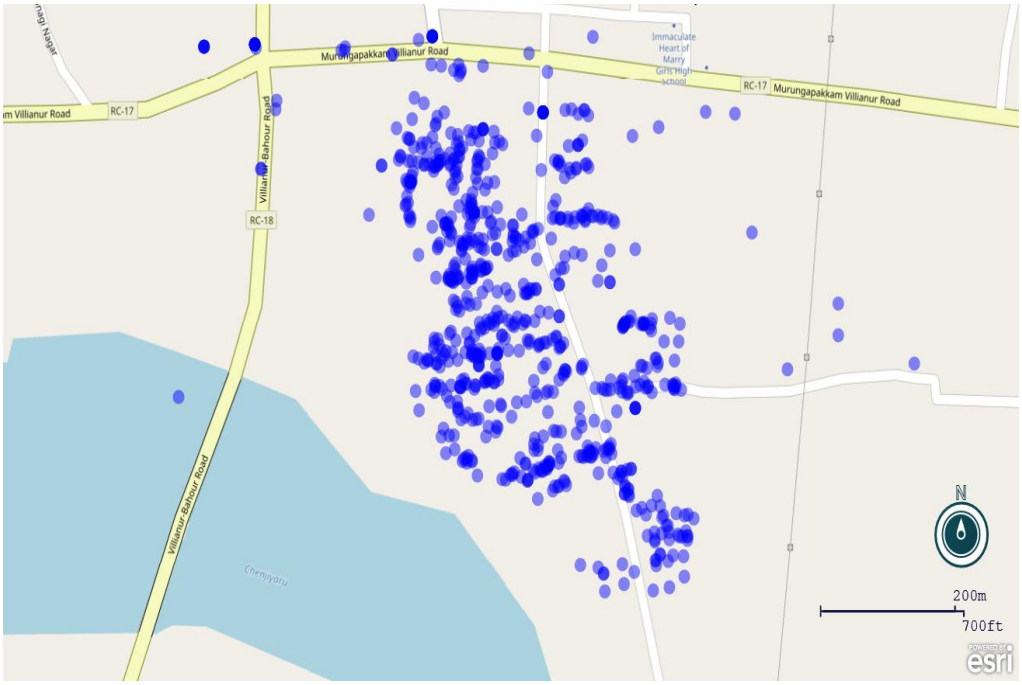


Figure 2: Distribution of study population in Odiampet village in Villianur

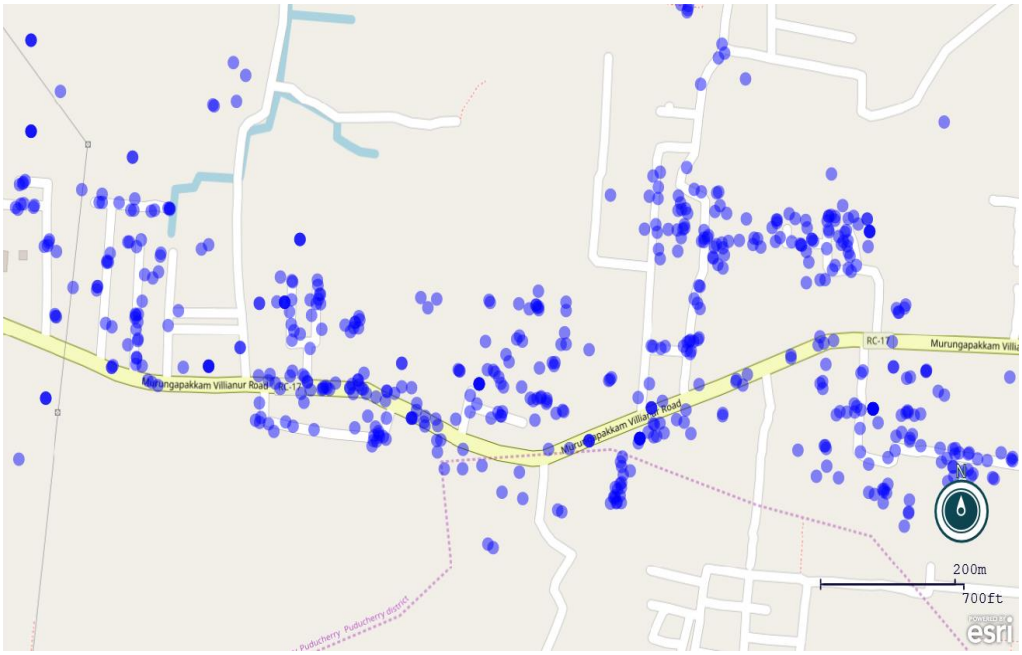


Figure 3: Distribution of Target population as per gender (N=4798)

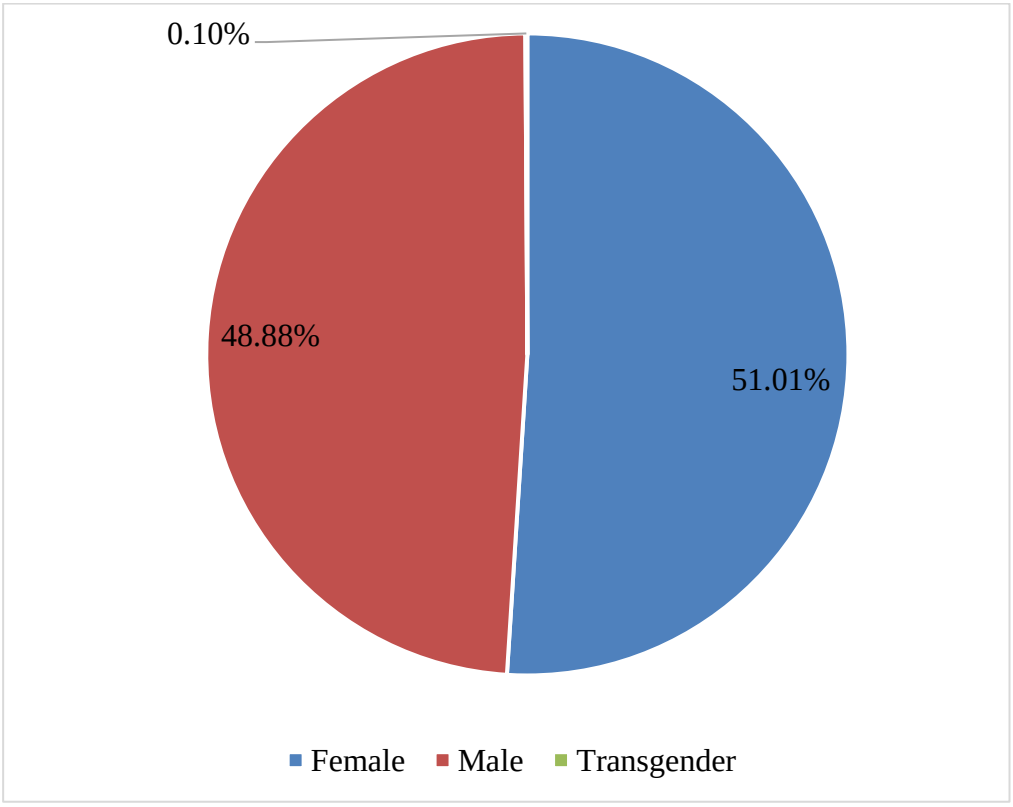


Figure 4: Distribution of Study participants as per gender (N=3013)

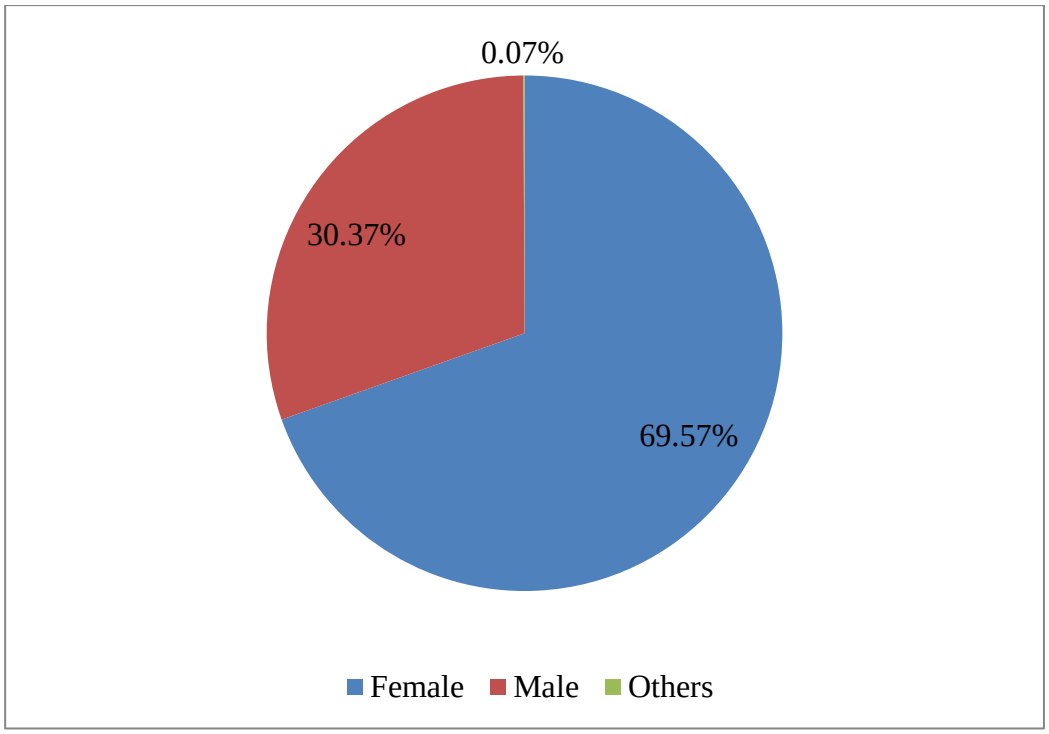


Figure 5: Distribution of Study participants as per age (N=3013)

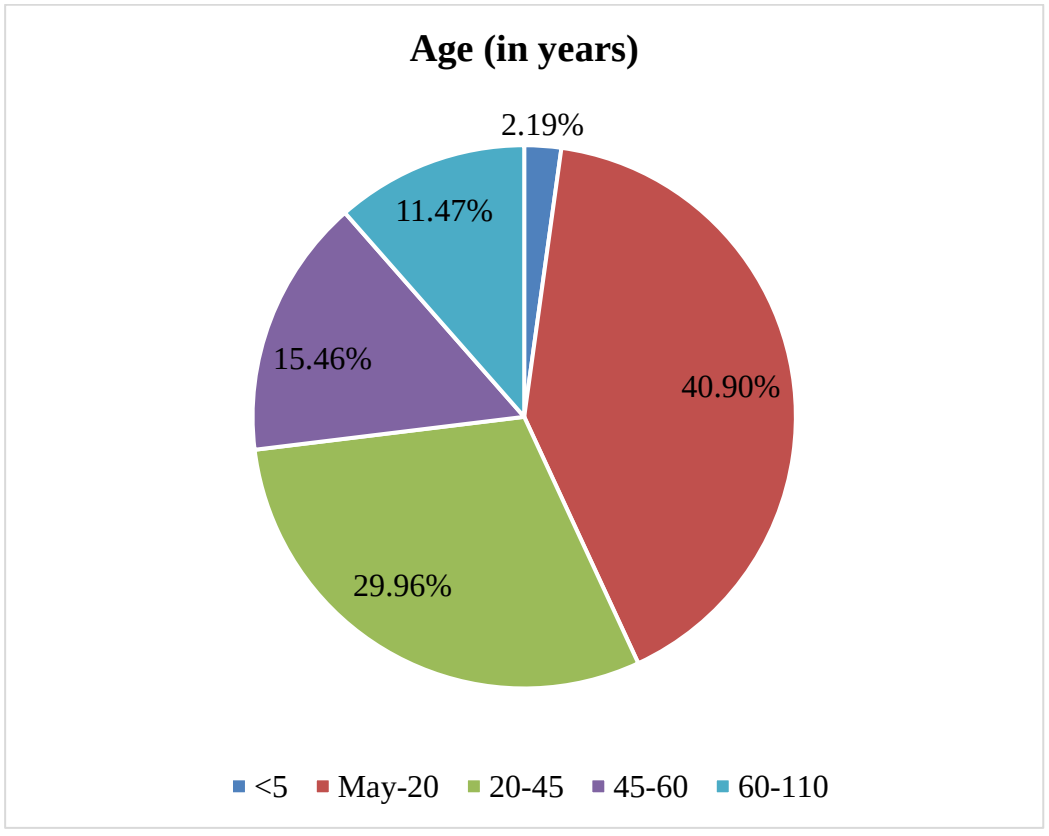


Figure 6: Distribution of Study participants as per educational status (N=3013)

