

PREVALENCE OF T B IN THE TWO TRIBAL MANDALS OF SRIKAKULAM DISTRICT- A SURVEY

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ABSTRACT

Population stress, socioeconomic conditions and cultural changes ultimately bring about changes in the human environment, making it a paradise for infectious agents. Such stress on environment contaminates air, water, soil and food thus affecting our health. Srikakulam is coastal district in northern part of Andhra Pradesh. We have conducted a Survey on incidence of T B in two tribal mandals of Srikakulam i.e., Kotturu and Seethampeta for 2 yr. Out of every 1000, 2-10 people are affected by T B in India. But in these two mandals 129, 124 per every 1000 are suffering from T B The data was analyzed on the basis of poor hygienic environment, malnutrition, overcrowding conditions, socio-economic conditions of the people. The paper also focused on the relation between T B and HIV, T B and Diabetes.

INTRODUCTION

India accounts for nearly one third of the global burden of tuberculosis and the disease is one of India's most important public health problems. Every day more than 20,000 people become infected with T B, more than 5000 develop T B and more than 1000 die because of T B. In India tuberculosis kills 14 times more people than all tropical diseases combined, 21 times more than malaria. T.B is major barrier to social and economic development (Vashishtha, 2010).

The causative agent of T B is Mycobacterium tuberculosis, measures about 1.4mm in length and 0.2 – 0.8 mm width rod shaped gram +ve non-sporulus and acid fast. A person can become infected with tuberculosis bacteria, when he or she inhales minute particles of infected sputum from the air. The bacteria get into the air when some one who has tuberculosis lung infection coughs, sneezes, shouts or spits (Which is common in some cultures). People who are nearby possibly breathe the bacteria into their lungs. T B is spread primarily from person to person by breathing infected air during close contact. Left untreated each person with active T.B disease will infect on average between 10-15 people every day.

According to WHO survey, globally 9,157,021 people are suffering from T B where as in India 1,932,852 are suffering from T B (WHO, 2006). Hence we have conducted a survey on T B in two tribal mandals of Srikakulam district over a span of two years i.e., 2005 and 2006. We have also carried out the statistical data relationship between T B and HIV, T B and Diabetes mellitus. We also calculated the risk factor of T B and population attributable to risk (Rao, 2003).

MATERIALS AND METHODS

Study area

Srikakulam is one of the coastal districts of northern part of Andhra Pradesh situated in the southern region of India, 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 last National census in 2001 it had 22 districts with a population of 75.73 Million and population density of 275 / sq. km, the sex ratio in the state is 978 females for every 1000 males, literacy rate of 75% among males and 51% among females.

Srikakulam is back ward district and people are not aware of hygienic environment. Water pollution, solid waste pollution is very common. Majority of the people live in below poverty condition and live in closely packed slum areas. Prevalence of T B is high in Srikakulam District.

We have selected few villages in two Mandals namely Seethampeta and Kotturu. Study of population comprised of 1163 in Seethampeta, 1300 in Kotturu Mandal. Data collected from January 2005 to December 2006 were included in the study. All these cases were subjected to personal detailed interview according to a designed questionnaire. The questionnaire contains particulars about name of the individual, sex, age, economic condition, living conditions, nutritional conditions, disease symptoms and their awareness on the diseases.

RESULTS AND DISCUSSION

Results are shown in Table 1 to Table 9.

Prevalence of the disease up to 31.01.2005 in Seethampeta and Kotturu mandal is 129 and 116 per thousand respectively. It is on higher side than the prevalence of the disease in south East Asia (29 per thousand:WHO, 2006).

