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Original Research Paper

Community Medicine

SCREENING FOR PULMONARY TUBERCULOSIS IN AN URBAN SLUM POPULATION OF THRISSUR DISTRICT, KERALA, INDIA

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ABSTRACT

Introduction: Tuberculosis continues to be a public health problem in India with an estimated incidence figure of 2.2 million cases of TB for India out of a global incidence of 9 million. The WHO recommends active case finding strategies to be conducted among targeted high-risk groups including urban slum dwellers. **Methodology:** A cross-sectional house-to-house survey was conducted in March 2016 using a pretested validated questionnaire. Individuals having productive cough for two or more weeks were identified as suspects for PTB and were given sputum cups and were instructed regarding sputum collection. Two sputum samples were collected including one early morning sample. The samples were tested for presence of acid fast bacilli using ZN stain at the district TB centre. **Results:** The total number of study subjects was 392. The mean age was 42.23 ± 21.57yrs.Twelve subjects were identified as TB suspects and two sputum samples were collected and tested at District TB Centre, but all were found to be negative for the presence of Mycobacterium Tuberculosis bacteriae. **Conclusion:** The screening for TB cases which we undertook did not find to be cost effective. From our experience at the field, we conclude mass screening is expensive and has uncertain benefits. Therefore, it should be avoided.

KEYWORDS :

Introduction

The global prevalence of Tuberculosis (TB) and death rates from the disease are steadily declining .[1]The scaling up of high-quality diagnosis and treatment of TB have greatly contributed to these reductions by improving cure rates and reducing case–fatality rates .[2]Still, in 2011,8.7 million people developed TB and 1.4 million people died from the disease. Moreover, the estimated global incidence of TB is declining slowly, by less than 2% per year. To reach the TB elimination target of less than 1 case/1000000 population in 2050, the incidence needs to decline by 20% per year.[1]

Tuberculosis continues to be a public health problem in India with an estimated incidence figure of 2.2 million cases of TB for India out of a global incidence of 9 million.[1] The estimated TB prevalence figure for 2014 is given as 2.5 million. It is estimated that about 40% of the Indian population is infected with TB bacteria, the vast majority of whom have latent rather than active TB.

During the nationwide tuberculin survey in 2000–2003, higher rates of TB transmission were observed in urban than in rural areas.[3,4] In urban areas, transmission was higher in slum areas.[4]This may be related to a combination of factors, such as poor living conditions, lack of awareness about TB disease, higher incidence of TB and the availability and utilisation pattern of health services.

DOTS strategy is entirely based on passive case finding which is often influenced to a great extent by the treatment seeking behaviour of the patients suffering from active TB, social stigmatization, access to health service and even diagnostic delay at health facility.[5] This in turn results in decreased TB case detection with underestimated number of actual TB cases prevailing in the community. Delay in the diagnosis of these open TB cases can results in transmission of TB among the contacts of the active TB cases and more likely to fuel its transmission in the community apart from increased morbidity and mortality.[6]

The WHO recommends enhanced case finding strategies to be conducted among targeted high-risk groups, such as healthcare workers, HIV-positive individuals, miners, urban slum dwellers, diabetic patients, smokers, prisoners, immigrants and contacts of TB patients. Though ECF has been shown to have proven efficacy through mathematical modeling, quality data does not exist for the evaluation of the impact of its implementation on a larger scale.

The study area comes under the field practice area of urban health centre of Amala Institute of Medical Sciences. The prevalence of TB disease in this area is found to be 1.5% in the previous year.Slums are high risk areas for PTB spread and there is limited treatment seeking behaviour among the slum population .In this background, this study was done so that TB suspects may be identified by means of active case finding and to create an awareness regarding PTB and its spread.

Methodology

The study was conducted at a densely populated low income urban slum (Variyam lane) in Thrissur district of Kerala, India. This cross-sectional house-to-house survey was conducted in March 2016. The survey was conducted with the help and support of district TB centre and the local govt health system.