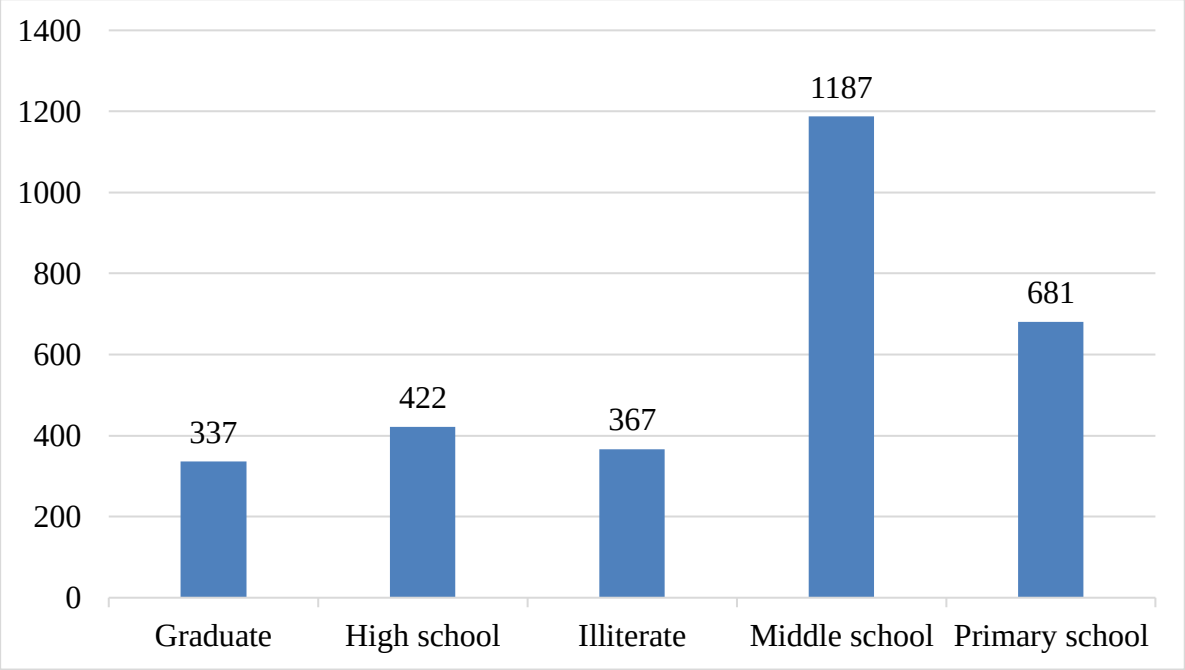


Figure 7: Distribution of Study participants as per occupational status (N=3013)

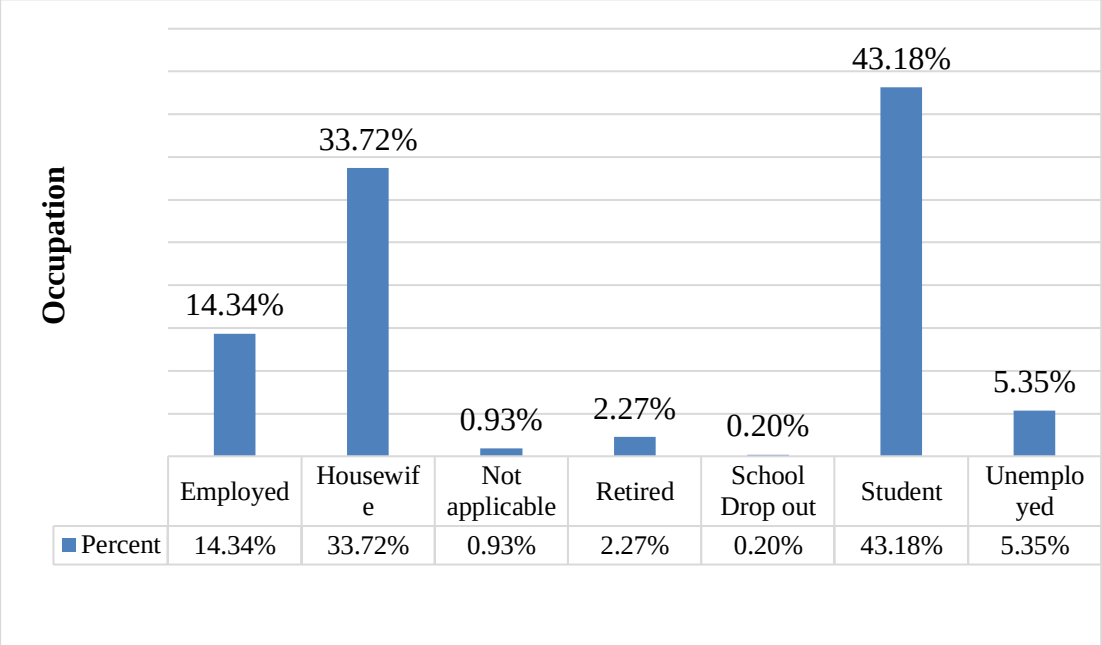


Figure 7a: Distribution of Study participants presenting with cough of any duration (N=2768) based on age

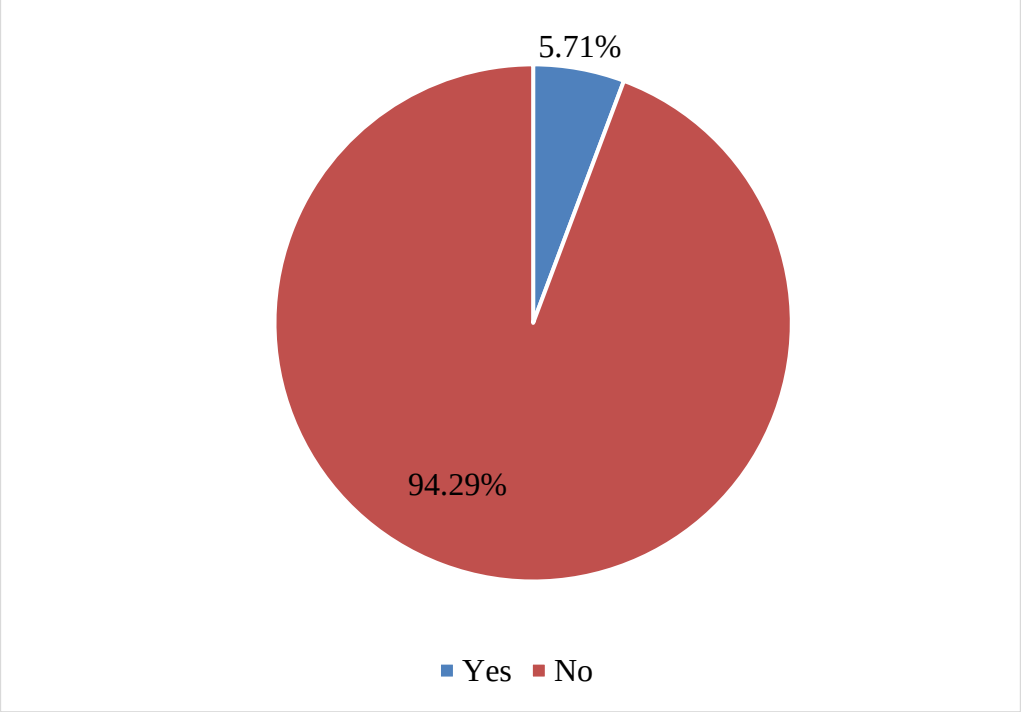


Figure 7b: Distribution of Study participants presenting with cough of any duration (N=157/2768) based on age

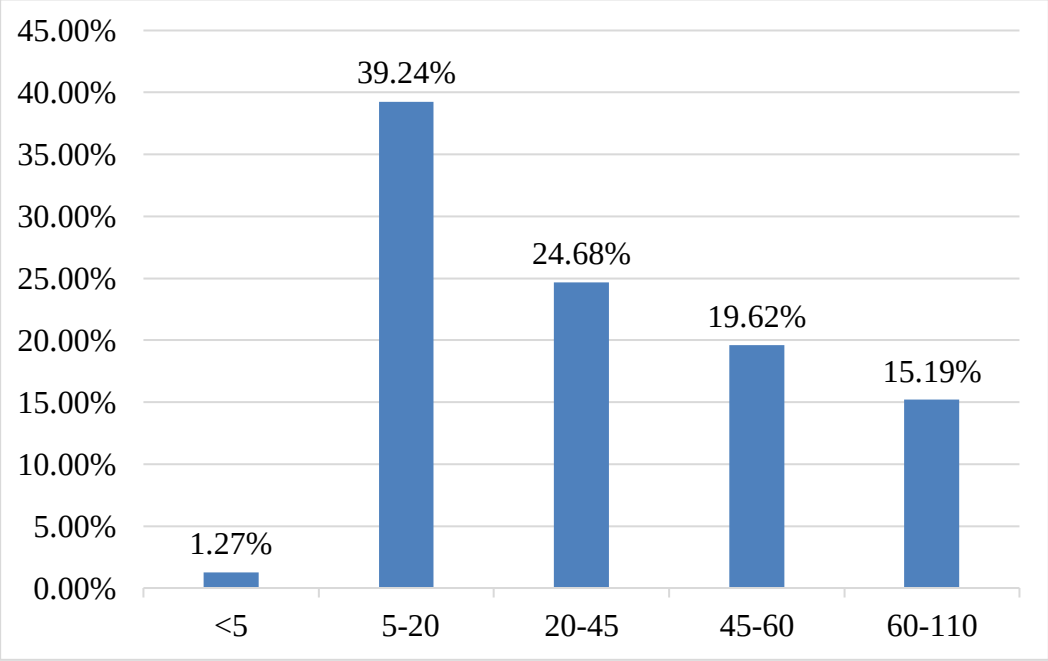


Figure 8: Distribution of Studyparticipants With persistent cough(>2 Weeks) (N=157)

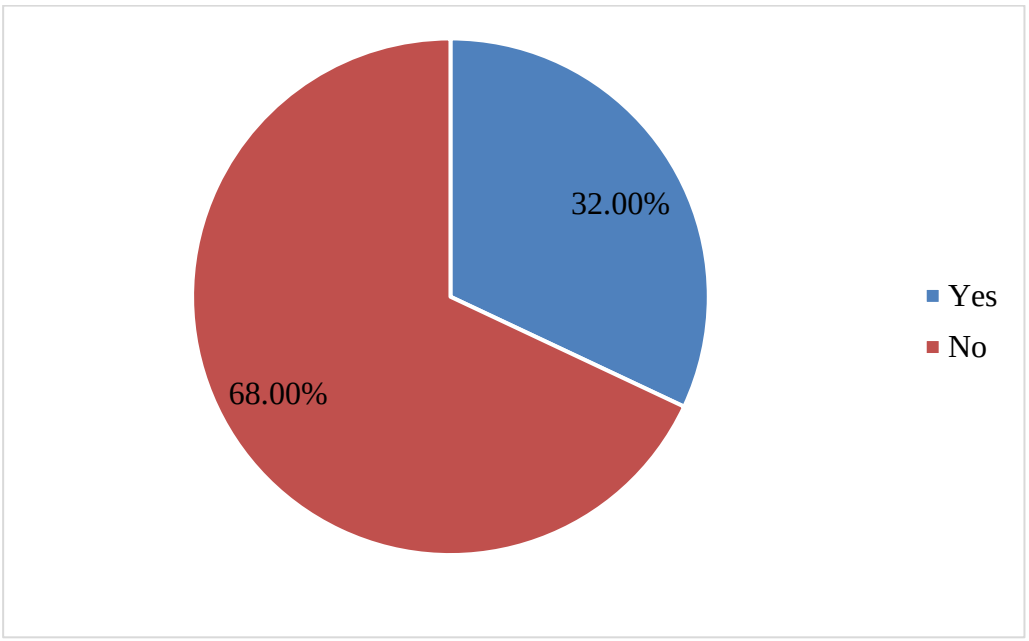


Figure 9: Geographical clustering of Study participants presenting with cough of any duration (N=2768) in Pudunagar

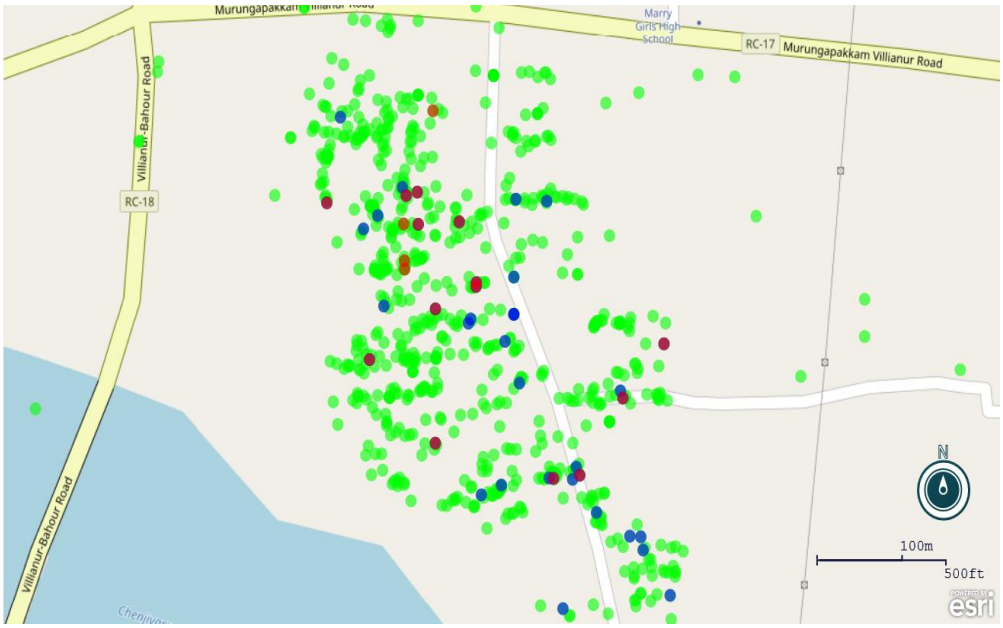


Figure 10: Geographical clustering of Study participants presenting with cough of any duration (N=2768) in Odiampet

