

*Research Paper*

## **Prevalence of Tuberculosis amongst Close Family Contacts of Tuberculosis Patients in Urban Population of Pune City**

**Rahul R. Bogam<sup>1,\*</sup> and Sunil M. Sagare<sup>1</sup>**

<sup>1</sup> Department of Community Medicine, Bharati Vidyapeeth Deemed University Medical College, Pune, India

\* Corresponding author, e-mail: (rhl\_bogam@yahoo.co.in)

(Received: 3-1-14; Accepted: 14-2-14)

---

**Abstract:** *India accounts for nearly one fifth of global problem of tuberculosis. Everyday more than 20,000 people become infected with TB bacilli. The risk of TB transmission increases with the closeness of contact, overcrowded living conditions, and the degree of infectiousness of a TB case. The present study was conducted to estimate the prevalence of tuberculosis among close family members of TB patients who were registered under RNTCP at one of Tuberculosis Units of Pune City. A Cross Sectional Study, carried out in one of the tuberculosis units (TUs) of Pune Municipal Corporation, Pune. All 861 tuberculosis patients who had been registered at this unit during period of 1<sup>st</sup> January 2007 to 31<sup>st</sup> December 2007 under RNTCP were included as study participants. All family members were clinically evaluated. Information about clinical evaluation was filled up in respective proforma. Traceable study participants in present study were 284 including expired participants. However the information regarding family history of tuberculosis could be elicited in 237 study participants only. The point prevalence of tuberculosis amongst contacts was found to be 1.05 per 100 family contacts. (Male: 0.41, Female: 0.64). In present study, prevalence of TB amongst household contacts was found to be less.*

**Keywords:** Family Contacts, Prevalence, Pune City, RNTCP, Tuberculosis.

---

## **1. Introduction:**

India accounts for nearly one fifth of global problem of tuberculosis. Everyday more than 20,000 people become infected with TB bacilli. Almost two people die of every three minutes in our country. (K.Park, 2013).

The risk of TB transmission increases with the closeness of contact, overcrowded living conditions, and the degree of infectiousness of a TB case as determined by the positivity of sputum smear microscopy of acid-fast bacilli (AFB) and degree of lung field involvement in the chest X-ray. (Rina Triasih et al., 2012).

Various studies conducted among close family contacts have proved that there is a greater risk to those who remain in contact with the patients with pulmonary tuberculosis. Therefore there is strong need to provide targeted interventions, especially for those who are at risk. Screening of household contacts, which has been prioritized in industrialized countries, merits serious consideration as a means to interrupt transmission of tuberculosis in high-burden settings. (I. G. Sia et al., 2010).

The present study was undertaken to estimate the prevalence of tuberculosis among close family members of TB patients who were registered under RNTCP at one of Tuberculosis Units of Pune City.

## **2. Material and Methods:**

The present study was Cross Sectional Study, carried out in one of the tuberculosis units (TUs) of Pune Municipal Corporation, Pune. All 861 tuberculosis patients who had been registered at this unit during period of 1<sup>st</sup> January 2007 to 31<sup>st</sup> December 2007 under RNTCP were included as study participants. All registered TB patients less than 15 years of age were excluded from study.

A list of participants during specified period was obtained from Tuberculosis Register (TB Register) maintained at respective Tuberculosis Unit. Information about their name, age, sex, address, initial sputum smear result, treatment category, date of start of treatment, sputum smear result during and at the end of their treatment and outcome was collected from the tuberculosis register maintained at TU. All participants along with their addresses were approached by door-to-door visit with the help of Social Workers and stake holders of communities. Informed consent was taken from participants as well as their close family members who were willing to participate in the study.

Relevant information about participants and their family members like sociodemographic characteristics, present complaints and its duration, past history and family history pertaining to tuberculosis was noted in pretested and predesigned proforma.

All family members were clinically evaluated. Information about clinical evaluation was filled up in respective proforma.

The data was collected and statistical analysis was done by using Microsoft Office Excel Sheet.

## **3. Results and Discussion:**

Present study included all 861 TB patients who had been registered during the period of 1<sup>st</sup> January 2007 to 31<sup>st</sup> December 2007 under RNTCP.

