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EXTENDED CONTACT TRACING: CAN BE AN IMPORTANT TOOL IN TUBERCULOSIS ELIMINATION, MINIMISING THE DISEASES TRANSMISSION- A STUDY PROTOCOL.

Community Medicine

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ABSTRACT

Background: Tuberculosis an infection with M. tuberculosis bacilli and once infected, symptomatic disease does not develop immediately but is highest in first and second year after infection and gradually decreases thereafter. The objectives of this study would be to assess the impact of extended contact tracing in minimising the diseases transmission in PTB and to estimate the average time required to detect active cases from contacts.

Methods: A prospective cohort design will be used in which all contacts of new and recurrent index cases with a diagnosis of PTB will be enrolled for the study over a period of six period and followed for two years.

Anticipated Impact: Finding will contribute to the evidence of impact of extended contact tracing in minimising diseases transmission in PTB and also the average time required to detect active cases from contacts of an index case.

KEYWORDS

Tuberculosis, Extended Contact tracing, TB Elimination.

BACKGROUND

Tuberculosis (TB) is infection with M. tuberculosis bacilli, suspended as tiny droplet nuclei, expelled by infectious individuals and inhaled by those sharing the same air. Risk factors for acquiring infection as a result of such exposure include the closeness of contact to the index case, severity of illness and the duration of exposure [1]. Contacts of TB are at high risk of getting either active TB or TB infection, which depends on source of infection, type of contact and environmental [2]. It is estimated that about 2–3 persons are infected by a smear positive case before its detection in developed countries, as against 4–5 persons in the developing countries because of higher number of close contacts [3]. Studies revealed that contacts of a tuberculosis patient are 10 to 60 times at higher risk to have the disease than the general population, and about 10-14% of all notified cases have been detected by contact tracing [3]. Once an individual is infected with M. tuberculosis, symptomatic disease does not develop immediately because of the varied incubation period , which may be from weeks to months or even years. Although the risk of developing TB is highest in the first and second year after infection, gradually decreasing thereafter[4]. Upto 10% of immunocompetent adults develop active TB in first year after infection, and the risk falls sharply thereafter, although there still remains persistent small risk of reactivation, throughout life (10%) and an infected individuals can develop signs and symptoms of active TB over a lifetime. In majority of immunocompetent contacts infection is either eliminated or it goes into in latent state[5]. The risk of progression to active TB infection is increased by HIV infection, immunosuppression (e.g. high steroid doses, cancer chemotherapy, tumour necrosis factor-alpha blockade or even poorly controlled diabetes mellitus)[6]. So the classical distinction between 'latent' and 'active' TB may not apply as rigidly as once would think. Thus, passive case finding for detection of active TB disease among symptomatic patients who present to medical services for diagnosis of symptoms must be augmented by more active methods. Even in asymptomatic persons there may be mild symptoms, but neither patient himself nor clinicians usually recognize these as indicative of TB. Thus classic symptom screening and sputum smear microscopy although effective tools for diagnosis of advanced TB disease, they are less useful as public health tools for reducing the infectious burden in the community through detection of prevalent infectious cases. Without actively finding prevalent cases in the community, it is not possible to reduce the burden of TB transmission substantially, as mostly the transmission is likely to occur before individuals with active TB actually seek medical care. All over the World, Household and Casual Contacts of sputum smear positive pulmonary TB Patient are considered high-risk group of being infected with TB[7,8]. Risk Group is any group of population in which the prevalence or incidence of TB is significantly higher than in the general population. To prevent and control tuberculosis, screening of these high-risk population is widely recommended[9].

As per the Global TB report 2017 the estimated incidence of TB in India was approximately 28,00,000 accounting for about one fourth of the world's TB cases. National Strategic Plan (NSP) 2017-25 for TB Elimination is a bold and ambitious framework that provides guidance for the activities of stakeholders including the National and State Governments, Development Partners, Civil Society Organizations, International Agencies, Research Institutions, Private Sector, and many others working in relevance to TB elimination in India[10]. The NSP proposes bold strategies with commensurate resources to rapidly decline TB incidence and mortality in India by 2025, five years ahead of the global End TB targets under Sustainable Development Goals to attain the vision of a TB-free India by achieving a rapid decline in burden of TB, morbidity and mortality while working towards elimination of TB in India by 2025.[10] If we have to achieve this ambitious target we need to think out of box and extended contact tracing of index cases both household and casual contacts for a longer period of time seems to be the game changer. Active Case Finding (ACF) or Intensive case finding activity (ICF) by contact tracing is basically a provider initiated activity with the primary objective of detecting TB cases early by active case finding in targeted groups and to initiate treatment promptly. It can target people who anyway have sought health care with or without symptoms or signs of TB and also people who do not seek care.

