# Situational Analysis of Household Contact Screening & Chemoprophylaxis under Revised Tuberculosis control Programme in District Bandipora of Division Kashmir, J&K.

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**ABSTRACT:** India is the highest TB burden country in the world accounting for nearly one fifth (20%) of global burden of tuberculosis. WHO in 2013 reported that the detected proportion of incident global tuberculosis (TB) cases is below the WHO Target of 70% and that the contact screening of close contacts is irregularly followed. The study aimed to assess, the extent of implementation of screening of all household contacts of pulmonary tuberculosis patients & the coverage of INH prophylaxis in their child contacts <6 years. 192 close contacts of 30 index cases were identified. 49.4 % of close household contacts aged >6 years had been counseled for screening. Out of these only 20% had gone for sputum smear microscopy on getting symptomatic. 25% of the close contacts were <6 years of age.  None of the children <6 years, had been evaluated for tuberculosis or put on INH prophylaxis. 5.5% of the close contacts screened, were positive for tuberculosis. The study also shows that 3.6% of close contacts had past history of tuberculosis with a mean time of 23 months before the time of diagnosis of index case. This provides a strong recommendation for contact screening not only during the time period for which index case is on DOTS but for two years following the diagnosis of index case.

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## INTRODUCTION:

India is the highest TB burden country in the world and accounts for nearly one fifth (20%) of global burden of tuberculosis [1]. In India today, two deaths occur every three minutes from tuberculosis but these deaths are preventable. Besides the direct effects of disease like mortality caused by it, effects of the disease on the society and economy are also enormous, For example a patient of tuberculosis takes an average of three to four months to recuperate and losses that much income, condition becoming more disastrous for those who are already poor. More than 100,000 women with TB are abandoned by their families every year[2]. The Government of India (GoI) in 1993 developed the Revised National Tuberculosis Control Programme (RNTCP) based on the internationally recommended Directly Observed Treatment – Short course (DOTS) strategy. The programme has been functional in the entire country from March 2006. Directly Observed Treatment Short course (DOTS) is a strategy for ensuring high cure rates in patients with tuberculosis. DOT provider if accessible and acceptable to patient and accountable to health system, can play a significant role in reducing TB burden of country.

WHO in 2013[3] reported that the detected proportion of incident global tuberculosis (TB) cases is below the WHO Target of 70%. Added to it is the fact that despite RNTCP recommendations of contact screening of close contacts, it is irregularly followed. The effect of these results is a heavy TB burden in the society. Fox GJ, Barry SE et al[4] have in their study shown that despite the contact investigation being a priority in tuberculosis control programmes in high burden and resource deplete areas contact screenig for TB is often not performed due to high workload & costs.

Young children living in close contact with a case of smear-positive pulmonary TB (PTB) are at higher risk of *Mycobacterium tuberculosis* infection and TB disease [5]. The World Health Organization (WHO) recommends screening household contacts of an infectious source case to identify children with TB disease, and enable their prompt treatment, and to provide children who do not have TB disease with Isoniazid Preventive Treatment (IPT). In India Revised National Tuberculosis Control Programme recommends all household contacts of sputum smear positive pulmonary tuberculosis (PTB) patients to be screened for TB disease[6] and also advocates chemoprophylaxis[7] for asymptomatic children aged <6 years who are household contacts of smear-positive pulmonary tuberculosis (PTB) patients, but such implementation is suboptimal as is evident from Rekha B[8] et all that shows only 19% coverage of the contact tracing & chemoprophylaxis for children. Madhavi Pothukuchi et al [9] in their study have shown that of the total contacts, only 67.5% contacts were screened for TB disease although 84% of them were on IPT . Out of the 97 children who were initiated on IPT, 83 (85.5%) children were consuming Isoniazid tablets regularly as outlined under the programme.

## OBJECTIVES:

1. To assess the extent of implementation of contact screening of all household contacts of pulmonary tuberculosis patients.
2. To assess the coverage of INH prophylaxis in children <6 years of sputum positive patients.

## METHODOLOGY:

A cross-sectional study was conducted in District Bandipora of Kashmir Division (J&K). The district has 01 Tuberculosis Unit (TU) at SDH Bandipora & 4 Designated Microscopy Centers (DMC) at SDH Bandipora, CHC Hajin, CHC Sumbal & PHC Gurez.

