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RESEARCH ARTICLE

AN EPIDEMIOLOGICAL SURVEY ON PREVALENCE OF DISEASE STATES & MEDICATION TAKING BEHAVIOUR OF PATIENTS IN RURAL AREA IN GUNTUR

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ABSTRACT

The study was aimed to assess the prevalence of disease states and to find out medication taking behavior of patients in rural area in Guntur. A crossectional study was conducted in the community setting (Rural Areas around the Guntur) for a duration of 6 months period i.e., from January 2016 to June 2016. Based on inclusion and exclusion criteria subjects were enrolled and data was collected. Out of 252 subjects enrolled majority of the subjects were within the age group of 30-50 yrs, and were males, employed, had primary education, income level per month was <10,000. Majority of the population surveyed were suffering from both hypertension and diabetes, followed by hypertension, diabetes, asthma alone etc. Most of the people were using medication from at least 2 years and were on 5-10 medications. Majority of patients were using OTC products for minor ailments and was found to be analgesic category. This study concludes that Prevalence of disease states was alarming, and there is a need for clinical pharmacist to recognize and to incorporate the necessary step to reduce the burden of diseases and to promote rational drug use.

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INTRODUCTION

The prevalence and incidence of a disease are among the most fundamental measures in epidemiology. Prevalence is a measure of the burden of disease in a population in a given location and at a particular time, as represented in a count of the number of people affected. Counts of the number of people affected with a disease are required to plan appropriately for their health care needs.

Diabetes mellitus

Diabetes mellitus is a chronic disease with debilitating complications that contribute to morbidity and mortality. The worldwide prevalence of diabetes has been increasing at a noteworthy rate. It has been estimated that the total number of people with diabetes would inflate from 171 million in 2000 to 366 million in 2030 (Wild *et al*., 2004). Healthcare costs from diabetes impose a global economic burden. The healthcare costs from diabetes alone were $376 billion USD in 2010 and have been estimated to increase to $490 billion USD in 2030 (Zhang *et al*., 2010). Presently, the Middle East region is among the most impacted countries. As noted in multiple research studies, the ability to recognize members of a population who are at risk for diabetes is critical for multiple reasons. Among these is that at the time of initial diagnosis, many patients are already demonstrating signs of small and large vessel complications, which indicate that diabetes may have gone undetected from 4 to 7 years before the patients' diagnoses (Harris *et al*., 1992; Hypertension in Diabetes Study (HDS) 1993). Additionally, patients who are found to have prediabetes, as indicated by impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT), demonstrate a 10 to 20 times greater risk of developing of type 2 diabetes (T2D) compared with people with normal glycemic levels (Unwin *et al*., 2002; de Vegt *et al*., 2001). Presently, there is a notable lack of assessment tools available to identify persons of Middle-Eastern origin who are prediabetic or have undiagnosed diabetics, despite the high numbers of both types of patients in the population. Hence, there is an urgent need to apply applicable screening tools to facilitate diabetes prediction and support the global prevention effort. Previous randomized experimental studies on the prevention of diabetes have reported the effectiveness of lifestyle intervention to reduce the

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incidence of diabetes among those with prediabetes (Tuomilehto *et al*., 2001). The World Health Organization (WHO) has noted the threat of an increased prevalence of overweight and obesity as a detriment to the health of the worldwide population (Buijsse *et al*., 2011). Presently, the trend of sedentary work has increased (Griffin *et al*., 2000). Thus, the risk of obesity has been increased because of long sedentary working hours.

