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**COMPARATIVE ANALYSIS OF COMMUNICABLE AND NON COMMUNICABLE DISEASES IN RURAL AND URBAN LOCALITIES OF TIRUPATI IN INDIA**C. Kumaraswamy Naidu<sup>1</sup>, Y. Suneetha<sup>1</sup>, B. V. Sai Prasad<sup>2</sup><sup>1</sup>Department of Zoology, Sri Venkateswara University, Tirupati, India<sup>2</sup>Department of Pathology, Sri Venkateswara Medical College, Tirupati, India

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**ABSTRACT**

Communicable diseases (CD) are the main cause of death around the world for years followed by non-communicable diseases (NCD) causing major problems in industrialized countries. Among all NCDs and CDs, Cancers (NCD) and Tuberculosis (CD) constitute the major cause of morbidity and mortality in developing countries, including India. The specific aim of this study is to quantify the prevalence of communicable (Tuberculosis) and non communicable diseases (Cancers) in urban and rural areas of Tirupati and to analyze the relative epidemic using a comparable framework. The data was analyzed statistically using Chi-Square test and Odds ratio with 95% confidence interval. All analyses were performed with SPSS version 13 software. Compared to rural areas, people from Urban areas of Tirupati (52.1% Vs 47.9%) has increased risk of NCDs: patients with Breast Cancer (33%), Cervical Cancer (35%), Oral Cancer (8.9%), Prostrate Cancer (6.3%), Skin Cancer (4%) and Other Cancers (12.9%) like Bladder, Colon, Lung, Rectal, Stomach, Uterine. There was a significant urban-rural difference in having Tuberculosis in the years 2010 to 2011 (71.4% vs 28.6%, respectively;  $P < 0.001$ ) and there was a significant urban-rural difference in Communicable and non communicable diseases in the years 2010-2011 (54.1% vs 45.9%, respectively;  $P = 0.03$ ). These finding suggests that there is an increasing prevalence of Communicable and non communicable diseases in Tirupati as a result of lifestyle changes and urbanization. These are the challenges that are to be tackled in new millennium.

**Keywords:** Communicable diseases, Non-communicable diseases, Rural, Urban

**INTRODUCTION**

India is one of the famous countries around the world for cultural activities. In India, one of the major pilgrimage cities is Tirupati which is located at the foothills of Eastern Ghats, Andhra Pradesh. Being a major pilgrimage, millions of people visit Tirupati daily. Being a famous tourist spot in Andhra Pradesh, Tirupati is prone to disease exposure. Diseases can be broadly categorized into two types: Communicable and Non Communicable. Communicable diseases (CD) were the main cause of death around the world for years followed by non-communicable diseases (NCD) causing major problems in industrialized

countries. The spread of non-communicable diseases (NCDs) principally heart disease, stroke, diabetes, cancers, and chronic respiratory disease represents a global crisis; in almost all countries and in all income groups, men, women, will account for 80% of the global burden of disease, causing seven out of every ten deaths in developing nations, compared with less than half today [1]. Globally, around 57 million people died and children are at risk of these diseases [2]. Epidemics of non-communicable diseases (NCD) are presently emerging or accelerating in most developing countries [3]. In 2008, 33 million (58%) of the deaths were due to chronic (non-

communicable) diseases (mainly cardiovascular disease, diabetes, cancer, and chronic respiratory diseases) [4]. In 2004, 4.8 million (59.4 percent) of the estimated 8.1 million Indian deaths were due to NCDs [5]. Communicable diseases (CDs) like tuberculosis (TB), cholera, meningitis, hepatitis, malaria, dengue, yellow fever, AIDS, Ebola, SARS and others in parallel also continue to be the major cause of mortality in developing countries [6].

Even Asian countries like India have a major public health challenge of growing magnitude of non communicable and communicable diseases in the present century. In India, among all NCDs and CDs, Cancers (NCD) [7] and Tuberculosis (CD) [8] constitute the major cause of morbidity and mortality. In this paper, we use the term chronic non-communicable disease to refer to major chronic disorder such as Cancer and communicable disease to refer Tuberculosis; other disorders are not covered in this paper. The specific aim of this study is to estimate and compare the relative incidence of communicable and non communicable diseases in Urban and Rural areas of Tirupati. A comparison was made of the age-specific incidence rates in Tirupati region at 2-year intervals from 2010 to 2011.

## MATERIALS AND METHODS

### Study site

This study was conducted based on data from Bharath, Diagnostic Center, Tirupati. All the newly diagnosed cases in the years 2010 and 2011 were included as the study cases. Among 3000 patients' biopsy data in the lab, only cases having Cancers (CD) and Tuberculosis (NCD) were included in this study. The data was a clinical

examination data containing Biopsy number, Disease type, age, sex, Locality, Height, Mark section, cut section, Histopathological examination and Microscopic examination. Among these variables only disease type, age, sex, locality was considered for the study. The reference date for recording information was the date of diagnosis for cases.

### Statistical Methods

The data was analyzed statistically using Chi-Square test and Odds ratio with 95% confidence interval. All analyses were performed with **SPSS version 13** software.