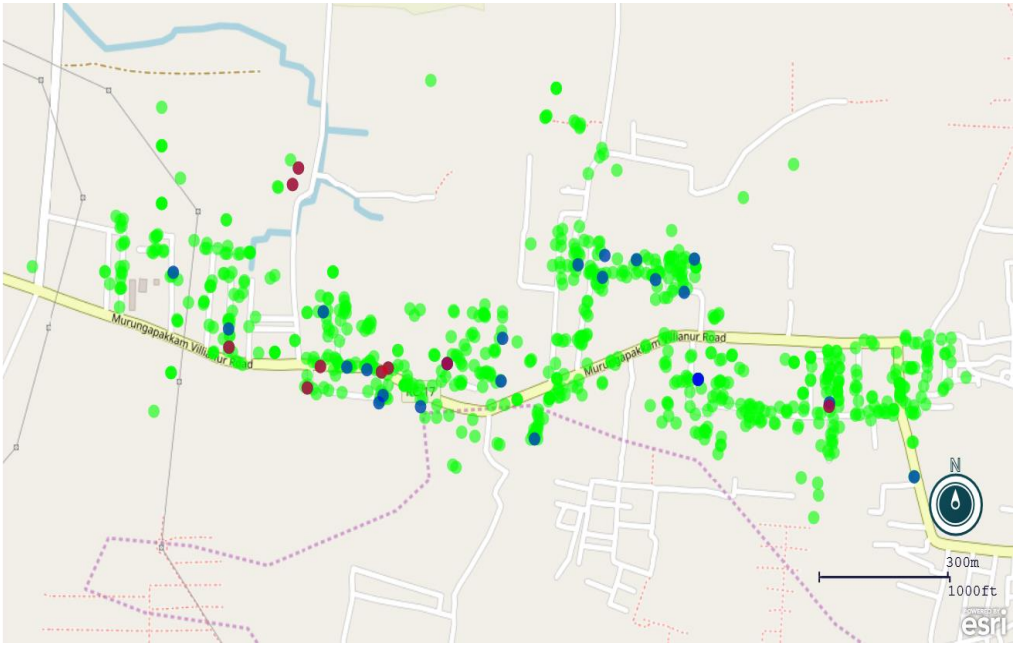
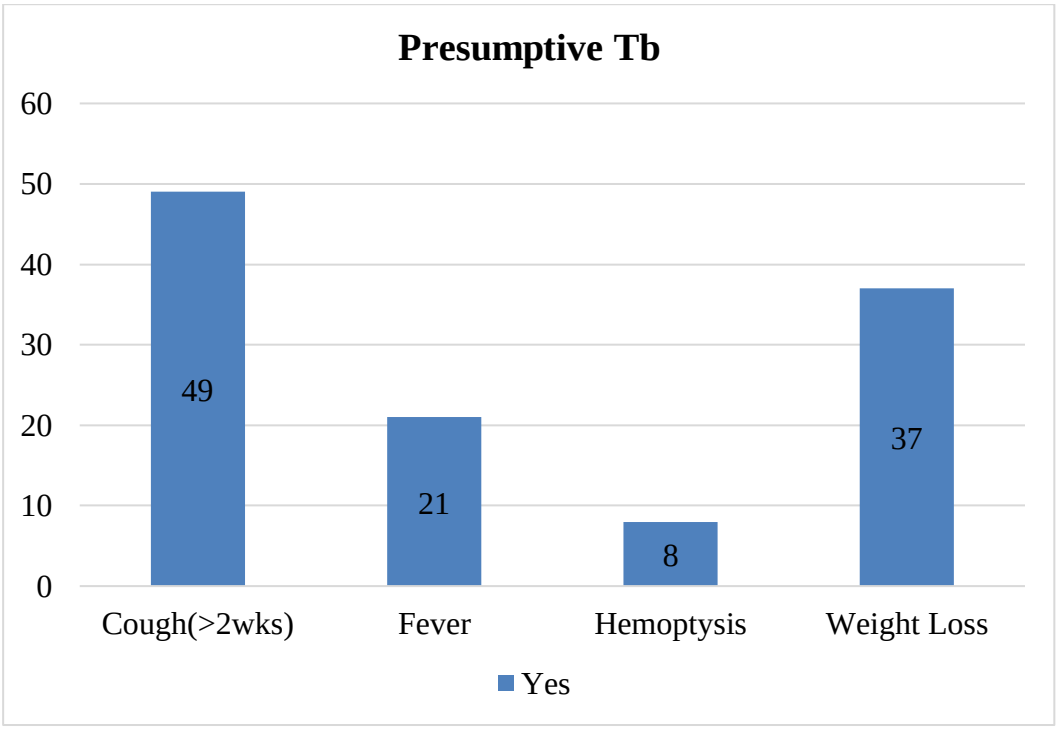


Fig 11: Various categories of patients diagnosed as presumptive TB cases



Overall 30 Sputum samples were collected from these presumptive cases and none had TB. Three X-rays were taken, none were TB

Figure 12: Distribution of individuals based on presence of patch

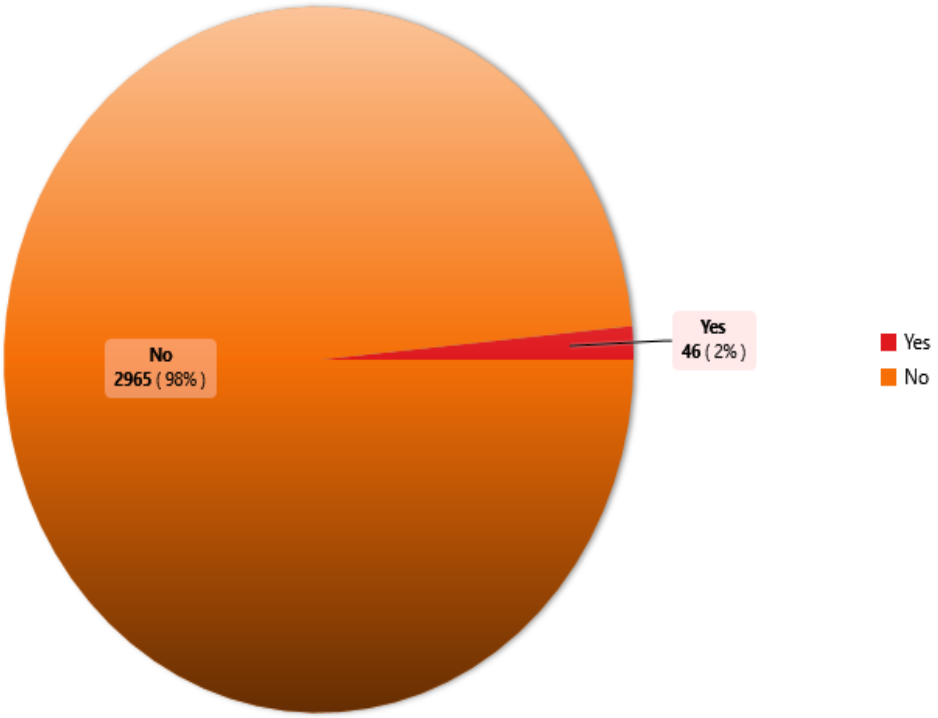


Figure 13: Distribution of individual with lesions based on colour

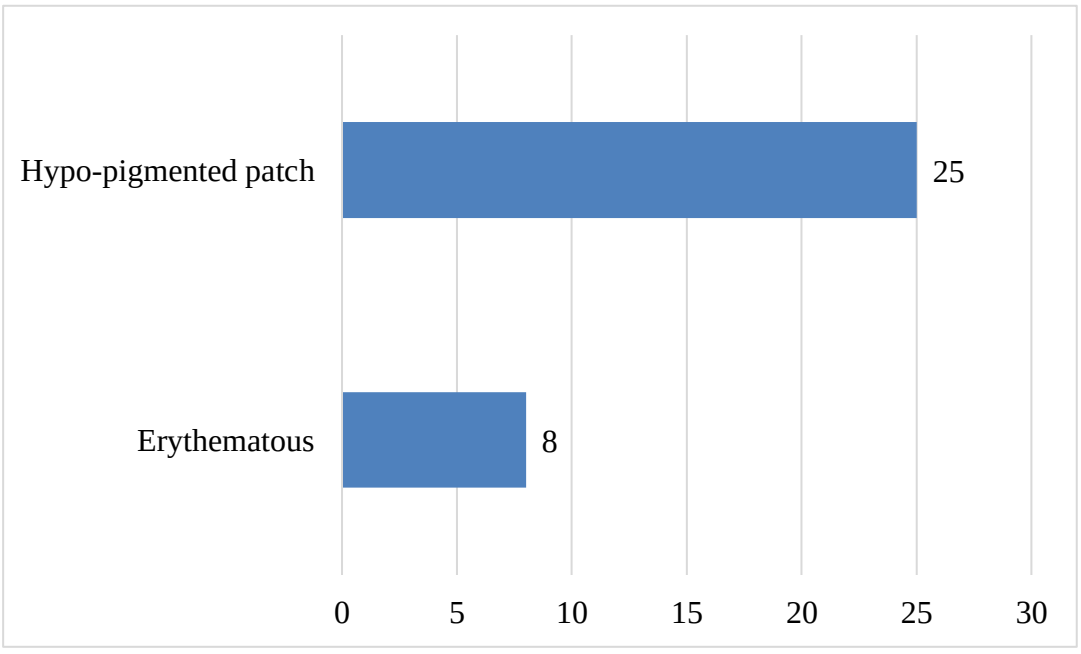


Figure 14: Distribution of Individuals with lesions bases on presence of sensation

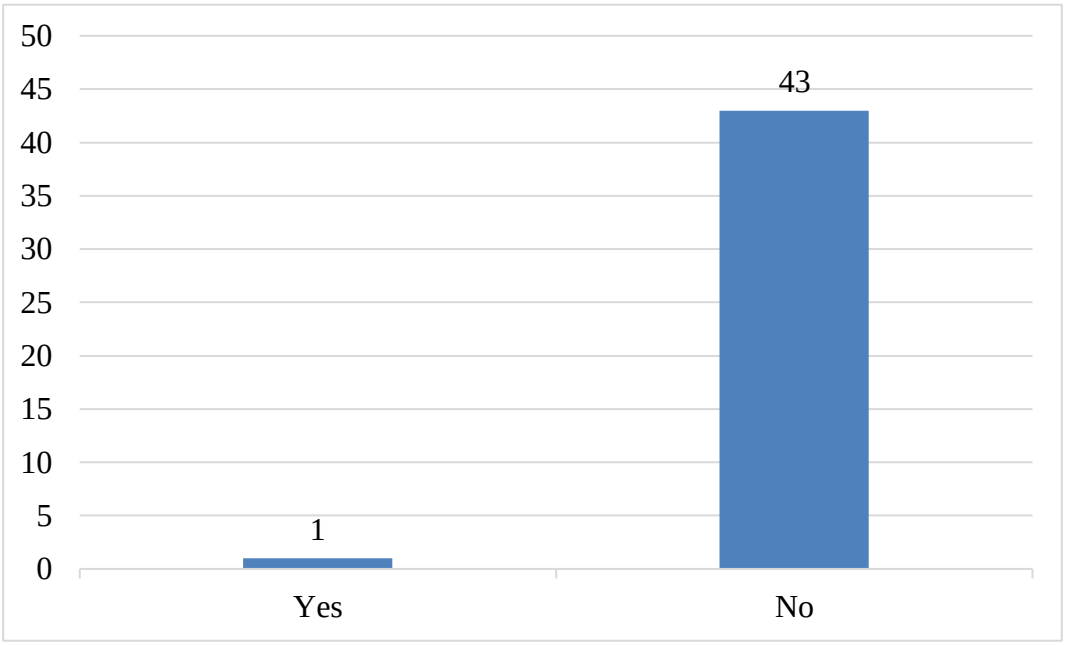


Figure 15: Distribution of individuals with lesions based on presence of tenderness

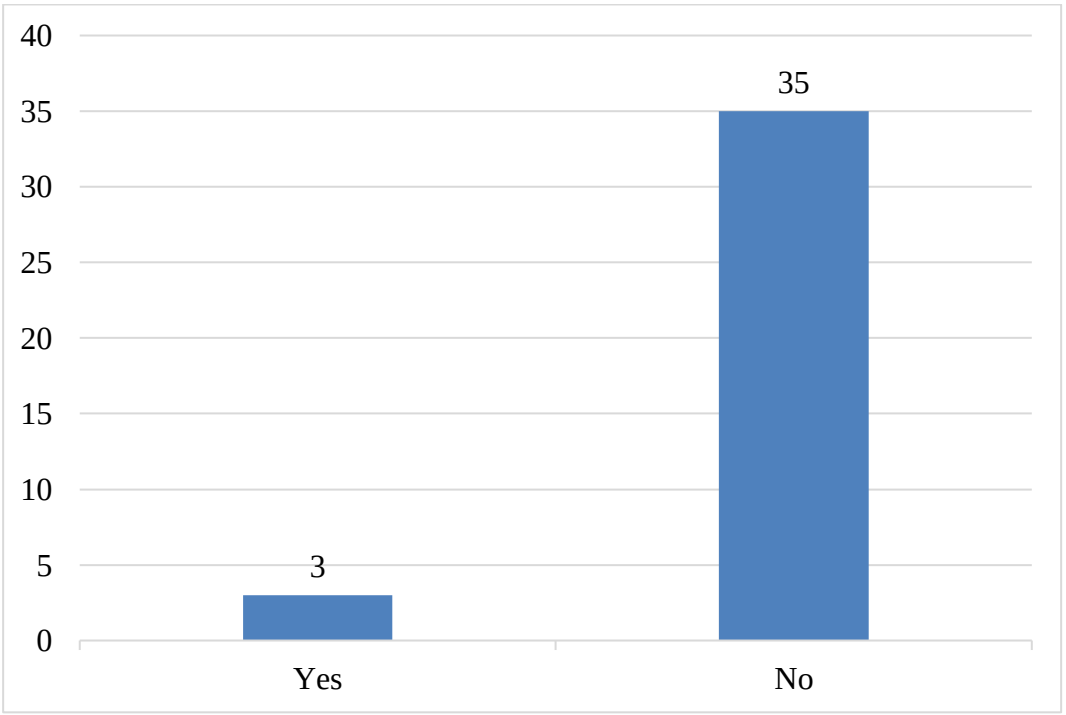


Figure 16: Geographical clustering of Study participants with suspicious lesions suggestive of Leprosyin Pudunagar