Trained investigators visited each of the households in the slum area. Individuals not present at the household during the first house visit were attempted to be included on at least one subsequent visit. The individuals were screened for TB symptoms including cough for two weeks or more, unintentional weight loss, fever, night sweats or haemoptysis etc. Simple pretested standardized questionnaires were used. Those with pulmonary symptoms were interviewed in the local language at their homes .The socio-demographic characteristics, history regarding TB symptoms and other relevant information were collected from the consenting participants. Additional information was obtained from old PTB cases regarding the health facilities where TB was diagnosed and treatment initiated. Cases detected during the survey who had already started TB treatment were not considered as actively detected cases. Information was also obtained from individuals with pulmonary symptoms about their knowledge, particularly about mode of transmission of TB.

Individuals having productive cough for two or more weeks with or without other clinical presentation were identified as suspects for PTB .These individuals were given sputum cups and were instructed on how to produce a good quality sputum specimen following a standard operating procedure. Two sputum samples were collected including one early morning sample. The samples were tested for presence of acid fast bacilli using ZN stain at the district TB centre.

Results

The total number of study subjects was 392, out of which females constituted 54%.The mean age was 42.23 ± 21.57yrs, with majority of them in the age class of 19-45 years. Out of 325 study subjects,

77.5% were married. While 7% were illiterate, 28% had at least high school education. 65% were from APL families.190 subjects were employed, whereas a majority were either unemployed or students.32.4% were skilled workers, with 58% in the productive age group.

Out of 36 individuals who gave history of tobacco usage, 69.4% were current smokers and the rest, tobacco chewers.119 individuals reported physical morbidities. Majority of them were diabetics and hypertensives.

Eight individuals gave a history of Tuberculosis, and all of them completed category 1 treatment and was cured. Five of them took DOTS treatment from District TB centre.66% of the 392 study subjects were aware about the mode of spread of tuberculosis.

Two sputum samples of 12 subjects who were TB suspects were collected and tested at District TB Centre, but all were found to be negative for the presence of Mycobacterium Tuberculosis bacteriae.

Table 1: Socio demographic characteristics of the study population

		Gender		Total
		F	M	
Age (in years)	1-18	30(42%)	41(58%)	71
	19-45	78(54%)	67(46%)	145
	46-59	40(52%)	37(48%)	77
	60-80	59(65%)	32(35%)	91
	81-100	5(63%)	3(37%)	8
Total		212(54%)	180(46%)	392
Marital status		Frequency		Percentage
Married		252		77.5
Single		44		13.5
widow		9		2.8
widower		4		1.2
Total		325		100.0
Educational status		Frequency (n=380)		Percentage
Illiterate		7		1.8
Primary school		40		10.2
Middle school		39		9.9
High school		111		28.3
Higher secondary		72		18.4
Diploma		7		1.8
Graduate		68		17.3
Postgraduate		36		9.2
Socio economic status		Frequency		Percentage
APL		255		65.1
BPL		137		34.9
Occupation		Frequency		Percentage
Unemployed /student		202		51.5
Unskilled		32		8.2
Semiskilled		31		7.9
Skilled		127		32.4
Total		392		100.0

Table 2: Other Characteristics

Taken TB treatment before	Frequency	Frequency	Frequency	Frequency
	8	8	3	5
Current symptoms		Frequency		
Cough		15		
Cough >2 weeks		8		
Sputum expectoration		9		
Chest pain		1		
Fever		1		
Loss of weight in the past month		4		
Loss of appetite		4		
Current morbidities		Frequency		
Diabetes mellitus		47		
Hypertension		43		
Dyslipidemia		8		
Thyroid dysfunction		5		
Cardiac diseases		9		
Bronchial asthma		4		
COPD		2		
CVA		1		
Usage of tobacco		Frequency(n=36)		
Smoking		25 (69.4%)		
Tobacco chewing		11 (30.5%)		
Awareness about spread of TB		Frequency(n=392)		
Aware		259(66%)		
Unaware		133(34%)		

Discussion

Concerted efforts during the past two decades – first under the DOTS strategy and later the Stop TB Strategy – have made remarkable worldwide progress in controlling tuberculosis (TB) and caring for patients with TB. However, millions of patients ill with TB are still not notified to public health authorities, and the declines in TB deaths and incidence are still too slow. These call for a redoubling of efforts for early identification and treatment of all cases of TB, as envisioned in WHO's End TB Strategy approved by the World Health Assembly in 2014[1].

