Incidence of Tuberculosis in Nellore District, Andhra Pradesh, India.

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Short Communication

ABSTRACT

Tuberculosis is a global emergency particularly in developing countries. Andhra Pradesh is the third largest state in India. Our data based on 3379 subjects. Among which 55.8% are new sputum positive cases and males were more affected than female. The age group from35–44 and 45–54 are more prone TB bacteria. Young children below 14 years are less susceptible. We did not found any TB patients with HIV infection. The population attributable risk is 29.89%.

INTRODUCTION

Tuberculosis is a disease of poor as it is widely found in developing countries like India. The world health Organization (WHO) has declared tuberculosis (TB) a global Emergency [1]. According to WHO statistics one third of the world's population is infected with *Mycobacterium tuberculosis with* an estimated 8 to 9 million new cases each year with 2 to 3 million deaths. India is amongst the 22 high TB burden countries of the world and contributes approximately 20% of the global incidence of TB annually. It is estimated that 40% of the population of the country is infected with the TB bacilli and estimated that about 10% of them will develop TB disease during their lifetime [2, 3, 4].

Study Area

Nellore is one of the coastal districts of south parts of Andhra Pradesh situated in the southern region of India. Andhra Pradesh is the third largest state in the country in terms of area and has a long coastal line bordering the Bay of Bengal. In the recent National census in 2001 it had 23 districts with a population of 762.10 million and population density of 277 per sq.km. The total population of Nellore Dist is 2268568 distributed in 131000 sq km area. Density of the population Nellore District is 204. Rural population is more (77.55%) when compared to urban population (22.4%) (Table–1). Among this population male literates are 68.22% and female literates are 50.24% there are 6 major towns in the Nellore districts. In all 6 towns 35% population lives in slum area. In Andhra Pradesh Nellore district is the first state with 22% of scheduled castes among them 87.97% are Agricultural labours.

Table 1: Distribution of population by age groups in Nellore dist (According to 2001 census)

	Rural population		Urban population	
	Male	Female	Male	Female
All ages	10,43,308	10,26,213	3,01,627	2,97,416
0–14	91,299	87,156	22,998	22,169
5–14	2,28,513	2,15,375	60,863	57,894
15–59	6,40,531	6,31,335	1,97,619	1,94,161
˃60	1,31,715	1,43,236	26,878	31,165

Data was collected from Jan – Dec 2008. All the cases were subjected to personal detailed interview according to a designed questionnaire. The questionnaire contains particulars about name of the individual, sex, age, economic conditions, living conditions, nutritional conditions, disease symptoms and their awareness on the disease.

RESULTS AND DISCUSSION

The data was taken from Jan to Dec which was divided into 4 quarters. For four quarters a total number of 3379 cases were collected. Among them 1887(55.8%) cases were New sputum positives. And 325(9.61%) cases were reported as extra pulmonary. (Table-2).

Table 2: Prevalence and incidence of TB in Nellore district during 2008.

Period	Total No. of cases observed	Total No. of new smear positive cases	Total No. of New smear Negative cases	No. of new extra pulmonary cases	Others
1st Quarter	891	479(53.7%)	324(36.3%)	88(9.87%)	0
2nd Quarter	896	505(563)	286(31.9%)	105(11.7%)	5(0.55%)
3rd Quarter	858	475(55.3%)	313(36.4%)	70(8.15%)	8(0.93%
4th Quarter	734	428(28.3)	244(33.2%)	62(8044%)	6(0.817%)
Total	3379	1887	1167	325	19

In the 2nd quarter more number of cases was reported. This is may be due to immediate occurrence of winter period. In the winter Tuberculosis (TB) represents itself as a major health problem globally [5]. The incidence of disease has increased in developed countries [6] and according to world health organization's every day in India more than 20000 people develop the disease and more than 1000 die from TB [7].

In all the quarters male were more affected than female (Table-3). This is because of their smoking habits and they are habituated to split on roads. Generally the mode of transmission is through inhalation of droplets from infected persons. (Rarely 0.56% 0.56% (19 cases were TB infection in other parts) among the total number of new smear positive cases (1887) 74.6% (1409) were male and female were only 25.3% (478).

Table 3: Influence of sex on TB during 2008   in the Four Quarters

Quarter	Total No. of New smear positive cases	Male	Female
1	479	350(73.0%)	129(26.9)
2	505	392(77%)	113(22.37%)
3	475	364(76.6%)	111(23.36%)
4	428	303(70.7%)	125(29.2%)
Total	1887	1407	478

Influence of age is also significant. More number of new sputum positive cases was recorded in the age group of 35-44 years & 45-54 years with 22.9% and 22.2 % respectively. In the age group of above 65 new sputum positive cases were only 7.7 %. In case of younger children below the 14 years. New sputum positive cases were almost rare i.e. only 0.42%. in an overall observations no of cases were increased with the advancement of age and it was with the increased age group (Table-4).