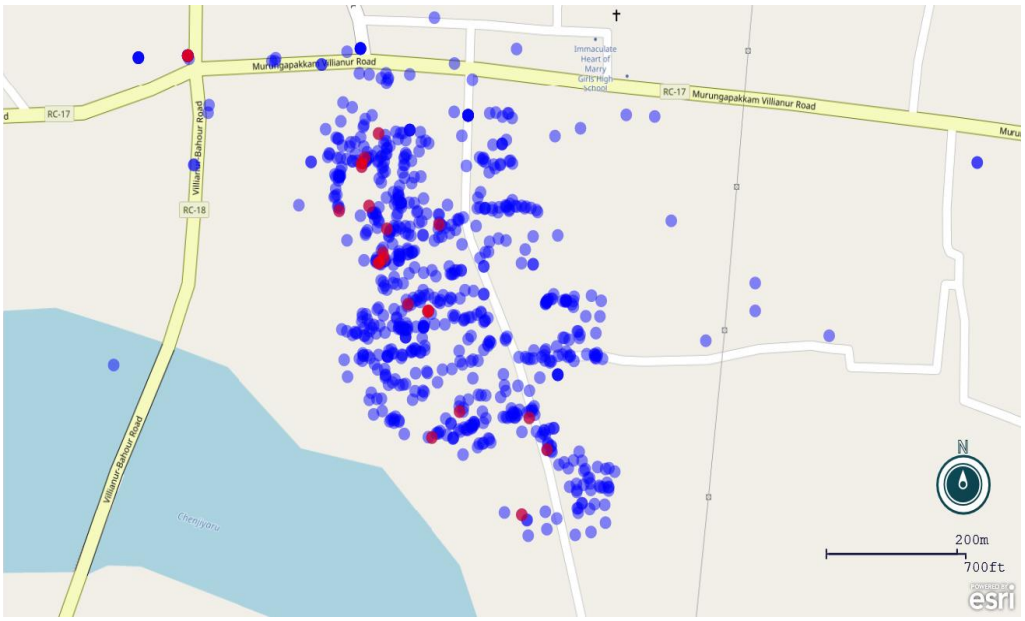
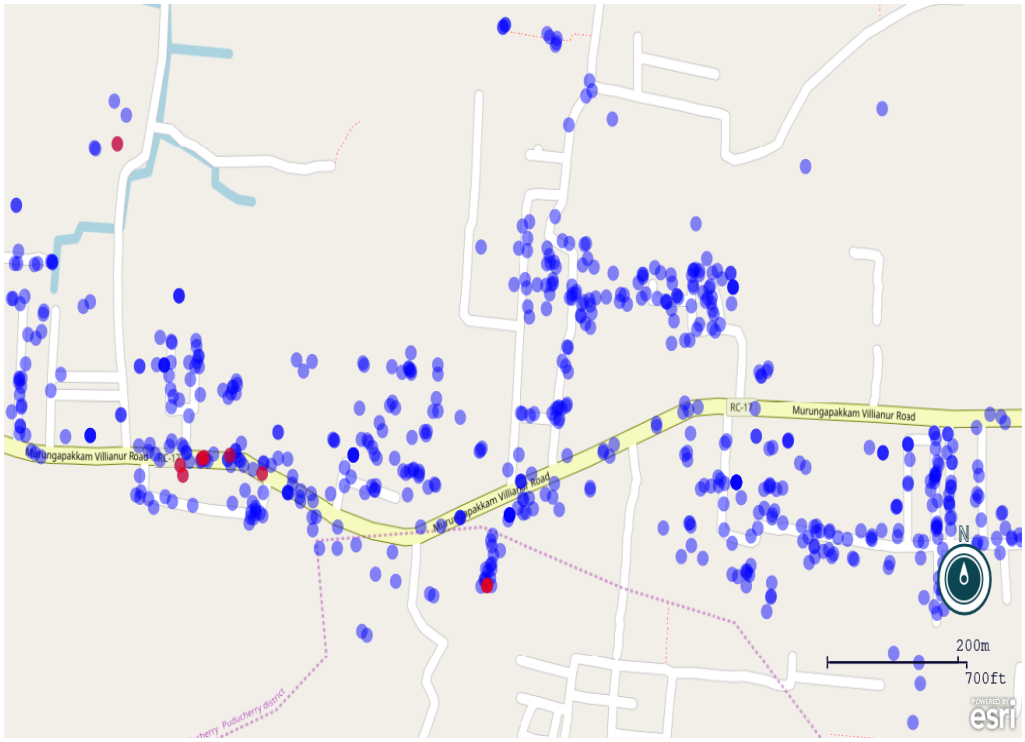


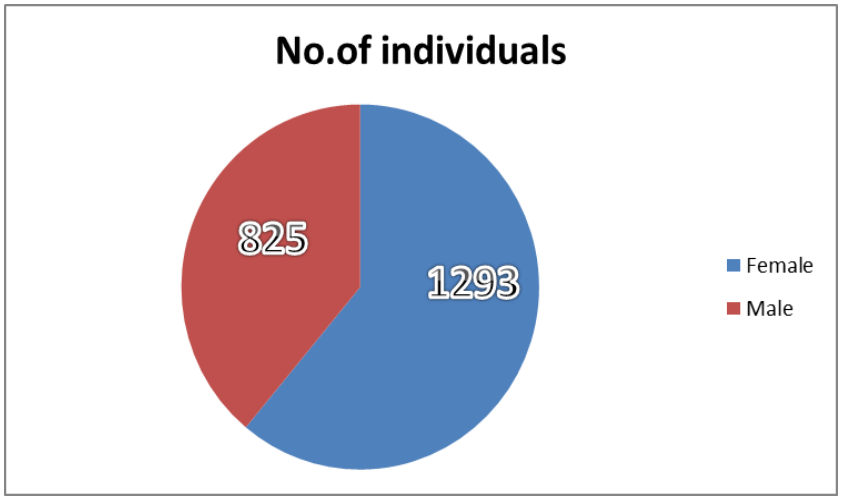
Figure 17: Geographical clustering of Study participants with suspicious lesions suggestive of Leprosyin Odiampet



GROUP - B

Totally 2118 people were surveyed. Characteristics of these 3368 are given in the following tables:

Diagram 1: Distribution of study population based on gender



Majority of the study participants were female , 1293 (61%).

Table 1: Age Distribution of the study population (n=2118)

Age(yrs)	No.of indivuals	Percent
<15	214	10.2
16-30	475	22.5
31-45	663	31.2
46-60	469	22
61-75	234	11.1
76-90	61	2.6
>90	2	0.1

Out of 2118 participants, 663 (31.2%) were belongs to 31-45 years of age group and 475 (22.5%) were 16-30 years of age.

Table 2: Distribution based on education status(n=2118)

EDUCATION	NO. OF IND	PERCENT
Illiterate	319	15.1
Preschool	30	1.4
Primary School	199	9.4
Middle School	572	27.0
High school	458	21.6
Graduate	540	25.5

Most of the participants were studied middle school level 572 (27%) and 540 (25.5%) were graduate.

Table 3: Distribution based on presence of patch on examination(n=2118)

Patch on exam.	number	percent
Yes	27	1.3
No	2091	98.7

Presence of batch was 27 (1.3%).
Diagram 2: Distribution based on colour of lesion(n=27)

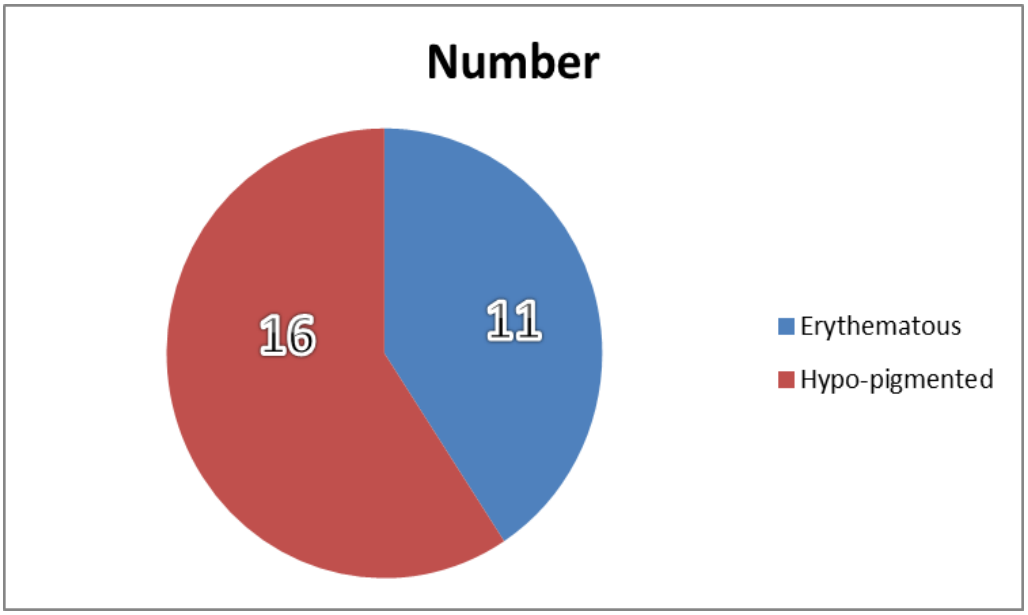


Table 4 :Distribution based on number of lesion observed (n=2118)

No.of skin lesion	Number	Percent
No lesion	2091	98.7
1-5 lesion	20	0.9
6 and above	7	0.3

Table 5: Distribution based on Nerve tenderness (n= 2118)

Nerve tenderness	Number	Percent
Excluded	2091	98.7
No Tenderness	27	1.3
Total	2118	100.0

Table 6: Distribution based on Pallor Examination (n=2118)

Pallor	Number	Number

Absent	1737	82.0
Present	381	18.0

Table 7 :12-Distribution of the study population based on cough for more than two weeks (n = 2118)

Persistent cough	Number	Percent
No	2100	99.2
Yes	18	0.8

Table 8:13-Distribution based on presence of fever for more than two weeks N= 2118

Fever	Number	Percent
No	2113	99.8
Yes	5	0.2

Diagram 3. Distribution of the study population based on examination of pallor

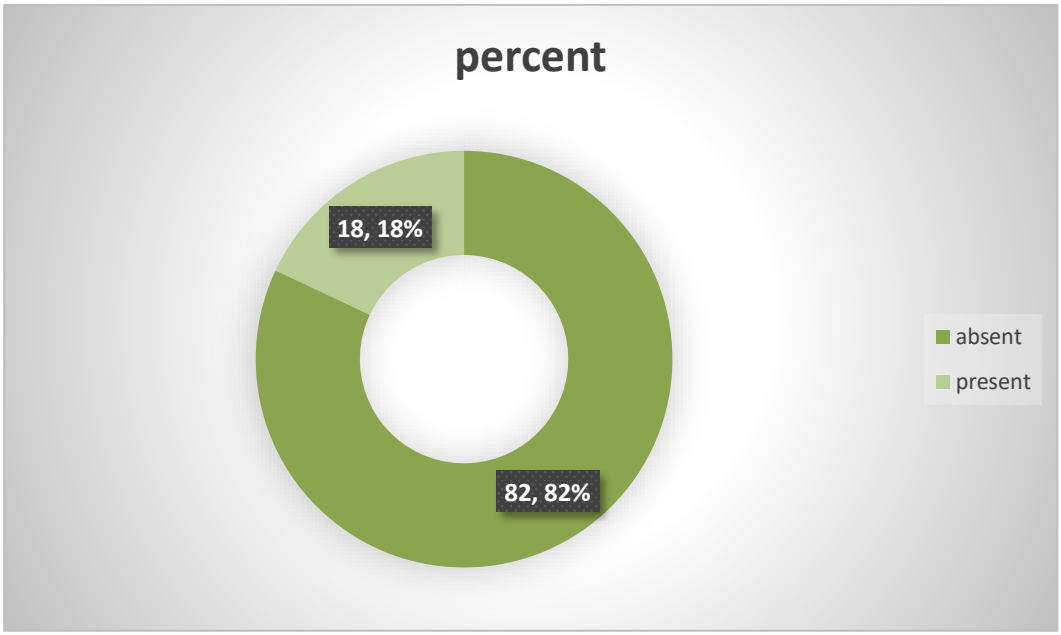


Table 9:16-Distribution based on contact with known TB cases (n= 2118)

