Original Research Paper

Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Factors Influencing the Effectiveness of Current Contact Tracing Practice Under Revised National Tuberculosis Control Programme in Kashmir

Medical Science

KEYWORDS : Household contacts; Contact tracing; Pulmonary Tuberculosis

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ABSTRACT

BACKGROUND: Present study was conducted to find out the influence of factors affecting the detection of active Pulmonary TB cases among household contacts of Index Pulmonary TB patients. METHODS: Initial counselling and repeated counselling of Index cases regarding contact screening was done by MO-TCs and Paramedical staff. Contact register was maintained at TU-level with all demographic record of household contacts. Laboratory registers were consulted for recording contact screening activities by sputum microscopy RESULTS: Out of total 593 eligible household contacts of 141 Index cases, 129 (21.75%) reported to DMCs for sputum test and total 7 (1.18%) co-prevalent cases were diagnosed. Majority of demographic characteristics of household contacts and sources of referral of household contacts to DMCs were found statistically significantly influencing the effectiveness of current practice of contact tracing under RNTCP.CONCLUSION: At TB-Unit level, RNTCP functions should be assigned as fulltime job responsibility of MO-TC so that contact tracing and other activities does not suffer adversely by various factors.

INTRODUCTION

Tuberculosis (TB) affects the *lungs* in more than 80% of cases. This form of the disease is called *pulmonary tuberculosis*. Pulmonary tuberculosis is an infectious disease. This means that people living with or coming in close contact with a patient who has infectious tuberculosis (in particular, smear-positive) can catch the infection. Therefore, it is very important to identify suspects who have symptoms of tuberculosis early in the course of the disease and ensure their examination.[1]

India accounts for nearly one-third of the global burden of tuberculosis. Nearly 40 percent of the Indian population is infected with the TB bacillus.[2] Contact tracing and examination have traditionally been undertaken to find associated cases of tuberculosis.[3]

Although in many countries, the National TB Control Programmes recommend contact screening and IPT, in particular for children under 6 years of age, preventive treatment of children often is not accorded high priority and is not generally viewed as an essential element of TB control activities. There is limited information on the implementation of this component of NTP activities in the field and the operational challenges associated with its implementation in different countries have not been widely investigated.[4]

As per India's Revised National Tuberculosis Control Programme (RNTCP) guidelines, all household contacts of sputum smear positive pulmonary tuberculosis (PTB) patients are to be screened for TB disease. In the absence of active TB disease, contacts aged less than 6 years are eligible for 6 months of daily IPT (with 5 mgs INH per Kg body weight per day).[5]

Present study is about the factors which are influencing the effectiveness of current contact tracing procedures under RNTCP for identifying cases of tuberculosis disease among household contacts of age ≥10 years.

METHOD AND MATERIALS

The study was conducted in two randomly selected TB Units i.e., TU Shopian from southern and TU Uri from northern Kashmir. Index cases of sputum smear positive Pulmonary TB and their attendants, enrolled for study from January to December 2014, were provided counselling regarding importance and current available facilities for household contact screening under RNTCP.As per the information obtained from interview of index case/attendant, complete list of household contacts along with their demographic characteristics was recorded in contact register of TB Units maintained specially for the purpose of present study. Information regarding the uptake of advice to undergo sputum testing to rule out active pulmonary TB among household contacts was obtained from TB register of DMCs of concerned TB-Unit during follow up period of initial six months of treatment of index case. Permanent resident index cases (including *transfer-in cases)* of selected TB Units, and their household contact person of age ≥ 10 years were included in present study. Data was entered and analysed using "Epi-Info-7" software.

Table.1-Characteristics of household contacts influencing the uptake of the advice* of undergoing for Sputum testing to rule out presence of active tuberculosis.

Characteristics	Compliance by Household contacts (N=593)		Statistical Significance
	Yes [N=129 (21.75%)]	No [N=464 (78.25%)]	
Gender			
Male	52 (17.28%)	249 (82.72%)	$\chi^2 = 7.20$; df = 1 p = 0.0072
Female	77 (26.73%)	215 (73.63%)	
Age group (years)			
10 - 20	28 (14.21%)	169 (85.79%)	$\chi^2 = 12.51$ df = 3 p = 0.0058
21 - 40	63 (28.51%)	158 (71.49%)	
41 - 60	30 (21.58%)	109 (78.42%)	
>60	8 (22.22%)	28 (77.78%)	
Education			
Illiterate	45 (25.57%)	131 (74.43%)	$\chi^2 = 2.854$ df = 3 p = 0.41460
Literate and till 5th standard	11 (16.42%)	56 (83.58%)	
6th to 10th standard	46 (21.30%)	170 (78.70%)	
11th standard or above	27 (20.15%)	107 (79.85%)	
Occupation			
Home maker, Unemployed, Old age (>60 Years)	69 (30.14%)	160 (69.86%)	$\chi^2 = 21.95$ df = 4 p = 0.0002
Agricultural, non-agricultural & Skilled workers	22 (26.51%)	61 (73.49%)	
Student	26 (13.98%)	160 (86.02%)	
Business	2 (9.52%)	19 (90.48%)	
Govt./ Private service	10 (13.51%)	64 (86.49%)	
Relationship with Index case			