Detecting TB cases only from among persons presenting themselves to health facilities with suggestive symptoms has until recently been the principal approach to case-finding. But the remaining case-detection gap, particularly in certain vulnerable populations, along with the persistence of delays in diagnosis and the accompanying continued transmission in the community, highlight the need for a more active approach to detect TB early, hence the need to consider systematic screening for active TB in selected risk groups like urban slum dwellers.

The cost of screening, especially as an outreach activity, can be high. The opportunity cost must be considered and compared with other efforts to improve early TB detection, such as improving access to diagnostic services. However, well-planned and well-targeted systematic screening has the potential to minimize avoidable delays in diagnosis and the initiation of treatment. It thereby can contribute to improving the health of individuals as well as reducing TB transmission.

Systematic screening for active TB may be considered for geographically defined subpopulations with extremely high levels of undetected TB (1% prevalence or higher). Systematic screening for active TB may be considered also for other subpopulations that have very poor access to health care, such as people living in urban slums, homeless people, people living in remote areas with poor access to health care, and other vulnerable or marginalized groups, including some indigenous populations, migrants and refugees. There are a number of studies reporting house to house symptom survey for TB can be an effective case finding tool in pockets of the population with suspected high TB incidence [10,11] but studies are lacking to evaluate cost effectiveness and yield, shortening the diagnostic delay, and successfully bringing patients into care.

The screening for TB cases which we undertook did not find to be cost effective. From our experience at the field, we conclude mass screening is expensive and has uncertain benefits. Therefore, it should be avoided.

Conflict of interest: Nil declared

REFERENCES

1. Global tuberculosis control 2011. Geneva,World Health Organization, 2012
2. Raviglione Met al. Scaling up interventions to achieve global tuberculosis control: progress and new developments. Lancet2012,379:1902–1913
3. Chadha V K, Jaganath P S, Kumar P, et al. Average annual risk of tuberculous infection in India. Int J Tuberc Lung Dis 2005; 9: 116–118
4. World Health Organization. WHO report 2007. Global tuberculosis control: surveillance, planning, financing. WHO/HTM/ TB/2007.376. Geneva, Switzerland: WHO, 2007

5. Ford CM, Bayer AM, Gilman RH, Onifade D, Acosta C, et al. (2009) Factors associated with delayed tuberculosis test-seeking behavior in the Peruvian Amazon. The American journal of tropical medicine and hygiene 81: 1097–1102. doi: 10.4269/ajtmh.2009.08-0627
6. Asch S, Leake B, Anderson R, Gelberg L (1998) Why do symptomatic patients delay obtaining care for tuberculosis? American journal of respiratory and critical care medicine 157: 1244–1248. doi: 10.1164/ajrccm.157.4.9709071
7. WHO Systematic Screening For Active Tuberculosis. Principles and Recommendations World Health Organization, Geneva (2013)
8. Getahun H, Raviglione M (2010) Active case-finding for TB in the community: time to act. Lancet 376: 1205–1206
9. WHO (2011) Rapid implementation of Xpert MTB/RIF diagnostic test. Technical and operational 'how to'. Practical considerations. World Health Organisation, Geneva, 2011. WHO/HTM/TB/2011 2.
10. Tempest P, Pesanti E., Jr A community-wide tuberculosis case finding program on the Navajo Reservation. Am Rev Respir Dis. 1974;110:760–764
11. Narang P, Tyagi NK, Mendiratta DK, Jajoo UN, Bharambhe MS, Nayar S. Prevalence of sputum-positive pulmonary tuberculosis in tribal and non-tribal populations of the Ashti and Karanja tahsils in Wardha district, Maharashtra State, India. Int J Tuberc Lung Dis. 1999;3:478–482.