Contact with k/c/o TB	Number	Percent
No	2111	99.7
Yes	7	0.3

Table 10: Distribution based on history of known TB case

Old tb	Number	Percent

No	2107	99.5
Yes	11	0.5
Total	2118	100.0

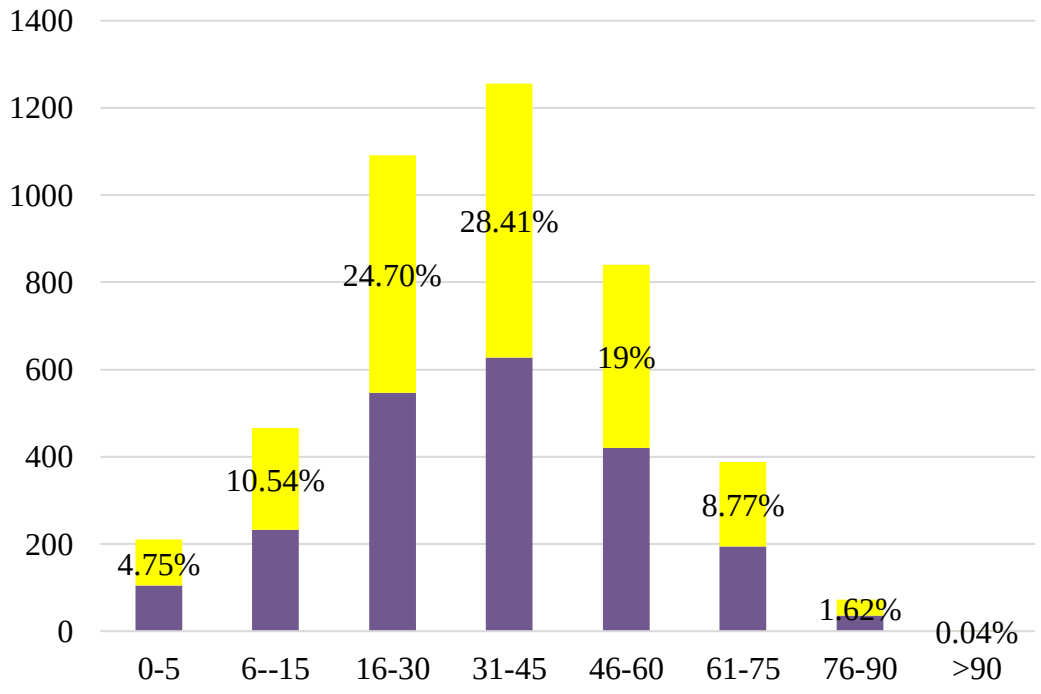
Table 11: No of presumptive TB (N= 2118)

Presumptive TB	Number	Percent
No	2098	99.1
Yes	20	0.9

Group C

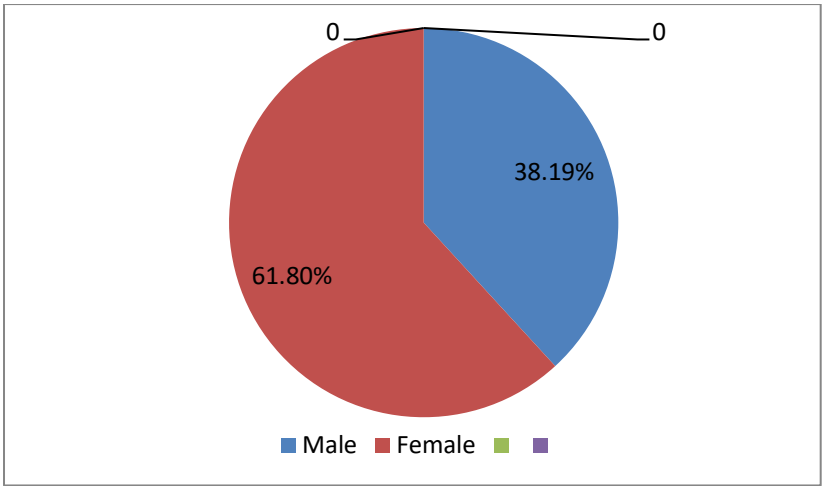
Totally 2210 people were surveyed in our study area. Characteristics of these 2210 are given in the following tables:

Figure 1: Distribution of study participants as per age group (n=2210)



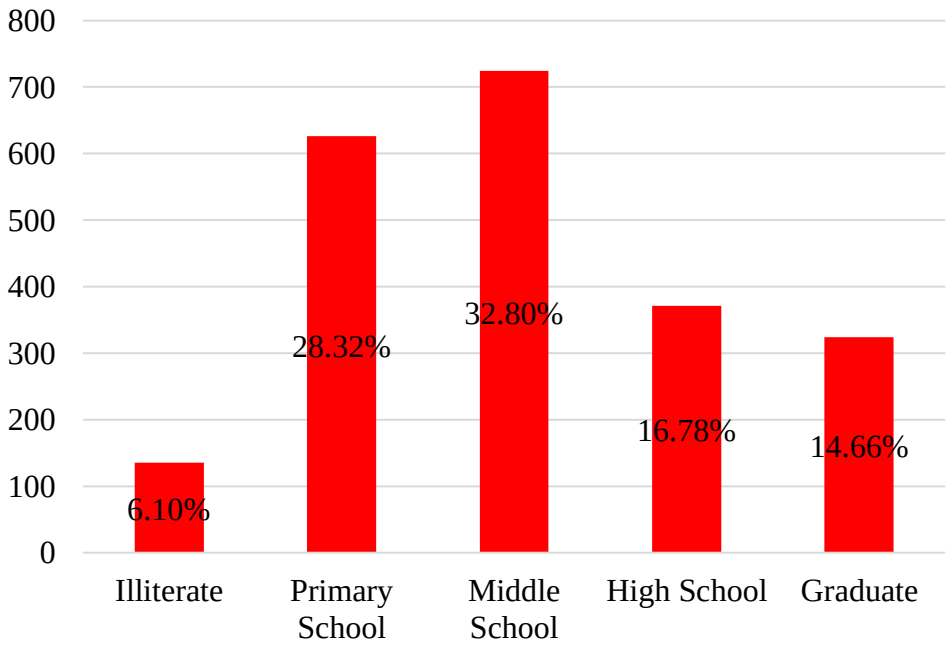
The maximum numbers of participants (28.41%) were in the age group of 31-45 years

Figure 2: Distribution of Study Participants based on gender (n=2210)



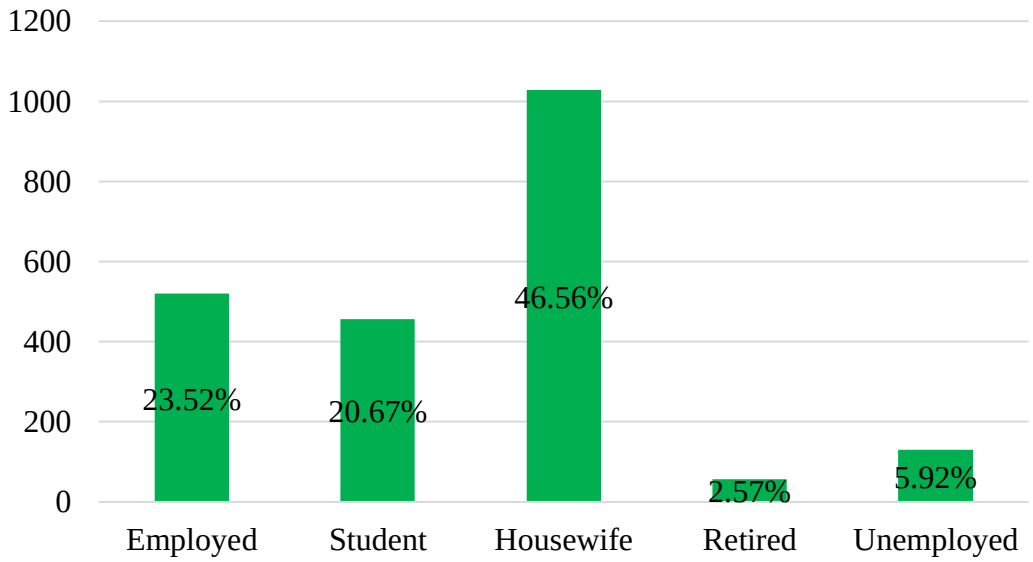
The majority of participants were women (61.80%) in our study area.

Figure 3: Distribution of Study Participants based on Educational qualification (n=2210)



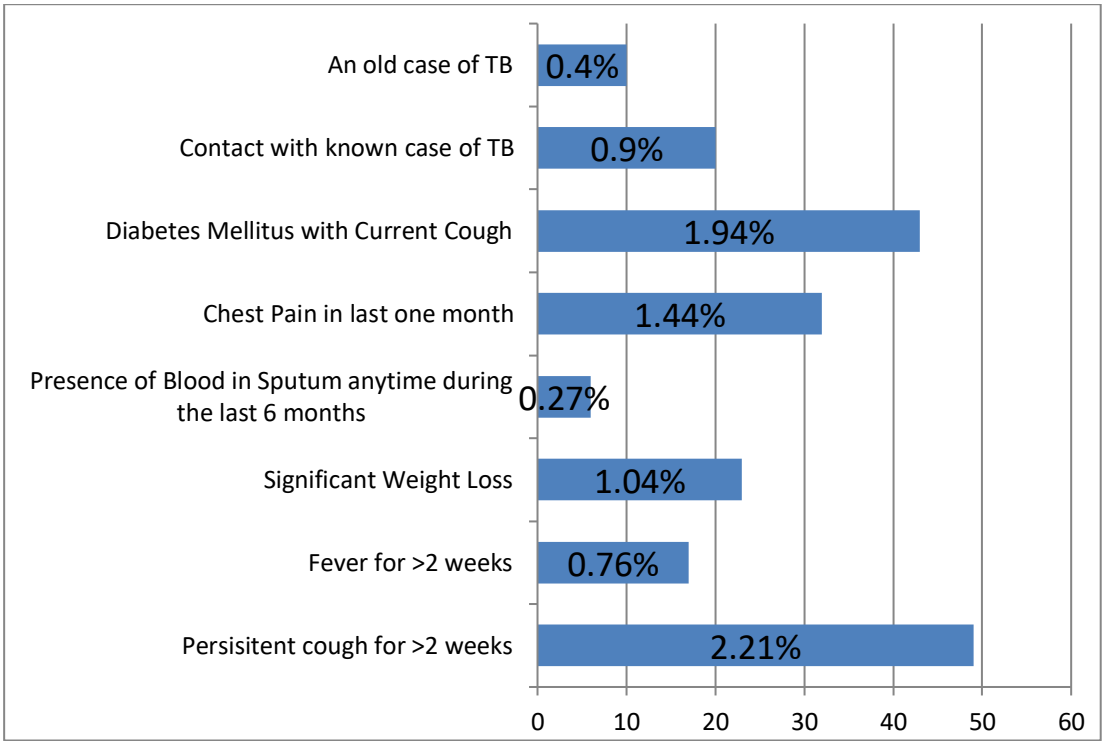
The maximum number of participants has studied up to Middle school (32.80%)

Figure 4: Distribution of Study participants based on Occupation (n=2210)



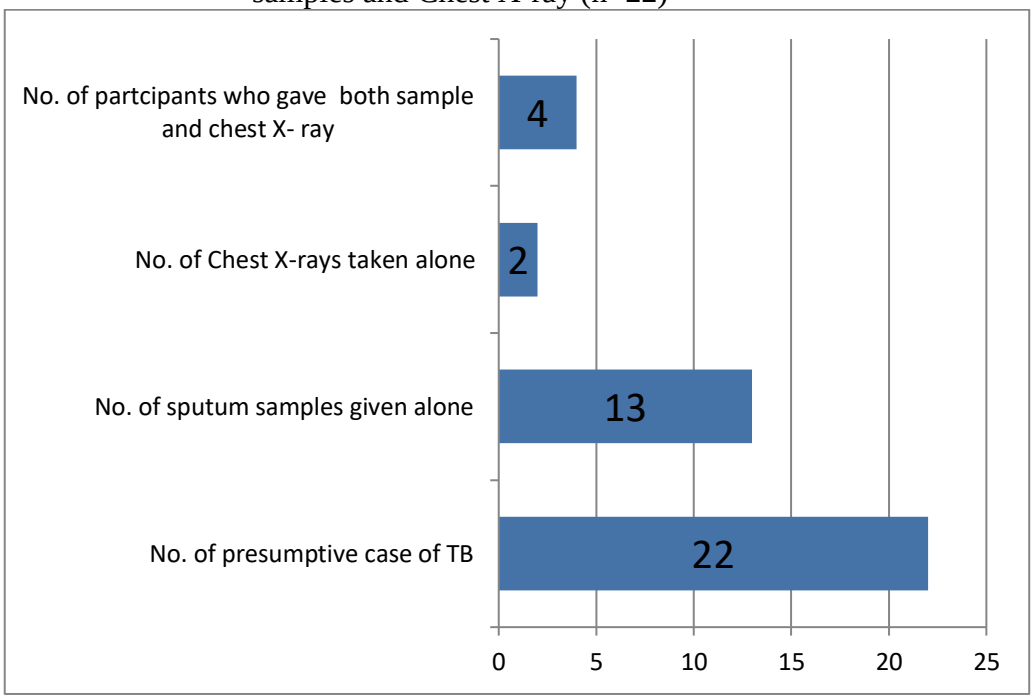
The majority of participants interviewed were housewives (46.56%)

Figure 5: Distribution of criteria to identify cases of presumptive TB (n=2210)