Spouse (Husband or Wife)	23 (27.06%)	62 (72.94%)	$\chi^2 = 20.37$ df = 9 p =0.0157
Father	3 (5.66%)	50 (94.34%)	
Mother	18 (33.96%)	35 (66.04%)	
Brother	8 (12.9%)	54 (87.10%)	
Sister	8 (25.81%)	23 (74.19%)	
Son	27 (23.83%)	87 (76.32%)	
Daughter	10 (20.83%)	38 (79.17%)	
Grand-child	9 (15.79%)	48 (84.21%)	
Daughter In-law	12 (22.22%)	42 (77.78%)	
**Other relationship	11 (30.56%)	25 (69.44%)	

* Advise was provided to households contacts through counselling of index cases (and attendant) at the time their registration on DOTS
** The complete list of "other relationship" include: Other In-laws- I. Father In-law (5); ii. Mother In-law (15); iii. Brother In-law (9); iv. Sister In-law (23); v. Grand Daughter In-law (3); vi. Son In-law (3
Others- I. Grand-parent (7); ii. Uncle (2); iii. Aunt (3); iv. Cousin (3); v. Nephew (4); vi. Niece (2); vii. Servant (2)

RESULTS

Total 141 Index cases and their 593 eligible household contacts were enrolled in present study. Overall 129 (21.75%) household contacts participated for their sputum test and total 7 (1.18%) household contacts were diagnosed as suffering from sputum smear positive Pulmonary TB during the follow up period of initial six months TABLE.1-shows the influence of Characteristics of household contacts on the uptake of the *advice* of undergoing for Sputum testing. TABLE.2-reveals - comparison between TB Units regarding "sources of referral" of household contacts to DMCs *with advice to undergo 'sputum specimen test'* and TABLE. 3-shows -the effect of source of referral on detection of sputum smear positive cases among household contacts.

Table. 2- Comparison between TB Units regarding "sources of referral" of household contacts to DMCs with advice to undergo 'sputum specimen test'

TB-Unit	Sources of referral*		Statistical Significance
	MO-TC of TB Unit	Paramedical staff#	
Shopian (N=67)	24 (35.82%)	43 (64.18%)	$\chi^2 = 9.0672$ df = 1 p = 0.0026
Uri ** (N=62)	8 (12.90%)	54 (87.10%)	
TOTAL (N=129)	32 (24.48%)	97 (75.19%)	

*Source of information Laboratory register of DMCs
Senior treatment supervisors (STS) and DOTS Providers
** In TU Uri, the "in-charge MO-TU" is basically Block Medical Officer-Uri during the period of study.

Table. 3- Effect of source of referral on detection of sputum smear positive cases among household contacts.

Source of referral*	Result of Sputum Microscopy*		Statistical Significance
	Positive	Negative	
MO-TC of TB Unit (N=32)	4 (12.50%)	28 (87.50%)	$\chi^2 = 4.1493$ df = 1 p = 0.0416
Paramedical staff# (N=97)	3 (3.09%)	94 (96.91%)	
TOTAL (N=129)	7 (5.43%)**	122 (94.57%)	

*Source of information Laboratory register of DMCs
Senior treatment supervisors (STS) and DOTS Providers
** This was case detection rate among those household contacts who complied for their sputum testing whereas the overall case detection rate among all eligible household contacts was found 1.18% only.

DISCUSSION

This study is one of the few studies conducted in connection with implementation of contact screening under RNTCP. Like previous studies conducted elsewhere and in India, the study findings show sub-optimal implementation of contact screening.[6-7] There appears to be a lack of importance given the implementation of these activities under the National Tuberculosis Control Programmes even though it is one of the most cost effective approaches to prevent childhood TB disease, especially in resource limited settings.[8] Overall 1.18% detection of prevalent P-TB among household contacts during six month follow up period is an indicator of inadequate contact tracing mechanism because there is evidence from *a systematic review and meta-analysis study*, (commissioned for a World Health Organization Expert Panel) on contact investigation for tuberculosis that in ***95 studies from low- and middle-income settings***, the prevalence of active TB in all contacts was found 3.1% (95% CI 2.2–4.4%, $I^2 = 599.4\%$).[9]

In present study we found that contact tracing at TB-Unit level is suffering adversely because the TB Units, despite being fundamental units under RNTCP are being headed by medical officers as their additional charge in addition to their routine duties in the hospitals. In some TB Units situation further deteriorate where the charge of Medical officer-Tuberculosis Control (MO-TC) has been assigned to overburden Block Medical Officers. Remedial actions are necessary to implement contact tracing policy of RNTCP in whole country in letter and spirit so that more cases of infectious TB can be diagnosed and treated early to prevent and control spread of Pulmonary TB. There is also need to develop alternate more effective strategies for contact tracing including intensified case finding among household contacts under RNTCP.

CONCLUSION

Contact tracing under routine programmatic conditions is sub-optimal as majority of eligible household contacts were not subjected to screening in Kashmir under RNTCP. There is need that instead of additional charge, full time MO-TC should be appointed at TU headquarter so that all functions under RNTCP, including contact tracing may be performed effectively. By effective mechanisms all identified factors adversely affecting the contact tracing at present can be addressed by adequate utilisation of resources of RNTCP including laboratory consumables.

ACKNOWLEDGEMENT

The author acknowledge *the permission* to conduct present study from the State Tuberculosis Officer Kashmir and *co-operation* from the RNTCP staff in concerned TB-Units.

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