**STUDY PERIOD:** May 2014 to November 2014

For the purpose of study all new pulmonary tuberculosis patients; diagnosed & put on DOTS in the two quarters preceding the commencement of study viz. last quarter of 2013 & first quarter of 2014 were identified from TB registers of the respective DMCs. Information regarding the address & telephone numbers was collected from the same.

Home visits were made to the identified index cases. Local help was sought from TBHV/DOTS provider. Wherever TBHV/DOTS provider was unavailable help was sought from local subcenter of the area for identification of the index case as subcenters act as DOTS center in far flung areas. In case of non-availability of both, index case was called for proper address & nearby milestone was utilized to reach the index case.

All the close household contacts of index case were interviewed for socio-demographic particulars, contact screening and information was collected on semi-structured questionnaire. In case of children or non-availibility of contact, family head was asked information regarding the counseling for screening and practices undertaken for that particular contact. The source that had provided knowledge about screening was also asked for. Close contact was defined as a person who shared atleast 4 hours in enclosed space with the index case. In addition attempt was made to identify High risk individuals for tuberculosis amongst the close contacts. High risk individual was identified as having one or more of the following: diabetic, HIV positive, pregnant, on steroids/other immunosupressants, cancer, and chidren less than 6 years of age.

As an attempt to see for the additional factors favouring tuberculosis transmission in the family, the index case house was examined in detail for presence of overcrowding, poor ventilation & indoor pollution.

Overcrowding in the house was determined on the bases of number of rooms per person [11] as

1 room= 2 persons
2 rooms= 3 persons
3 rooms= 5 persons
4 rooms= 7 persons
5 or more rooms= 10 persons(add 2 for each further room).
Ventilation was determined by window & door ratio in relation to floor space. Window area of a living room should be $1/5^{th}$ of floor area. Doors & windows combined should have $2/5^{th}$ of the floor area [10] Indoor pollution in the kitchen was based upon the presence/ absence of separate kitchen with a smoke vent.

Socio-economic stratification was done on the basis of per capita income per month.(B.G.Prasad 2010)

Class I: 3288 & >
Class II: 3287 -1644
Class III: 1643-986
Class IV: 985-493
Class V: <492

Each close contact was asked about tuberculosis suggestive symptoms before/during the study period. They were further counseled for screening in case of tuberculosis suggestive symptoms occurring during the treatment or follow up following cure of the index case. Children <6 years of age were referred to the nearest health facility with available pediatrician for evaluation of active TB & further management on INH if found negative for active tuberculosis.

Approval was sought from the Institution ethical committee & informed written consent was taken from the subjects.

**RESULTS:** Bandipora TU had 38 registered patients in the last quarter of 2013 & first quarter of 2014, 18 were from DMC Bandipora, 4 from DMC Sumbal, 5 from DMC Hajin & none from PHC Gurez. In addition to these cases there were Transfer – In cases that were 3 in Bandipora, 4 in Sumbal & 4 in Hajin. Of these 38 index cases, 30 (79%)were included in the study, the rest of cases were not identified due to lack of proper address or contact number.

**TABLE 1: TUBERCULOSIS PATIENTS REGISTERED IN TU BANDIPORA (LAST QUARTER 2013 & FIRST QUARTER 2014)**

| Category | Number | Percentage |
|---|---|---|
| Category 1 | | |
| a)  NSPT | 33 | 70.2 |
| b)  NSN | 5 | 10.6 |
| c)  NEP | 7 | 14.8 |
| Category 2 | 2 | 4.2 |
| TOTAL | 47 | 100 |

Majority of cases registered with TU Bandipora, were that of pulmonary tuberculosis (80.8%) out of which new sputum positive tuberculosis were 70.2% whereas new sputum negative were 10.6%.

Of the index pulmonary TB cases majority were in the productive age group of 19-29 years (30%) followed by age group of 10-19 years (26.6%) and geriatric age group of > 60 years (16.6%). Females were 53.3% and males were 46.6%. 56.6% of the studied tuberculosis cases were unmarried. Majority of the patients under study were educated till middle class (33.3%), 16.6% were educated till primary level & only 3.3% were illiterate. Of all the studied patients majority were House maker, Retired government employee, Student, Skilled workers as electrician, carpet weaver, farmer, carpenter. Only 9.9 % were government or self employed, whereas 13.3% were unemployed. Of the 30 studied pulmonary tuberculosis patients 90% cases had a positive sputum smear. Majority (85.2%) of the NSP TB patients had scanty smear results followed by 1+ in 11.1%, 2+ in 3.7% & none had 3+ smear result.