Table 4: Influence of Age on TB during 2008

Period	Age 0-14	Age 15-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age >65y	TOTAL
I	03	45	85	122	114	75	35	
II	04	66	97	110	105	92	31	
III	0	57	96	98	117	68	39	
IV	1	47	87	103	83	66	41	
TOTAL	08	215	365	433	419	301	146	1887
	(0.42%)	(11.39%)	(19.3%)	(22.9%)	(22.2%)	(15.9%)	(7.7%)	

We also examined the sex wise distribution of New smear positive pulmonary TB cases in various age groups(Table-5).Males were more prone to TB at the age group of 35-44 and 45-54.width 23.5% and 23.7% respectively. In females 25-34 age group is exhibited more number of new sputum positive. Tb cases with 27.82%. in male 0-14 age groups shows very low no of cases where as in female it was slightly higher(1.46%) in 15-24 age group number cases were increased rapidly (18.41) when compared to males (90.02). it was almost double. This because of the malnutrition. Un hygienic environment neglect of girl child etc plays crucial role. The numbers of TB cases were low in female with age group of above 65 years (2.92) when compared to males. In males the occurrence of TB was almost 4 times greater (9.36%) than Females (2.92%). In the remaining age groups i.e. 0-14, 15-24 and55-64 the number of TB cases were double in Female when compared to males.

Table 5: Age wise distribution of TB in different sexes.

	Age 0-14	Age 15-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age ˃65y	Total
Male	1(0.07)	124(9.0)	232(16.46)	332(23.5)	334(17.8)	251(17.8)	132(9.36)	1409
Female	7(1.5)	88(18.4)	133(27.8)	101(21.1)	85(17.7)	50(9.56)	14(2.92)	478

Influence of HIV on TB

HIV is major contributing factor to the increased case defection rate of TBO. It is estimated that approximately 424000 cases of multidrug resistant tuberculosis (MDR- TB) occurred in 2004 [8]. Accordingly the new stop TB strategy and the global plan to stop TB 2006-2015 include MDR Tb management as a basic component of TB control [9,10] so we also conducted studies on retreatment cases. Among the total number of 991 retreatment cases the percentage of TAD cases were more 42.38%. (Table- 6) 22.3% cases were relapses, Failure cases were very low i.e 5.85% only. The number of other cases was high.

Table 6: Occurrence of Retreatment cases in different time periods

Period	Relapse	Failure	TAD	others
1	45	11	130	57
2	65	16	85	70
3	59	12	98	78
4	55	19	107	84
Total	224(22.6%)	58(5.85%)	420(42.38%)	289(29.16%)

HIV is major contributing factor to the increase case detection rate of TB observed over the past few years of the prevalence of HIV countries to increase the incidence of tuberculosis it will continue to rise as well [11]. Approximately 10million people are estimated to be co-infected with *M.tuberculosis* and HIV [12]. Hence, we have also conducted survey on TB patients with HIV to an knowledge we did not find any case of all the registered TB cases , no cases were found HIV positive before or ending the treatment.

Population Attributable Risk

In our study we calculated Population attributable risk. Population exposed to TB is0.617and not exposed were 0.402.The relative risk rate is 1.534, risk difference is 0.451 and population attributable risk is 29.89 %. (Table - 7).

Table 7: Population attributable risk in Nellore District 2008

Outcome rate exposed	Outcome rate not exposed	Relative risk RR	Risk difference R.P	Population expose	PAR %
0.617	0.402	1.534	0.215	0.451	29.89

Population stress, socioeconomic condition and cultural changes ultimately bring about changes in the human environment. Making it a paradise for infection agents. Such stress on environment contaminates air, water, soil and food this affecting a health. Climatic, socioeconomic educational and environmental sanitary condition may influence the prevalence and severity of Mycobacterium infections. Information regarding prevalence of TB infection in south India (Nellore) is lacking. Hence a new vista has been opened to assess the occurrence and clinical significance of Tuberculosis.

REFERENCES

1. WHO guidelines for the programmatic management of drug-resistant tuberculosis: 2011 update.
2. India TB. 2008 RNTCP Status Report. New Delhi, India: Central TB Division, Directorate General of Health services, Ministry of Health and Family Welfare, New Delhi, India, 2008. (Accessed at http://www.tbcindia.org)

3. World Health Organization. Implementing the WHO Stop TB Strategy A handbook for national tuberculosis programmes WHO/HTM/TB/2008. Download the document.

4. World Health Organization. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2008.WHO/HTM/TB 2008. 362. Geneva, Switzerland: WHO 2008.

5. Christie YJ, Megan BM. Diabetes Mellitus increases the risk of active T B, A systematic review of 13 observations studies. PLOS Med. 2008; 5(7) :152.

6. Ezung T, Devi NT, Singh NT, Singh TB. Pulmonary tuberculosis and diabetes mellitus – a study. J Ind Medical Association. 2002; 100: 376–379.

7. Jaggarrajamma K, Ramchandran R, Charles N, Chandrasekaran V, Muniuandi M, Ganapathy S. Psychosocial dysfunction: Perceived and enacted stigma among tuberculosis patients registered under RNTCP. Indian J Tuberc. 2008; 55: 179–87.

8. Vashishtha VM. Current Status of Tuberculosis and Acute Respiratory Infections in India. Much more needs to be done. Indian Pediat. 2010; 47: 88–89.

9. Richard C. Risk factors for pulmonary tuberculosis in Russia: case control study2006.

10. Kant L. Ind J Tuberculosi. 2003;s50(4):Editorial.

11. Broek JVD. 1993. Risk of HIV infection for developing active tuberculosis www.gateway.n/m.nin.gov/meeting abstracts.

12. Lisa Gooze MD, Charles L, Daley MD. 2003. Tuberculosis and HIV. HIV Insight Knowledge base chapter May. 1–17.