

Reviewing the Disparities in the Incidence and Treatment outcome of Tuberculosis in Geo-Coded Areas of A South Indian Population

Rooth Vasantha M.*, G. Sudhakar**, S. Sridevi***

Abstract

Aim: The purpose of the study is to compare the incidence of Tuberculosis (TB) and the treatment outcome in patients living in urban, semi-urban and rural areas of Visakhapatnam, Andhra Pradesh, India. **Methodology:** The study was carried out on 100 TB patients undergoing treatment in the Government chest and TB hospital, Visakhapatnam during the year 2012-2013. The patients were classified as urban, semi-urban and rural according to their geocoded residence in par with the census of India. **Results:** It was observed that male individuals living in urban areas are more affected. The incidence of TB is more in urban areas, than in semi-urban and rural areas among individuals between 21-40 years. The incidence of TB in urban areas is fourfold higher than in rural areas. No statistical significance was found between new cases and retreatment cases ($P=0.515$). **Conclusion:** DOTS program must be strictly followed in all the three areas to reduce the incidence of retreatment cases of TB. It is concluded that the incidence of TB is greater in urban areas.

Keywords: Tuberculosis; Urban; Semi Urban; Rural; Age; DOTS Program.

Introduction

Tuberculosis is, causing a major health problem not only in India but also globally. The country India accounts for one-fifth of the global Tuberculosis (TB) incident cases. The global burden of TB in 2013 was estimated to be 9.0 million people, and 1.5 million died of the disease. The global Tuberculosis report 2014 showed higher global totals for new TB cases

and deaths in 2013 than previously. Studies showed that incidence of TB vary between Urban and Rural area population (Hayward A et al., 2003). The epidemic of TB infection in urban areas is seen in people who were either slum dwellers or in people who lived near the surrounding slum area where congested living conditions poses as one of the risk factors (Braden C R et al., 1997). Tuberculosis is considered to be greater in urban population than in rural population, but access to the service of TB control is poorer in rural areas which increase the risk for the incidence of drug resistance TB and recurrent TB (Watt IS 1993, Reading R et al., 1993). The health services in urban areas are within the reach of an urban dweller but patients from rural areas have to travel a longer distance for proper health services. This serves as one of the difference in TB services between urban and rural areas within the country. There is also difference in the outcome of treatment in patients living in urban, semi urban and rural areas (Banerjee A et al., 1999). Many TB patients in urban areas are from highly deprived communities. This study is aimed to determine whether there is difference in the incidence of TB in urban, semi urban and rural populations and also to know the treatment outcome among urban, semi urban and rural population.

Materials and Methods

The TB patients taken into study were under Directly Observed Treatment Strategy (DOTS TB strategy) programme in 2012-2013 in RNTCP centres and Government chest and TB hospital in Visakhapatnam. All the TB patients were diagnostically confirmed with TB by clinical,

Author's Affiliation: *Research Scholar, Professor and HOD, ***Assistant Professor, Department of Human Genetics, Andhra University, Visakhapatnam, AP, India.

Corresponding Author: Rooth Vasantha M., Research Scholar, Department of Human Genetics, Andhra University, Visakhapatnam-530003, AP, India.

E-mail: ruthvasantha@gmail.com

radiological and sputum analysis, which are the suggestive diagnostic tests for Tuberculosis. All the patients were undergoing a full course of anti- TB Therapy. The living addresses of patients were recorded and were geocoded. Cases were assigned as rural or semi urban or urban basing on the rural and urban classification by the Census of India – part of the Central Government of India.

Results

The results of the demographic study of the 100 TB cases basing on the categorisation of age, gender and living surroundings are given below:-

Table 1: Age and Gender related incidence of TB in Urban, Semi-urban and Rural areas.

Gender	Urban		Semi-urban		rural	
	Frequency	%	Frequency	%	Frequency	%
Male	58	58.0	14	14.0	11	11.0
Female	11	11.0	2	2.0	4	4.0
Age						
11-20 years	2	2.0	0	0.0	1	1.0
21-30 years	17	17.0	5	5.0	2	2.0
31-40 years	17	17.0	1	1.0	4	4.0
41-50 years	10	10.0	5	5.0	2	2.0
51-60 years	12	12.0	3	3.0	6	6.0
61-70 years	6	6.0	2	2.0	2	2.0
71-80 years	3	3.0	0	0.0	0	0.0

Table 2: Incidence of New TB cases and Retreatment TB cases in Urban and Rural areas.

Area	New TB cases	Retreatment cases	Chi square	P value
Urban	34	35		
Sub urban	8	8	1.326	0.515
Rural	5	10		

* Value Significant @ 5% level. (P < 0.05)

Among the 100 TB patients' data, it was observed that 69 are from urban areas, 16 are from Semi-urban areas and 15 are from rural areas. Out of the 69 % of TB cases from urban area 58 % were male individuals and 11% were female individuals. Out of 16% of semi-urban TB cases 14 % were male individuals and 2% were female individuals. Out of 15% of rural TB cases 11% were male individuals and 4% were female individuals.

Among the TB cases taken into study it was observed that male individuals, living in urban areas between the age group of 21-40 years, are at higher risk to TB infection than female individuals. And individuals between the age group of 11-20 years are at lower risk to TB infection when compared to adult individuals.

The rate of TB in urban areas was four fold higher when compared to cases from rural areas. Out of the 69 urban TB cases 34 were new cases while 35 were retreatment cases and out of 16 semi-urban TB cases 8 were new cases and 8 were retreatment cases, but out of 15 rural TB cases 5 were new cases and 10 were retreatment cases. When statistically calculated

the results of Chi-square (1.326) and P value (0.515) was observed to be insignificant.

Discussion

The occurrence of TB is more prone in urban areas than in rural areas, globally (Banerjee A 1999). But increase of incidence of TB in rural areas was also reported in some high risk countries (Vorokhobkin Ius 2005). The present study showed that TB is more common in individuals living in urban areas (69%) mainly who are residing in poor living circumstances.

The obtained results showed that retreatment cases are more in individuals living in rural area this may be due to lack of nearby treatment centres or RNTCP centres. Various studies have shown that access to care is limited in rural areas which can be the cause of increase in retreatment cases (Liff JM, Chow WH, Greenbe 1991, Barker RD 2002) and other factors like socio economic status and lack of availability of local health services (Goddard M. Smith P). Immigrants or homeless

people are more likely to get inappropriate completion of TB treatment and they are categorised as the dwellers in a deprived urban locality. Persons living in urban areas are more likely to have various other problems.

Conclusion

A prospective study with large sample size in the urban slum dwellers is necessary to estimate the prevalence of TB. The system of DOTS program must be maintained even in the immigrants coming to the urban areas. Appropriate number of RNTCP centres and health care centres would help in decreasing the risk of TB and also to reduce the burden of retreatment in rural area. Increase of RNTCP centres, helps to reduce the percentage of drug resistant TB cases.

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