Of the studied cases, 23.3% belonged to class III & Class V each, where as 20% of the cases belonged to Class I & Class IV. Overcrowding was present in

66.6% of the studied cases. Ventilation was found to adequate in 63.3% of the studied cases. Indoor air pollution in kitchens was absent due to presence of smoke vent in 70% of the studied cases.

The close contacts of pulmonary tuberculosis under study, were 192 out of which 26.5% were in age group of 10-19 years, 19.2% in age group of 19-29 years, 14% in age group of <10 years whereas 9.8% were in geriatric age group. 25% of the close contacts were <6 years of age. Close contacts as per gender were in equal weightage (50% each). 40% of the close contacts were illiterate, 21% had primary level education, 13% were matriculate followed by 11.9% who were middle class level of education.

**TABLE 2:HIGH-RISK AMONGST CLOSE-CONTACTS (N=192)**

| HIGH-RISK | Number | Total |
|-----------|--------|-------|
| Yes | 16 | 8.3 |
| No | 176 | 91.7 |
| TOTAL | 192 | 100 |

Of all the close contacts 49.4% had been counseled & made aware about the importance of contact screening.

**TABLE 3: SOURCE WHO DID THE COUNSELLING FOR CONTACT SCREENING IN CLOSE-CONTACTS AGED >6 YEARS   (N=89)**

| COUNSELLOR | Number | Percentage |
|------------|--------|-----------|
| Medical Officer TC | 44 | 49.4 |
| ANM | 9 | 10.1 |
| TBHV | 11 | 12.3 |
| DOTS provider | 6 | 8.4 |
| Laboratory Technician | 15 | 16.8 |
| TOTAL | 89 | 100 |

**TABLE 4: LAG-TIME FROM DIAGNOSIS OF INDEX CASE TO CONTACT-SCREENING OF SYMPTOMATIC CLOSE-CONTACTS IN CLOSE-CONTACTS AGED >6 YEARS (N=36)**

| LAG-TIME | Number | Percentage |
|----------|--------|-----------|
| <3 months | 21 | 58.3 |
| 3-6 months | 15 | 41.6 |
| 6-9 months | 0 | 0 |
| 9-12 months | 0 | 0 |
| ≥ 12 months | 0 | 0 |
| TOTAL | 36 | 100 |

3.6% of the close contacts had past history of tuberculosis with a mean time of 23 months before the time of diagnosis of index case. Only one of these contacts had extrapulmonary tuberculosis. Majority (42.8%) of these were in age of 10-19 & 39-49 years age group.

**DISCUSSION:**

The study shows that 49.4 % of close household contacts aged >6 years had been counseled for screening. Out of these only 20% had gone for sputum smear microscopy on getting the symptoms. None of the children <6 years had been evaluated for tuberculosis or put on INH prophylaxis. Thuy Hoang Thi Thanh et al[12] in their study have also shown that contact screening is done almost in 10% of the household contacts & just 5.5% in children less than 5 years of age. They pointed out that the passive method of screening employed wherein a contact on getting symptomatic seeks medical help on their own initiative. This becomes inadequate considering the fact that study done by Reider HL[13] shows that upto 22% of the contacts in high prevalence countries have TB. The finding

calls for more active form of screening in the form of Latent TB infection

Furthermore our study reveals that 5.5% of the close contacts screened were positive for tuberculosis. Loredo et al[14] has also reported 2.7% prevalence of TB cases among respiratory symptomatic patients who sought care in a primary Health center. An important finding from the study was that 3.6% of close contacts had past history of tuberculosis with a mean time of 23 months before the time of diagnosis of index case. In wake of such important revelations there is a need for more vigorous counseling for contact screening of close-contacts of index cases of tuberculosis. Several studies[4,15] have shown that the highest proportion of TB cases occurring amongst the contacts was detected in first two years after exposure. Another study done by G Guwatudde, M Nakakeeto, EC Jones-Lopez et al[16] have shown that 4.2% of the contacts had co-prevalent tuberculosis & 2.1% had incident tuberculosis. These secondary cases presented often with minimal disease because of which their median time of diagnosis was 16 months from that of the index case. The risk for secondary tuberculosis was greater among young children than adults.

The findings provide a strong recommendation for general awareness amongst close contacts for screening not only during the time period for which index case is on DOTS but for two years following the diagnosis of index case.

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