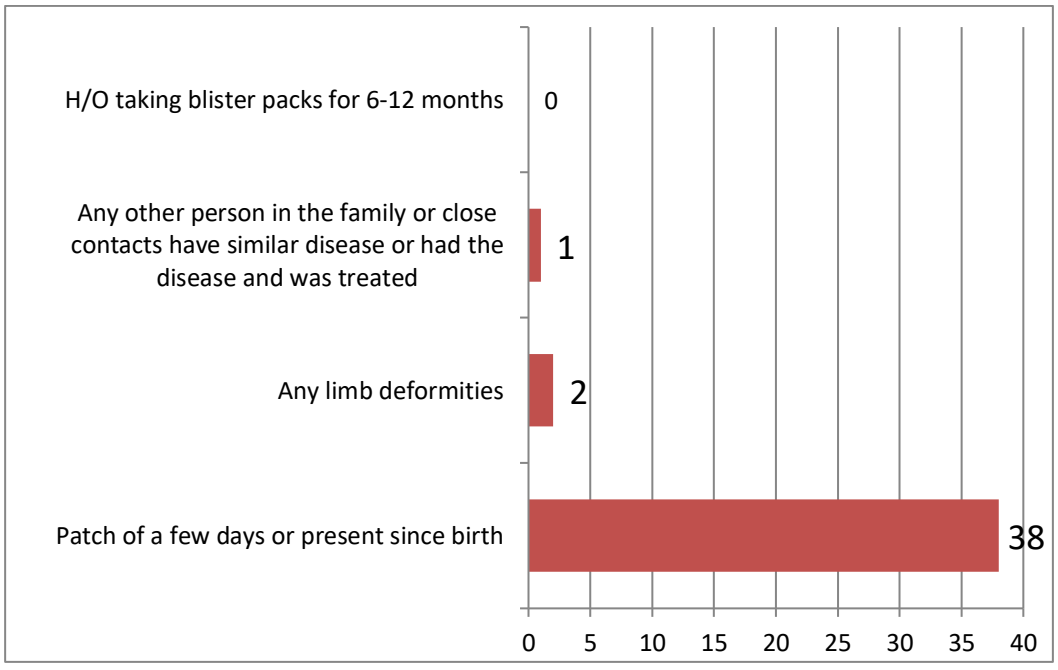
Persistent cough for more than 2 weeks and DM with current cough is the most commonly reported symptom among the study participants

Figure 6: Distribution of presumptive case of TB participants who gave sputum samples and Chest X-ray (n=22)



In the study area, there were 22 number of presumptive cases and of which 19 participants were motivated for chest X ray and also gave sputum sample for investigations.

Figure 7: Distribution of Study participants based on history suggestive of Leprosy (n=2210)



Majority of participants had skin lesions/ patch for a few days or present since birth

Table 1: Distribution of Study participants based on examination findings of Leprosy (n=2210)

On Examination	No. of participants
Presence of skin lesions/ hypo pigmented patch	47
Loss of Sensation over the lesion/ patch	2
Presence of infiltration under skin	9
No skin lesions	2163

Among 47 study participants who had skin lesion/ hypo pigmented patch, only two participants had loss of sensation over the patch.

Table 2: Distribution of Study participants based on examination findings of VMT (n=2210)

Voluntary Muscle Testing (VMT)	Strong	Weak	Paralysed
Facial Nerve	2209	0	1
Ulnar Nerve	2209	0	1
Median Nerve	2209	0	1
Radial Nerve	2209	0	1

Among study participants examined for Voluntary Muscle Testing (VMT) of individual nerves only one participant had paralysis of all the four nerves.

Our ROME posting study area was in Sulthanpet, Villianur town. Twenty two presumptive cases of TB were identified and out of which 19 participants were motivated for investigations (CB NAAT and Chest X ray). All the test results turned out to be negative for Tuberculosis.

Two leprosy cases where identified and out of which one participant was an old case of Leprosy and the other as Leprosy suspect.

Group-D

Results are organised as per the following headings:

1. Characteristics of the study participants
2. Characteristic of presumptive cases

Characteristics of the study participants

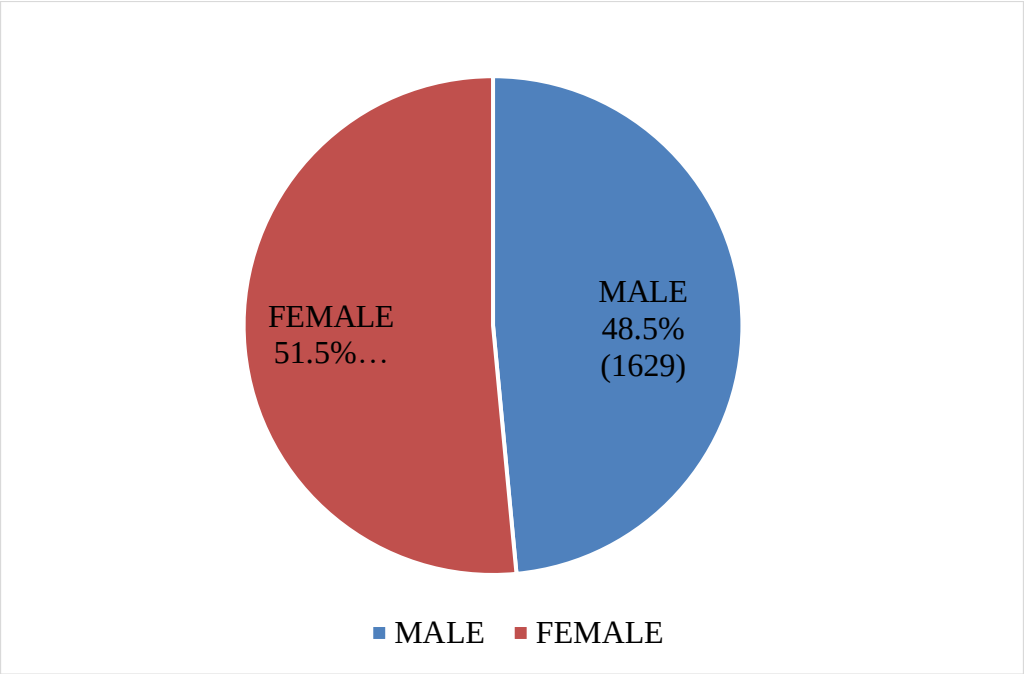
Totally 3368 people were surveyed from 1670 houses. Characteristics of these 3368 are given in the following tables:

Table 1. Distribution Of Study Participants Based On The Age Group

Age (in years)	Frequency	%
0-14	584	17.34
15-24	605	17.96
25-34	673	19.98
35-44	553	16.41
45-54	447	13.27
55-64	286	8.49
65-96	220	6.53
TOTAL	3368	100

Mean age of the participants: 29.1, Majority of the study participants were age group of 25-34 (19.98%).

Figure 1.Distribution of study participants based on gender



Male and female have represented equally with a slight preponderance of females

Figure 2.Distribution of study participants based on education

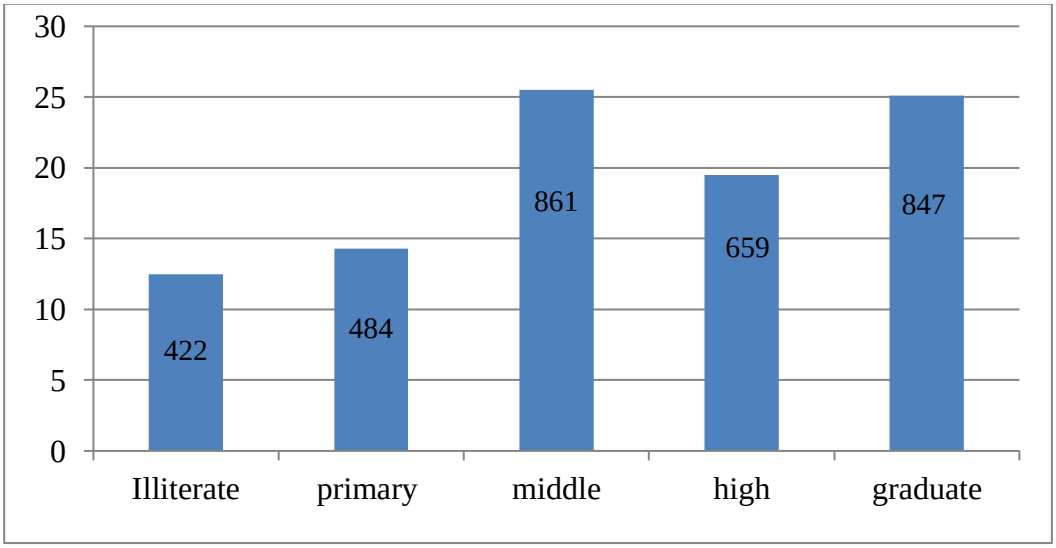
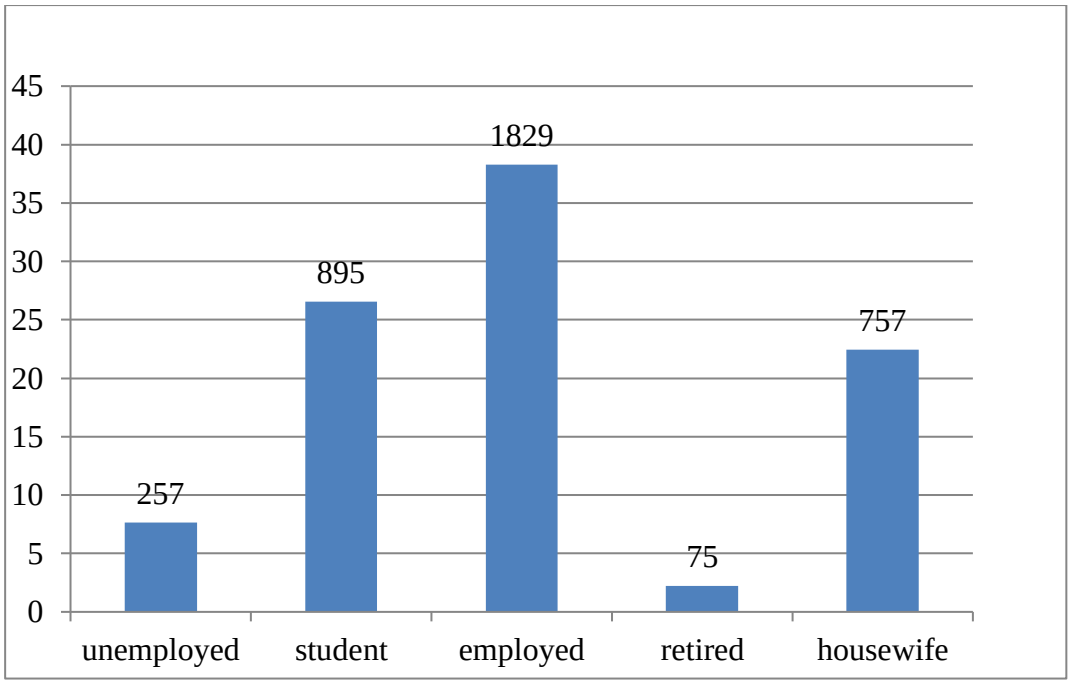


Figure 3. Distribution of study participants based on occupation



B .Characteristic of presumptive cases

Of the 3368 population surveyed, 40 cases were found to have at least one symptom suggestive of tuberculosis.

Table 2: Distribution Based on Investigations Done Among the Symptomatic

No of individuals screened	Frequency	%
No of presumptive TB cases identified	40	1.18
No of presumptive TB cases investigated	32	0.95
No of sputum examination done	32	100
Two Sputum samples	24	75
Single sputum sample	32	100
No. of Chest X -rays done	4	10
No. of CBNAAT investigations done	32	100

Table 3. Prevalence of Tuberculosis

TB cases identified	Frequency	Percentage
New Sputum positive	1	0.02
New Active lesion in X ray	0	0
Known cases of TB	8	0.023