## RESULTS AND DISCUSSION

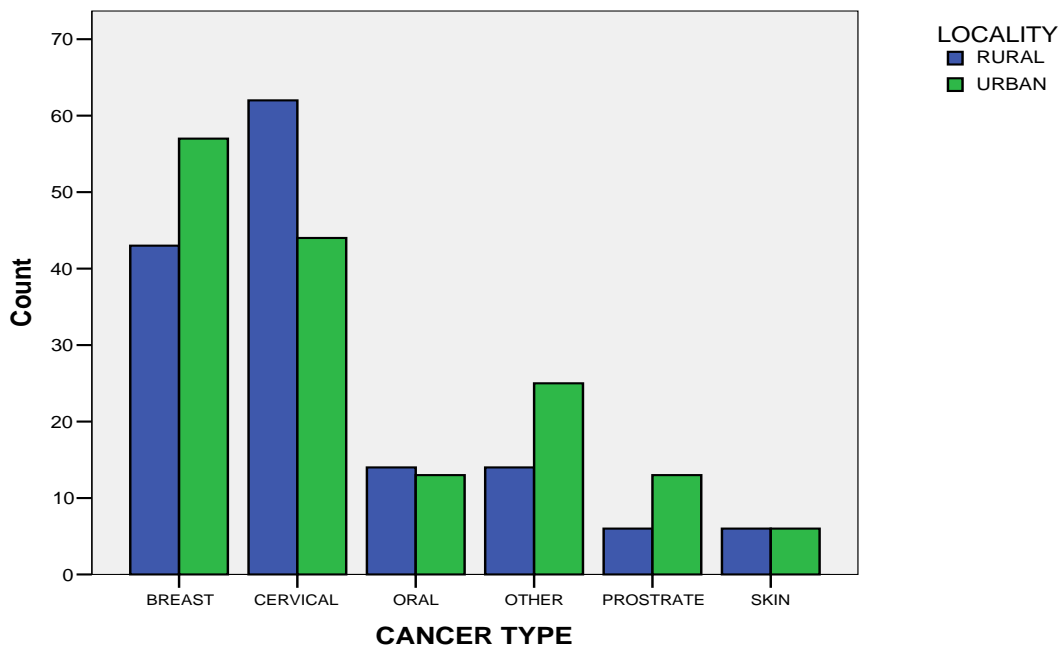
### Non communicable diseases

Among the various NCDs like cardiovascular diseases, Diabetes and Cancers, only cancers were used for this study. Cancers that are used in the study includes Breast, Cervical, Colon, Bladder, Lung, Oral, Prostrate, Rectal, Skin, Uterine and Stomach Cancer. Among 3000 patients biopsied in the year 2010 to 2011, 303 patients were seen affected with these cancers. Compared to rural areas ( i.e., 10 villages surrounding Tirupati), people from Urban areas of Tirupati (i.e., People living in Tirupati town) (52.1% Vs 47.9%) has increased risk of NCDs: patients with Breast Cancer (33% ), Cervical Cancer (35%), Oral Cancer (8.9%), Prostrate Cancer (6.3%), Skin Cancer (4%) and Other Cancers (12.9%) like Bladder, Colon, Lung, Rectal, Stomach, Uterine (  $P=0.07$ , Table 1). The prevalence of the non communicable diseases in urban and rural areas is diagrammatically represented in the chart (Chart 1) given below.

**Table 1: Non communicable diseases in urban and rural areas of Tirupati (2010-2011)**

Cancer Type	Patients, n (%)		df	$\chi^2$	P
	Rural	Urban			
Breast	43 (14.19)	57 (18.81)	5	10.1	0.07
Cervical	62 (21.7)	44 (15.4)			
Oral	14 (1.24)	13 (1.15)			
Prostrate	6 (0.77)	13 (1.67)			
Skin	6 (0.24)	6 (0.24)			
Other	14 (1.8)	25 (3.2)			

\*Abbreviations: df – degrees of freedom,  $\chi^2$  used to test categorical variables for statistical significance, P refers to the probability

**Bar Chart****Chart 1: Prevalence of the non communicable diseases in urban and rural areas**

### Non communicable diseases

Among 3000 patients biopsied in our laboratory 35 patients were seen affected with Tuberculosis. There was a significant urban-rural difference in having Tuberculosis in the last 2 years (71.4% vs 28.6%, respectively;  $P < 0.001$ ) (Table 2).

**Table 2: Tuberculosis in Urban- rural communities of Tirupati (2010-2011)**

Cancer Type	Tuberculosis Patients, n (%)		Difference (95% CI)	df	t	P
	Rural	Urban				
Age	10 (28.6)	25 (71.4)	30.743 (25.58 to 35.91)	34	12.102	<0.001

### Comparison of communicable and non communicable diseases

There was a significant urban-rural difference in burden to Communicable and non communicable diseases in the years 2010-2011 (54.1% vs 45.9%, respectively;  $P = 0.03$ ) (Table 3).

**Table 3: Communicable and Non Communicable diseases in Urban- rural communities of Tirupati (2010-2011)**

Disease Type	Patients, n (%)		df	$\chi^2$	P
	Rural	Urban			
Communicable	10 (4.59)	25 (13.5)	1	4.699	0.03
Non Communicable	145(66.5)	158 (85.4)			

### CONCLUSION

Our findings suggest that the observed differences between urban and rural women could be substantially reduced by changing the lifestyle or proper detection in the early stages. It is also important to educate the public and health care professionals in rural and urban areas in order to promote early detection. Overall, our study concludes that people residential of Tirupati are more exposed to both communicable and non communicable diseases compared to those from 10 villages surrounding Tirupati.

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### Ethical Approval

The study has ethics approval from Sri Venkateswara Medical College, Tirupati.

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