Out of 861 participants, 553(64.23%) were males and 308(35.77%) were females. Category wise distribution of study participants revealed that 746 (86.64%) participants belonged to category I, 103(11.97%) belonged to category II and only 12(1.39%) participants were from category III.

Traceable study participants in present study were 284 including expired participants. However the information regarding family history of tuberculosis could be elicited in 237 study participants only.

Following table represents the distribution of those 237 participants regarding family history of tuberculosis.

**Table 1:** Distribution of study participants as per family history

Sr. No.	Family history of TB	Study Participants					
		Male		female		Total	
		No	(%)	No	(%)	No	(%)
1.	Present	04	(1.69)	06	(2.53)	10	(4.22)
2.	Absent	147	(62.03)	80	(33.76)	227	(95.78)
		<b>151</b>	<b>(63.71)</b>	<b>86</b>	<b>(36.29)</b>	<b>237</b>	<b>(100)</b>

The total family members of traced out participants were 954. The point prevalence of tuberculosis amongst contacts was found to be 1.05 per 100 family contacts. (Male: 0.41, Female: 0.64). Out of 284 participants traced out, 10(4.22%) showed evidence of tuberculosis amongst their family members. They were asymptomatic at the time of examination. One interesting finding in present study was that more female family members were affected from tuberculosis than male members. Amongst 10 family members, 9 belonged to pulmonary category and were declared as 'Cured' while 1 member was from extra pulmonary category and was included in 'Treatment Completed' category. The present study findings again reiterate the need for screening of contacts of smear positive patients for tuberculosis irrespective of the duration of symptoms.

The same has been supported by V.K.Dhingra et al. who mentioned that, following notification of case of tuberculosis, appropriate contact procedures should be initiated with the aim of identifying other cases of tuberculosis. As against the present study findings, he reported high prevalence of tuberculosis i.e.7.6% among contacts reported from New Delhi Tuberculosis Center.

Remarkably high prevalence of TB disease amongst household contacts i.e.3.7%, 5% and12.8% was reported in studies of Antonio Carlos Lemos et al., Janina Morrison et al. and I. G. Sia et al. respectively.

#### 4. Conclusion:

In present study, prevalence of TB amongst household contacts was found to be less. This could be attributed to certain factors like contact tracing is being carried out as a routine activity in many tuberculosis centers and strengthening Advocacy, Communication and Social Mobilization (ACSM) component of RNTCP by various agencies.

#### Acknowledgements

We heartily acknowledge the cooperation and support of Dr. Narendra Thakur, City tuberculosis Officer, Pune Municipal Corporation, Dr. Chougule S.G., Medical Officer (RNTCP) and Dr. Medha Bargage, Associate Professor, Department of Pulmonary Medicine, Bharati Vidyapeeth Deemed University Medical College and Hospital, Pune.

#### References

- [1] A.C. Lemos et al, Risk of tuberculosis among household contacts in Salvador, Bahia, *The Brazilian Journal of Infectious Diseases*, 8(2004), 424-30.
- [2] J. Morrison et al, Tuberculosis and latent tuberculosis infection in close contacts of people with pulmonary tuberculosis in low-income and middle-income countries: A systematic review and meta-analysis, *Lancet Infect Dis*, 8(2008), 359-68.

- [3] I.G. Sia et al, Tuberculosis attributed to household contacts in the Philippines, *Int J Tuberc Lung Dis*, 14(2010), 122-25.
- [4] K. Park, Textbook of Preventive and Social Medicine (22<sup>nd</sup> Edition), Banarsidas Bhanot Publishers, Jabalpur, 2013.
- [5] R. Triasih, M. Rutherford, T. Lestari, A. Utarini, C.F. Robertson and S.M. Graham, Contact investigation of children exposed to tuberculosis in South East Asia: A systematic review, *Journal of Tropical Medicine*, 2012(2012), 1-6.
- [6] V.K. Dhingra et al, Tuberculosis trend among household contacts of TB patients, *Indian Journal of Community Medicine*, 1(2004), 44-48.