Table 1: Prevalence and incidence of T B in Seethampeta Mandal during 2005 and 2006

S.N.	Name of the village	2005		2006	
		No.of cases observed	No. Positive cases	No.ofcases observed	No.of positive cases
1	Seethampeta	301	40	315	44
2	Jadithota	27	2	35	5
3	Haddubangi	24	6	25	8
4	Kothapunukuvalasa	60	6	64	7
5	Godiguddi	18	3	20	4
6	Panara guddi	27	3	30	5
7	Somagandhi	39	7	40	8
8	Patha punukuvalasa	40	5	42	6
9	Kamba gandi	27	1	32	3
		563	73	603	90

Table 2: Prevalence and incidence of T B in Kotturu Mandal during 2005 and 2006

S.N.	Name of the village	2005		2006	
		No.of cases observed	No. Positive cases	No.of cases observed	No.of positive cases
1	Parapuram	140	15	140	20
2	Kotturu	348	20	150	22
3	Pedda dimidi	120	15	142	16
4	Kurigam	110	12	110	15
5	Mathala	100	10	140	10
		618	72	682	83

Table 3: Influence of sex on T B during 2005

S.N.	Name of the Mandal	During 2005			During 2006		
		Total	M	F	Total	M	F
1	Seethampeta	73	59	14	90	70	20
2	Kotturu	72	51	21	83	55	28

WHO, 2006).

Males are more affected than females. 90% of the males are smokers and they are habituated to spit on roads. Mode of transmission is through inhalation of droplets from infected persons. Influence of age is not significant but it is more in the age group of 30 - 40 years.

Table 4a: Influence of Age on T B during 2005

S.N.	Name of the Mandal	Total cases	0-10 Years	10-20 Years	20-30 Years	30-40 Years	40 and above Years
1	Seethampeta	73	10	10	21	19	13
2	Kotturu	72	12	13	15	20	12

Table 4b: Influence of Age on T B during 2006

S.N.	Name of the Mandal	Total cases	0-10 Years	10-20 Years	20-30 Years	30-40 Years	40 and above Years
1	Seethampeta	90	13	14	24	21	18
2	Kotturu	83	13	13	20	22	15

Table 5: Effect of smoking on T B

S.N.	Name of the Mandal	During 2005			During 2006		
		Total cases	Smokers	Non smokers	Total cases	Smokers	Non smokers
1	Seethampeta	73	48	25	90	60	30
2	Kotturu	72	50	22	83	55	28

Table 6: Population attributable to risk (PAR) in two Mandals

In 2005

S.N.	Name of the Mandal	IP	IE	IO	AR	RR	PAR	PARP	AR1
1	Kotturu	116	80	35	45	2.2	81	69.82	56.25
2	Seethampeta	129	85	44	41	1.9	85	65.89	48.23

In 2006

S.N.	Name of the Mandal	IP	IE	IO	AR	RR	PAR	PARP	AR1
1	Kotturu	121	80	41.0	39	1.95	80	66.1	48.75
2	Seethampeta	149	99	49	50	2.0	100	67.1	50.50

(I.P Incidence of Disease in Population, I.E Incidence if Disease in Exposed, I.O Incidence of Disease is not exposed, A.R Attributable Risk, R.R Relative Risk, PAR Population attributable risk, PARP Population attributable risk proportion, AR1 Attributable Fraction (Exposed))

The Incidence of the disease from 01.01.2006 to 31.12.2006 at Kotturu and Seethampeta mandals are 16, 28 respectively per thousand. (South East Asia incidence is 18 per thousand:

Smokers are more affected by T.B and among patients 69.44% are smokers and 30.55% are non-smokers in Kotturu mandal and 65.75% are smokers and 34.25% are non-smokers in

Table 8: Relationship between T B and AIDS

S.N.	Name of the Mandal	2005						2006					
		No. of T B Cases			No. of patients with T B and AIDS			No. of T B Cases			No. of patients with T B and AIDS		
		Total	M	F	Total	M	F	Total	M	F	Total	M	F
1	Kotturu	73	59	14	24(32.07%)	16	08	90	70	20	30(33.3%)	20	10
2	Seethampeta	72	51	21	27(37.52%)	18	09	83	55	28	28(33.7%)	19	09