Contact tracing process is used to stop the spread of many different infections in the community and involves finding and informing the target people that an infected person who has been in contact with to get counselling, testing and treatment if needed. The present status of exposure to Tubercular bacilli in people who have had recent contact with an index case, diagnosed with active TB. One usually needs to have very close day-to-day contact with someone who has the TB disease to breathe in the bacteria. Contact tracing will help to identify if someone in the community has TB and is not aware of it. They can then be treated and stop the spread of infection and more importantly minimise the transmission time of diseases. There has no clear cut guidelines for the period of follow up of these contacts from RNTCP and most of the contacts after initial screening are not followed up for the development of the signs and symptoms

RESEARCH QUESTION:

Can extended contact tracing be used as a tool for active case finding and minimising the disease transmission in Pulmonary Tuberculosis?

AIMS:

To shorten the exposure of the newly developed pulmonary tuberculosis patients to the community for minimal transmission of disease.

To develop an effective tool for active case finding of Pulmonary tuberculosis.

OBJECTIVES:

PRIMARY:

To assess the impact of extended contact tracing in minimising the diseases transmission in pulmonary tuberculosis.

SECONDARY:
To estimate the average time required to detect active cases from contacts of an index case of pulmonary tuberculosis.

METHODS AND MATERIALS:

STUDY DESIGN:-
Longitudinal cohort study.

STUDY POPULATION:-
New and recurrent Index Cases of Pulmonary Tuberculosis and their Close, Household and Casual Contacts

PROCEDURE:-
In this study all household and casual contacts of new and recurrent index cases with a diagnosis of pulmonary TB will be identified and enrolled for the study over the period of six period. On identification of TB contacts, a history will be taken including prior BCG vaccination. Presumptive cases will be investigated as per RNTCP 2016 guidelines. In case of negative results contacts will be followed for a period of two years. Contacts will be contacted telephonically on monthly basis for first year and bimonthly during second year for development of symptoms and this information will be noted in pre-structured proforma having two Annexures. Physical examination will be done at baseline, after 3 months, 6 months, 12 months, 18 months and 2 years. Counselling about the development and reporting of the symptoms will be done at the baseline in all contacts. In case of contacts developing symptoms during this period a thorough investigations as per RNTCP guidelines will be done irrespective of the timing of the follow up[11].

STUDY PERIOD:-
Data will be collected for the period of two and a half year. During first six months all index cases along with their contacts will be recruited for the study and later will be followed for a minimum period of two years (extended contact tracing).

INCLUSION CRITERIA:-
1. Microbiologically confirmed (New & Recurrent TB) Index Pulmonary tuberculosis (P-TB) Cases.
2. Household and casual Contacts of same Index P-TB Cases.

EXCLUSION CRITERIA:-
1. Those index P-TB Cases, who were not the permanent residents of the geographical area of selected TB Unit.
2. Contacts with less than 6 years of age who will be put on INH prophylaxis as per guidelines.

OPERATIONAL DEFINITIONS:-

Close contacts:- is a cumulative total exposure to a Microbiologically positive case of TB exceeding 8 hours within a restricted area as close contacts[12].

Household contact:- A person who shared the same enclosed living space for one or more nights or for frequent or extended periods during the day with the index case[13] .

Casual contact:- A person who is not in the household but shared an enclosed space, such as a social gathering, workplace or facility, for extended periods in a day with the index case[14].
All persons who were in close contact as explained above with the index case from the period he first explored signs and symptoms, will be labelled as contacts.

STATISTICAL ANALYSIS:
The data will be analysed using both descriptive and Statistical Package for the Social Sciences (SPSS).

ETHICAL ISSUES:
All respondent will be informed about the purpose of the study and their written informed consent will be obtained before the interview or information will be kept anonymous and confidential.

PROFORMA Annexure I

S No.	Index case	Treatment Category	Contact No.	Residence	Age	Sex	Occupation	Close Contact	Period of Contact	Relationship with I.C	Residence	Age	Sex	Occupation
1								1. 2. 3. 4.						
								Household Contact						
								1. 2. 3. 4. 5. 6.						
								Casual Contact						
								1. 2. 3. 4.						

PROFORMA Annexure II

S No.	Close Contact	Contact No.	GE 1	GE 2	GE 3	GE 4	Ge 5	GE 6	TC 1	TC 2	TC 3	TC 4	TC 5	TC 6	TC 7	TC 8	TC 9	TC 10	TC 11	TC 12	TC 13	TC 14	TC 15	TC 16	TC 17	TC 18
1	1. 2. 3. 4.																									
	Household Contact																									
	1. 2. 3. 4. 5. 6.																									

	Casual Contact																								
	1. 2. 3. 4.																								

Whereas, GE is General physical examination and TC is Telephonic call

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