Table 4. Distribution OF Presumptive cases based on age

Majority of presumptive cases belong to the age group of 45 -54

AGE (IN YEARS)	FREQUENCY	%
0-14	1	2.5
15-24	8	20
25-34	4	10
35-44	6	15
45-54	10	25
55-64	5	12.5
65-96	6	15
TOTAL	40	100

Figure 4. Distribution of presumptive cases based on education

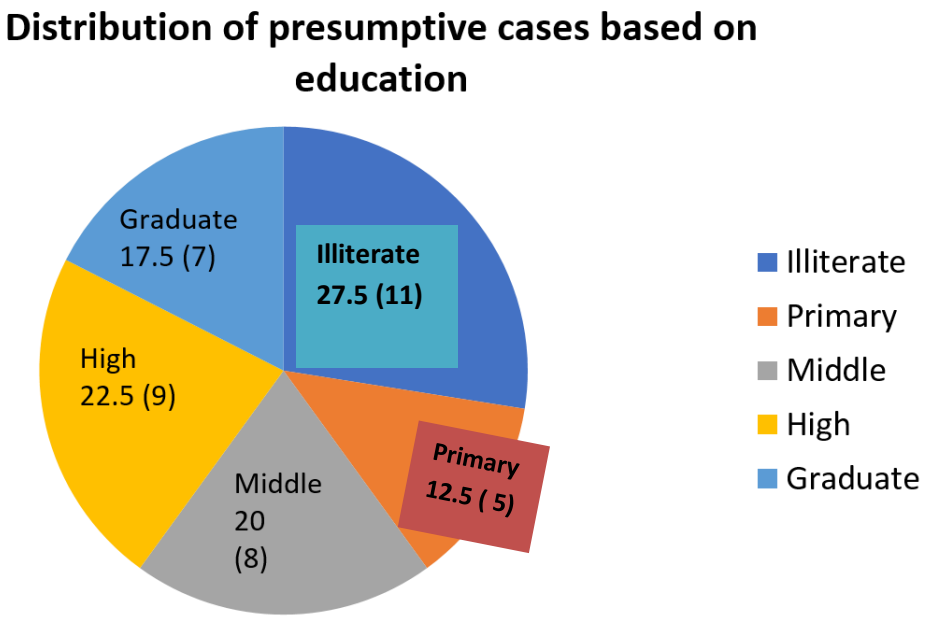
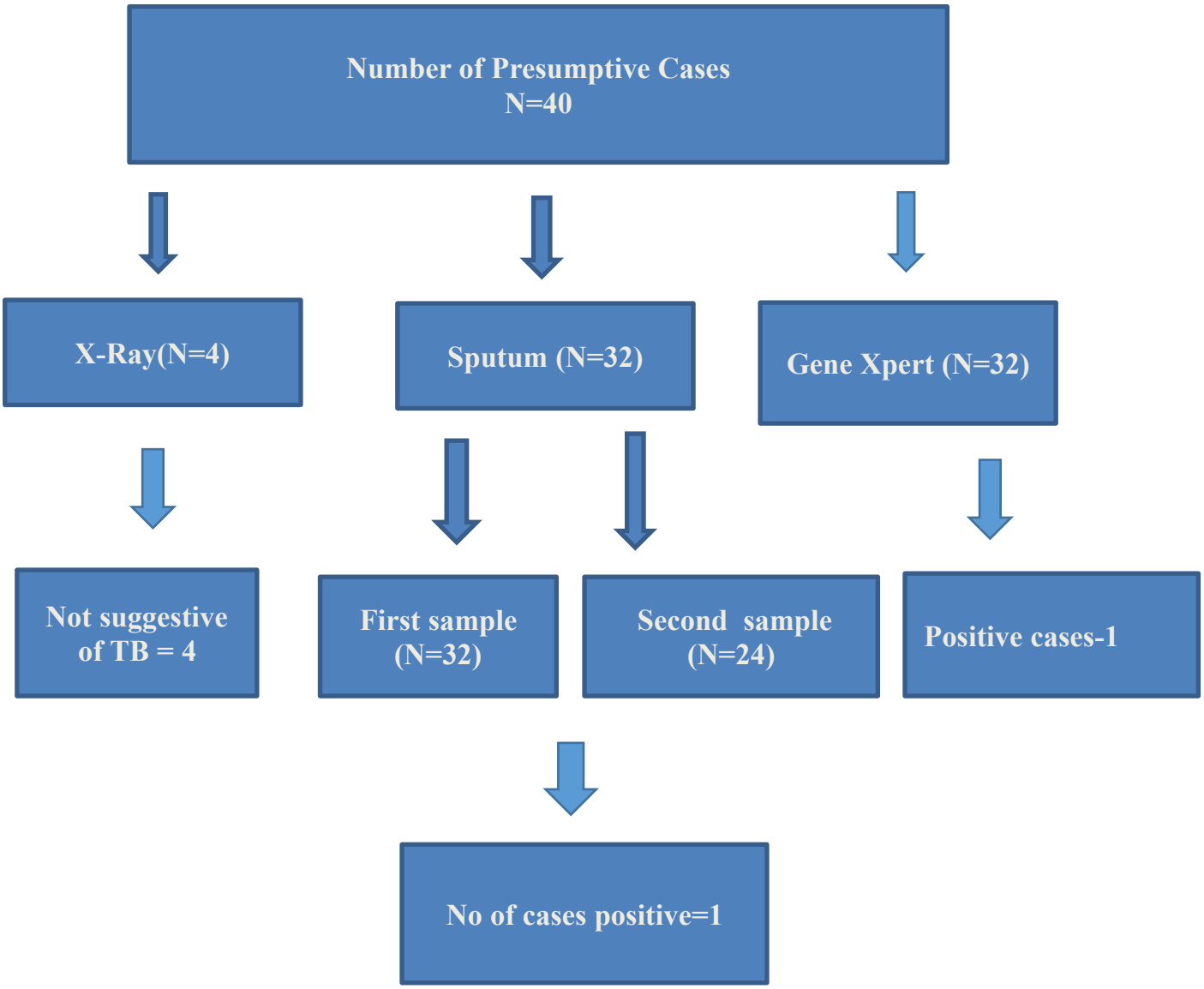


Table 5.Distribution of presumptive cases based on occupation

Occupation	Frequency	%
Unemployed	7	17.5
Housewife	6	15
Student	6	15
Employed	18	45
Retired	3	7.5
Not entered	0	0
Total	40	100

Flow chart: Investigations done for presumptive cases of TB



DISCUSSION

This community based activity of active case finding carried out from urban area of Puducherry had identified two new cases of Tuberculosis. With the current five tuberculosis cases the prevalence of Tuberculosis estimated was 0.106% which is equivalent to 106/one lakh population. Compared to the national figure estimated prevalence in the current study is less. This could be attributed to high socio economic status, better living conditions and easy access to health care facilities.

A cross sectional study was conducted in Rayagada district of Odisha from June 2011 to May 2013 in 20 designated microscopy centres. Out of 634 smear positive pulmonary TB patients enrolled in this study information on health seeking by the patients were available for 580 patients with symptoms suggestive of pulmonary TB. [40]

According to study conducted 27,714 Tibet refugees who was screened for symptoms of TB, 3800 persons were symptomatic. They were tested using chest radiography, sputum smear microscopy, culture and rapid diagnostic test. Out of which 96(2.5%) cases of TB were detected (prevalence 346 cases / 1 lakh persons). Of these cases 5% were MDR TB. The incidence of TB among Tibetan refugees has increased to 431 cases by 1 lakh persons in India, compared with 181 patients by 1 lakh persons in 2010. [41]

A population based case control study was conducted in rural south India in 2004-05 to investigate the extend to which smoking and or drinking can increase the incidence of pulmonary TB. A total of 1839 males and 870 females treated in 2000-03 by state TB clinics were interviewed at home above their education, smoking and drinking habits before the onset of the disease.[42]

A study was conducted among vulnerable community in two districts of Karnataka during July to December 2013. An intensified case finding intervention detected 658 sputum smear positive Tb cases. The number of smear positive cases detected increased by 88% related the pre-intervention period July-December 2012 in intervention communities as compared to an 8.6% decrease in community without the ACF intervention.[]

During the month of March 2013, a community based active screening for symptomatic of pulmonary TB was conducted in two selected urban slums of Puducherry, Tamilnadu, India. A house-to-house survey was conducted and informants were interviewed to obtain information on people aged 18 years and above with cough of any duration. Of 1,178 houses in two urban slums, which enumerated 3,564 adults (1695 males and 1,851 females) from 1,107 houses? 382 (10.8%)participants reported cough of any duration and 203 (5.7%) reported cough for 2 weeks duration. Of 152 participants who had cough for 2 weeks with sputum production, 66(43.4%) provided “spot” sputum samples and 51 (33.5%) provided both “spot” and “early morning” samples. Of 66 participants who provided atleast one sputum sample, three individuals were diagnosed as smear positive TB, of which two individuals had a smear grading of 3+. Of 3, participants, past history of TB was reported by 79(2.2%) individuals and

17(8.4%) among 203 were chest TB symptomatic. The study gives an idea on missing cases of tuberculosis could be identified in Pondicherry.[37]

As per study conducted between April 2013 and December 2014, 4.9 million households covering nearly 20 million people were visited. Of which 350,047 presumptive pulmonary TB cases (cough of 2 weeks) identified, 187,586 (54%) underwent sputum smear examination and 14,447 (8%) were found to be smear positive. Therefore, active case findings help in detection of large number of presumptive TB cases. This was implemented by the global fund-supported project Axshya among high risk group in 300 districts under National Tuberculosis programme.[38]

In our study among 6606 study participants, 0.8% was found to be presumptive cases of TB. Among them 0.015% were smear positive and 0.015% were x-ray positive. So totally 0.03% were positive for pulmonary TB.

Community based active screening for symptomatic of pulmonary TB was conducted (2013) in two selected urban slums of Pondicherry, India among 3564 adults, 0.08% were smear positive, 0.47% x ray positive and 7.5% were symptomatic which was in agreement with our study. As per study conducted between April 2013 and December 2014, 4.9 million households covering them 1.75% were presumptive TB AND 0.07% was smear positive which was similarly corresponding with our study.

When compared to other studies, the current study is different in terms of population studied and type of laboratory investigations performed among presumptive cases. The current study used the definition of cough for more than two weeks to identify presumptive cases where majority of the previous studies had used the cut off of three weeks duration cough. Similarly, in this study the primary diagnosis was based on sputum smear AFB. In case if the smear was negative or unable to expectorate, presumptive casesare referred for X-Ray. In other studies of active case finding projects the diagnosis was entirely based on sputum AFB.

Also the study differs by its target population involved. The current study involved all community members regardless of their age, living status and their co-morbidities. Other reported studies from the past literature had mainly focused vulnerable groups such as orphanages, slums, prisoners and construction workers

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Since, this study was carried out as an exclusive activity with the team 40 members for the whole month, the similar results cannot be expected in programmatic settings. On an average each presumptive case required three visits to counsel and make them understand the need for follow-up investigations.

In the current study, of the total smears 32 tested one found to be positive. The positive smear was observed the early morning second sputum sample. This emphasizes the need to stringently follow the second sputum and the yield of early morning sputum. This study has following strengths. The current study was conducted based on the recent guidelines suggested by RNTCP for active case finding with the help of ANM workers . Repeated visits were made to avoid the non-compliance for diagnosis for Tuberculosis among presumptive cases. Also, this is one of the very few studies which demonstrated the feasibility of active case finding in community based settings.

Yet, the study findings should be interpreted with caution considering the following limitations. The total household coverage was 43.57% . Despite of the repeated visits for locked houses they were unable to be covered.

LIMITATIONS

- Our study period was only for a month, so we were not able to motivate or follow up the presumptive tuberculosis cases for a longer period.
- Our survey did not include information regarding extra pulmonary tuberculosis

SUMMARY AND CONCLUSION

One of the strategies for TB elimination by 2025 adopted by Indian government is active case finding for tuberculosis (ACF) among vulnerable population. In Puducherry active case finding for TB was planned to implement with the help of medical colleges through STF mechanism Pondicherry Institute of Medical Sciences was assigned to conduct ACF in PHC areas of Pudunagar, Manaveli, Sultanpet, pitchaiveeranpet, periyapet, uthiravaginipet in villianur. This study was carried out in urban census enumeration block and areas of villianur. A total of 12494 individuals were covered during the survey. House to house visit was done and all individuals who were available were screened for symptoms suggestive of tuberculosis. 168 individuals were identified to be presumptive cases of tuberculosis that were further evaluated with sputum microscopy, chest x-ray and GENE xpert as per RNTCP ACF guidelines. Among the presumptive cases one individual turned out to be sputum positive. Others symptomatic were referred and treated by the chest physician at PIMS. Thus prevalence of tuberculosis in this study was found to be 1 case per 3.3 thousand population and new case yield is 0.3% case per thousand population. As a follow up action medical camp was conducted in the community with free medical screening and awareness program on tuberculosis. A school health program was also conducted in the area where free health check-up and awareness program on TB in the forms of health talk.

RECOMMENDATIONS

- All sputum smear negative patients should undergo chest X-ray so that smear negative pulmonary tuberculosis cases could be identified at the earlier stage.
- Presumptive TB cases should be followed up by the field staff for better management and treatment of the diagnosed cases.

INTERVENTION- SCHOOL HEALTH CAMP

Group – A

The ultimate goal of health education interventions is to positively influence health status, more proximal indicators of success are changes in intermediate outcomes, or impact. Because health education interventions work through intermediate outcomes, the linkage to health status is often assumed to be at a conceptual or theoretical level.

The term health education intervention strategy is a heuristic device used to conceptualize and organize a large variety of activities.

Our interventions were in school and camps that was organized to focus on individual and community. These interventions include multiple strategies that are typically the most effective in producing desired and lasting change by reaching large number of people as students are the future pillar of any country.

Evidence has shown that interventions create change by:

- Influencing individuals' knowledge, attitudes, beliefs and skills;
- Increasing social support; and
- Creating supportive environments, policies and resources.

For Community Health Education:

To inform the community about early signs and symptoms of the disease and the available for treatment in that area ,the nearby Government health facility ,first person to contact so that new cases are detected by voluntary presentation of suspected cases at the earliest and to inform the community about the effectiveness of the treatment, counteract the stigma and promote community integration of affected persons and their families.

School Health Education:

The messages were much more effective when the target groups(students) had a chance to express their opinions and interact. The students were asked question and was awarded with incentives so as to encourage them.

The School health intervention took place in Immaculate Heart of Mary's Boys and Girls school separately. The different kinds of health education interventions that was demonstration were Hand washing technique, Life style modification, Personal Hygiene, Sleep Hygiene, Health, LETS START, Cough etiquette, awareness about TB and Leprosy.

IMMACULATE BOYS SCHOOL

IMMACULATE GIRLS SCHOOL

We also elaborated on NEWSTART PROGRAM
N- NUTRITION
E- EXERCISE
W- WATER
S- SUNLIGHT
T- TEMPERANCE
A-AIR
R- REST
T- TRUST

SCHOOL HEALTH KANNUVAPET GOVERNMENT MIDDLE SCHOOL

Charts were also displayed in Medical camps in simple language with pictures depicting the symptoms of TB and Prevention.

Medical camps are conducted to carry out health promotion, education, and minor medical and preventive healthcare services. Only allopathic evidence-based medical practice was allowed. As an integral part of ROME postings 2019 our group conducted a medical camp at Pudhunagar,Odiyampet and Kombakkam with the help of postgraduates and faculties following the rules and regulations of drug inventory that included 423 patients. Out of them 20 of them were referred to PIMS for further follow up and 10 were brought to PIMS for further evaluation.