Table 9: Relationship between T B and Diabetes

S.N.	Name of the Mandal	2005						2006					
		No. of T B Cases			No. of patients with T B and Diabetes			No. of T B Cases			No. of patients with T B and Diabetes		
		Total	M	F	Total	M	F	Total	M	F	Total	M	F
1	Kotturu	73	59	14	25(34.24%)	14	11	90	70	20	30(33.4%)	15	15
2	Seethampeta	72	51	21	28(38.88%)	14	14	83	55	28	26(31.32%)	15	11

Seethampeta mandal. They smoke unfiltered tobacco, beedis etc.,

Economic status, poor hygienic environment helps the prevalence of the disease. The houses are small and there is no gap between houses. They cook on the roadside, they spit on the roads and children play in the same areas. Because of the economic conditions they are not in a position to take balanced diet. They are not habituated to use medicines given by T.B control Board.

The ratio of incidence in the exposed to incidence in the non-exposed is 1.95 in Kotturu and 2.0 in Seethampeta coincides the result of Gajalakshmi *et al.*, (2003).

Population attributable risk is 80 in Kotturu and 100 in Seethampeta.

The fraction of the diseased in the exposed attributable to the risk factor is about 48.75 in Kotturu, 50.5 in Seethampeta, clearly reveals that smoking infects in human to lead T.B.

TB and HIV

HIV is major contributing factor to the increased case detection rate of T B observed over the past few years. If the prevalence of HIV continues to increase the incidence of tuberculosis will continue to rise as well (Broek, 1993). Approximately 10 million people are estimated to be coinfecting with *M.tuberculosis* and HIV (Lisa Gooze *et al.*, 2003). Hence we have also conducted survey on T B patients with HIV. The results are indicated in the Table 8.

In Seethampeta mandal during 2005, 2006 32.8%, 33.3% of T B patients are suffering from HIV. In Kotturu mandal during 2005 and 2006 37.5%, 33.7% of T B patients are suffering from HIV. People with advanced HIV infection are vulnerable to a wide range of infections and malignancies that are called opportunistic infections because they take advantage of the opportunity offered by a weakened immune system. There are several important association between the epidemics of HIV and T B.

T B progresses faster in HIV infected people and T B in HIV positive people is more likely to be fatal if undiagnosed or left untreated. T B occurs easier in the cause of HIV infection than other opportunistic infections. As one of the first opportunistic infection to appear in HIV infected people, T B may be one of the easier signs of HIV infection. HIV activates dormant T B in a person who then becomes infections and able to spread the

T B bacillus to others.

T B and Diabetes

Since the early part of the 20th century, Doctors have observed an association between DM and TB, although they were often unable to determine whether DM caused T B or whether TB led to the clinical manifestations of DM (Christie and Megan, 2008). More recently epidemiological studies investigating the relation ship have demonstrated that DM is indeed positively associated with T B (Richard *et al.*, 2006). Hence we have also conducted studies on relation ship between TB and DM.

Results reveal that in Kotturu during 2005 34.24%, in Seethampeta 38.88% T B patients are suffering from Diabetes. During 2006 33.4% of T B patients are suffering from Diabetes in Kotturu and 31.32% are suffering in Seethampeta mandals. Patients with diabetes mellitus are also at a higher risk of tuberculosis. In a study in Mumbai T B was found to be the most common complicating illness in a large cohort of over 8000 patients with diabetes (Patel, 1989).

In a recent study from RIMS, Imphal the prevalence of pulmonary T B in diabetics was found to be 27% by radiological diagnosis and 6% by sputum positively (Ezung *et al.*, 2002). There have been reports of high prevalence rates of diabetes in cases of pulmonary T B (4 – 20%), (Goswami and Kachupillai, 2001). The cause of increased susceptibility is not yet clearly understood. Some believe it to be due to the lowered production of interleukin I and tumor necrosis factor (Kant, 2003).

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