It provided us the opportunity to deliver quality health care services to the people in respective areas of survey on the same day and also to refer emergency cases to the nearby PHC.


2019-1-30 12:1


2019-1-30 12:


SUMO Gel
SUMO Gel

CAMP AT KOMBAKKAM

CAMP AT PUDHUNAGAR

GROUP –C

Students preparing for intervention and report writing

Pictures taken during practice session for role play

Intervention – Rally

Pamphlets

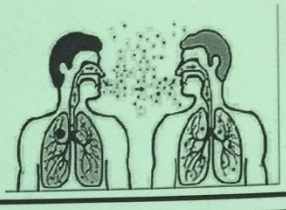
PONDICHERRY INSTITUTE OF MEDICAL SCIENCES

(A unit of Madras Medical Mission)
Kalapet, Puducherry
DEPARTEMENT OF COMMUNITY MEDICINE

தொழுநோய்

தொழுநோய் பரவும் விதம்

தொழுநோயாளி இருமும் போதும் தும்மும் போதும் தொழுநோய் கிருமிகள் பரவுகிறது

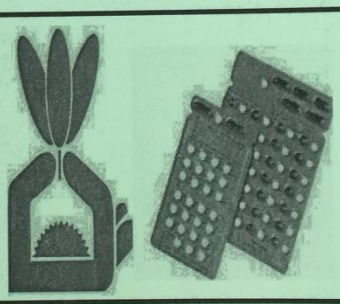


அறிகுறிகள்

- உணர்ச்சியற்ற வெளிர்ந்த அல்லது சிவந்த தேமல்
- தோல் அதிக மினுமினுப்புடன் காணப்படுதல்

சிகிச்சை

- 1 வருடம் தொடர்ந்து சிகிச்சை எடுத்துக்கொள்ள வேண்டும்
- அனைத்து ஆரம்ப சுகாதார நிலையங்களிலும் இலவசமாக சிகிச்சை பெறலாம்.



சிகிச்சை எடுத்துக்கொள்ள தவறினால்

- கை கால் விரல்கள் மடங்கி விடுதல்
- சிங்கமுகம் போன்ற தோற்றம் ஏற்படும்

தொழுநோய் உள்ளவரை ஒதுக்க வேண்டாம்

தொழுநோய் கண்டு பயம் வேண்டாம்

PONDICHERRY INSTITUTE OF MEDICAL SCIENCES

(A unit of Madras Medical Mission)

Kalapet, Puducherry

DEPARTMENT OF COMMUNITY MEDICINE

The Madras Medical Mission
"Reaching The Unreached"

காசநோய்

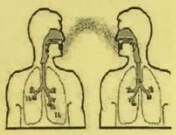
எடைகுறைவு சளியுடன்இரத்தம்வருதல் இரவில்வியர்வை

அறிகுறிகள்

- தொடர்ச்சியாக இரண்டுவார இருமல் மற்றும் மாலை நேர காய்ச்சல்
- நெஞ்சுவலி
- சளியுடன் கூடிய இரத்தம் வருதல்
- பசியின்மை, உடல் எடைகுறைவு

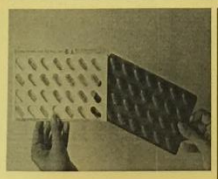
காசநோய் பரவும் விதம்

காசநோயாளி இருமும்போதும், தும்மும்போதும் காற்றின்மூலமாக கிருமிகள் பரவுகிறது.



காசநோயினை கண்டறியும் கருவிகள்

- இரண்டுமுறை சளிபரிசோதனை செய்யவேண்டும்
- *CB-NAAT* கருவி மூலம் மிக துல்லியமாக மற்றும் விரைவாக காசநோயை கண்டறியலாம்



- 6முதல் 8 மாதங்கள் தொடர்ந்து சிகிச்சை எடுத்துக் கொண்டால், காசநோயிலிருந்து முற்றிலும் குணமடையலாம்.
- அனைத்து ஆரம்ப சுகாதார நிலையங்களிலும் இலவசமாக சிகிச்சை பெறலாம்.

UNITE TO END TB

ஒன்றுபடுவோம்
ஒழிப்போம்
காசநோயை

IEC charts

School health education – Health Talk


RAAK
INTERNATIONAL HR. SEC. SCHOOL

Role play


RAAK
INTERNATIONAL HR. SEC. SCHOOL

Interaction with the school students

Group – D

We, a group of 20 members under guidance of Dr.Newton Raj and Dr.Vinoth went Government primary school, Periyapet, Villianur organized a health camp in school .There are nearly 39 students from class I to class V.

We gave them health education on symptoms of TB & LEPROSY and how to approach if they have symptoms and emphasized more on prevention of this disease.

We showed them in the form of charts.

We were divided into small groups to each class and examined for hypo\ hyper pigmented patches and other symptoms of leprosy.

Along with that we also looked for any symptoms of TB and gave awareness about the disease

We thank the school headmaster for granting permission to create awareness among school students

SCHOOL HEALTH CAMP – INTERVENTION


அரசு ஆரம்பப் பள்ளி
GOVT PRIMARY SCHOOL
VILLIANUR PET.


READING CORNER
English
Utensils

TRIBAL HEALTH INITIATIVE

Tribal hospital in the tribal village of Sittilingi nestled in the foot hills of kalrayan and sitteri hill ranges of Dharmapuri district

Dr Regi George and Dr LalithaRegi at Tribal Health Initiative, a hospital that provides quality healthcare at an affordable rate to the tribal population of Sittilingi village in rural Tamil Nadu

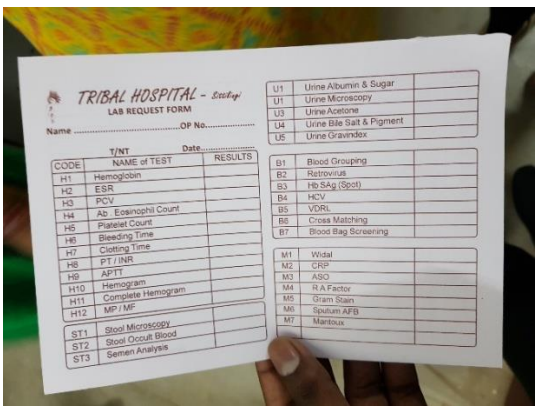
The documentary ‘THE SITTILINGI EXPERIMENT’ played to the students of PIMS of batch 16-17 during their visit to the tribal hospital in sittilingi, of Dharmapuri district

The Nursing superintendMrs.Prema of the Tribal hospital explaining the students about the day to day activities of the hospital.

The ward and the medicine storage rooms at the Tribal Hospital at Sittlingi

The Intensive Care Unit at the Tribal Hospital

The Laboratories present at the Tribal Hospital where all the technicians are local people.



TRIBAL HOSPITAL - Kishtwar

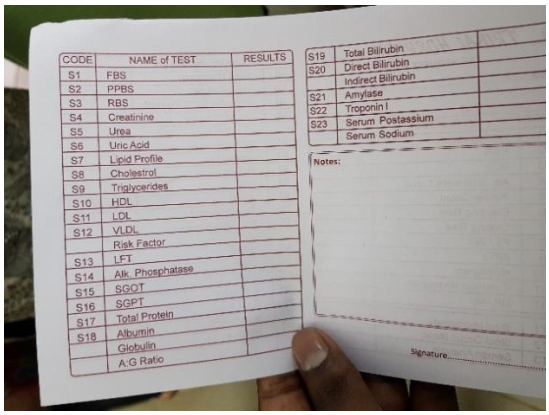
LAB REQUEST FORM

Name .....OP No.....

T/NT Date.....

CODE	NAME of TEST	RESULTS
H1	Hemoglobin	
H2	ESR	
H3	PCV	
H4	Ab Eosinophil Count	
H5	Platelet Count	
H6	Bleeding Time	
H7	Clotting Time	
H8	PT / INR	
H9	APTT	
H10	Hemogram	
H11	Complete Hemogram	
H12	MP / MF	
ST1	Stool Microscopy	
ST2	Stool Occult Blood	
ST3	Semen Analysis	

U1	Urine Albumin & Sugar	
U1	Urine Microscopy	
U3	Urine Acetone	
U4	Urine Bile Salt & Pigment	
U5	Urine Gravindex	
B1	Blood Grouping	
B2	Retrovirus	
B3	Hb SAg (Spot)	
B4	HCV	
B5	VDRL	
B6	Cross Matching	
B7	Blood Bag Screening	
M1	Widal	
M2	CRP	
M3	ASO	
M4	R A Factor	
M5	Gram Stain	
M6	Sputum AFB	
M7	Mantoux	



CODE	NAME of TEST	RESULTS
S1	FBS	
S2	PPBS	
S3	RBS	
S4	Creatinine	
S5	Urea	
S6	Uric Acid	
S7	Lipid Profile	
S8	Cholestrol	
S9	Triglycerides	
S10	HDL	
S11	LDL	
S12	VLDL	
	Risk Factor	
S13	LFT	
S14	Alk. Phosphatase	
S15	SGOT	
S16	SGPT	
S17	Total Protein	
S18	Albumin	
	Globulin	
	A:G Ratio	

S19	Total Bilirubin	
S20	Direct Bilirubin	
	Indirect Bilirubin	
S21	Amylase	
S22	Troponin I	
S23	Serum Postassium	
	Serum Sodium	

Notes:

Signature

The Request form of the Hospital for Laboratory services.

The Operation Theatre at the Tribal Hospital

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DEPT. OF COMMUNITY MEDICINE
Re-Orientation of Medical Examination (ROME)- 2019

Puducherry

Roll No. **Date:**

A. General information:

1	Name of Participant: Age: Gender: Education: Occupation: Monthly income:	 Male/ Female/ Others Illiterate/ Primary/Middle/High school/ Graduate Employed/Student/ Housewife/ Retired/Unemployed Rs:
2	House/ Door no.	
3	Street Name	
4	Area	
5	Ward	
6	Contact no.	
7	Pin the location (GIS):	Latitude& Longitude co-ordinates

B	History of Leprosy:	Tick
1	A patch of a few days/ present since birth	
2	Any deformity of limbs	
3	Any other person in the family or close contacts having similar disease or had the disease and was treated	
4	H/O taking blister packs for 6-12 months	
5	None of the above	

C	On examination:			
1	Is there a patch/ skin lesion?	Yes		No
2	Number of skin lesion –	1-5		6 and above
3	Color of the skin lesion –	Hypo pigmented patch		erythematous
4	Loss of sensation over the skin lesion	Yes		No
5	Take a photograph of the identified finding	Photo 1		Photo 2
6	Presence of infiltration (thickened, shiny, erythematous skin / nodule)	Yes		No
7	Tenderness on gentle tapping of ulnar, lateral popliteal and posterior tibial nerve	Yes		No
8	Voluntary Muscle Testing (VMT)	Strong (S)	Weak (W)	Paralysed (P)

	Facial nerve Ulnar nerve Median nerve Radial nerve Lateral popliteal nerve			
7	Sensory test Sole Palm	Present		Absent

D	History suggestive of anemia:	Tick
1	Easy fatigability	
2	Weakness	
3	Palpitation	
4	Shortness of breath	
5	Pica	
6	Passage of worms in stools	
7	Iron supplementation/ iron infusion	
8	Blood transfusion	
9	None of the above	

E. Pallor on examination: Present/ Absent

F. Is the participant K/C/O COPD/ Asthma? – Yes / No
G. Is the participant K/C/O Liver /kidney disease? – Yes / No

I. Criteria for presumptive TB: (Select the options)

1. Persistent cough for ≥2 weeks
2. Fever for ≥2 weeks
3. Significant weight loss (>5% weight loss over last 3 months)
4. Presence of blood in sputum any time during last 6 months
5. Chest pain in last one month
6. Diabetes Mellitus with current cough
7. Contact with K/C/O TB
8. Old case of TB
9. Is the Patient a case of presumptive TB: Yes/ No, If Yes, proceed

J.	Symptoms related to TB	Write no of days
1	Cough	
2	Fever	
3	Weight loss	
4	Hemoptysis	
5	Chest pain	

K. Does the participant belong to any of the mentioned target population?

Target Population:

1. Not applicable
2. Prison inmate
3. Tribal Population
4. Old Age home
5. Construction worker
6. Night Shelter
7. Refugee camp
8. Homeless
9. Street children
10. Orphanage/Asylum

Target Population:

11. NACO identified HRG for HIV
12. Smoker
13. Slum
14. Diabetes mellitus
15. Coastal
16. Healthcare worker
17. Mine/ quarry worker
18. Is the participant on palliative care / bed ridden
19. Alcoholic

L	History related to TB:	Yes	No
1	Did you consult a doctor for above symptoms?		
2	History of taking ATT in the past?		
3	If yes, outcome of the treatment: Cured / Treatment completed/ Loss to follow up/ Treatment failure		
4	History of taking ATT at present?		
5	Place of diagnosis:	Govt	Private
6	How long has it been after treatment? < 1 year/ 1-2 years/ > 2 years		
7	Any other relevant information (specify)		

M. Investigations & Findings:

Investigation	Status	Result
Sputum 1	Given/ Not given/ NA	Negative/ 1+/ 2+/ 3+/ Scanty/ Indeterminate
Sputum 2	Given/ Not given/ NA	Negative/ 1+/ 2+/ 3+/ Scanty/ Indeterminate
Chest X Ray	Done/ Not done /NA	Positive finding/ Negative finding
Gene Xpert	Done/ Not done /NA	Detected/ Not detected Rifampicin/ I Not sensitive