Cardiovascular disease

Cardiovascular disease (CVD) is the leading cause of death worldwide, and hypertension is the most important preventable risk factor for CVD (Lim *et al*., 2012). High blood pressure is associated with at least 7.6 million deaths per year worldwide (13.5% of all deaths) (Lawes *et al*., 2008). High blood pressure causes significant morbidity, accounting for 7·0% of all global DALYs lost, mostly in low and middle income countries (LMICs) Suboptimal blood pressure represents about 10% of the world's overall healthcare expenditures (Lim *et al*., 2012). However, more than 90% of the expenditures on antihypertensive treatment, amounting about $50 billion each year (Gaziano *et al*., 2009). are spent in high-income countries (Riley, 2006). Additionally, it is estimated that three out of four individuals who suffer from hypertension live in LMICs (Lawes, 2005). Recently, many countries have undertaken large-scale health surveys and epidemiological studies that include measures of cardiovascular risk factors (Kearney *et al*., 2008). Hypertension prevalence is difficult to determine in such population surveys, however, since many of them are based on self-report only. Moreover, hypertension awareness and control are not possible to examine with self-report data. Thus, using data from multiple sources seems to be a useful way of retrieving information to tackle this relevant problem in public health. High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia (2010). Hypertension (HTN) exerts a substantial public health burden on cardiovascular health status and healthcare systems in India (Tibazarwa *et al*., 2014). HTN is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India (Lim *et al*., 2012). The WHO rates HTN as one of the most important causes of premature death worldwide (Leeder *et al*., 2004). The Global and Regional Burden of Disease and Risk Factors study (2001), in a systematic analysis of population health data for attributable deaths and attributable disease burden, has ranked HTN in south Asia as second only to child underweight for age (Srinath Reddy *et al*., 2005). In an analysis of worldwide data for the global burden of HTN, 20.6% of Indian men and 20.9% of Indian women were suffering from HTN in 2005 (Gupta, 2004). The rates for HTN in percentage are projected to go up to 22.9 and 23.6 for Indian men and women, respectively by 2025 (Mackay and Mensah, 2004). Recent studies from India have shown the prevalence of HTN to be 25% in urban and 10% in rural people in India (Lopez *et al*., 2006; Kearney *et al*., 2005; Thankappan *et al*., 2006; Gupta, 1997). According to the WHO 2008 estimates, the prevalence of raised BP in Indians was 32.5% (33.2% in men and 31.7% in women) (Das *et al*., 2005). However, only about 25.6% of treated patients had their BP under control, in a multicenter study from India on awareness, treatment, and adequacy of control of HTN (Noncommunicable diseases country profiles 2011).

An alarming rise in HTN projected by Global Burden of Hypertension 2005 study, (Hypertension Study Group Prevalence, awareness, treatment and control of hypertension among the elderly in Bangladesh and India, 2001). The GBD 2010 study (Devi *et al*., 2013) and WHO 2011 NCD India specific data (Gupta *et al*., 2012). Portray a grim picture for the 17.8% of the world's population who reside in India. Previously, a systematic review on the prevalence of HTN in India, for studies published between 1969 and July 2011, reported a range between 13.9 to 46.3% and 4.5 to 58.8% in urban and rural areas of India, respectively (Kaur, 2012). The regional variations (between urban and rural) reported in prevalence of HTN are also seen in cardiovascular diseases. Published literature reports regional variations in mortality and prevalence of CHD and stroke in India (south India has higher CHD mortality and eastern India has higher stroke rates Similar variations are also seen among urban and rural areas with CHD prevalence being higher in urban parts of India

Rising burden of hypertension in India

In India, hypertension is the leading NCD risk and estimated to be attributable for nearly 10 per cent of all deaths (Patel *et al*., 2011). Adult hypertension prevalence has risen dramatically over the past three decades from 5 per cent to between 20-40 per cent in urban areas and 12-17 per cent in rural areas (Gupta, 2004). The number of hypertensive individuals is anticipated to nearly double from 118 million in 2000 to 213 million by 2025 (Reddy *et al*., 2005). It is estimated that 16 per cent of ischaemic heart disease, 21 per cent of peripheral vascular disease, 24 per cent of acute myocardial infarctions and 29 per cent of strokes are attributable to hypertension underlining the huge impact effective hypertension prevention and control can have on reducing the rising burden of cardiovascular disease (CVD).

Bronchial asthma

Bronchial asthma is heterogeneous pulmonary disorder characterized by recurrent episodes of cough, breathlessness and wheezing, which may resolve spontaneously or after the use of bronchodilator medication (Agarwal *et al*., 2015). The global prevalence of asthma is anticipated to be approximately 4.5 per cent (Masoli *et al*., 2004; To *et al*., 2012). There are about 334 million patients with asthma affecting all age groups, across the world (The Global Asthma Report, 2014). The prevalence of asthma has increased over time and an additional 100 million people worldwide are expected to develop asthma by the year 2025 (Aggarwal *et al*., 2006). In the Indian study on epidemiology of asthma, respiratory symptoms and chronic bronchitis in adults (INSEARCH), a survey conducted in two phases across 16 centers in India, the prevalence of asthma in adults was 2.05 per cent, with an estimated burden of 17.23 million (Agarwal *et al*., 2014). A recent analysis using three different estimate models (INSEARCH, GINA and WHO survey) suggests that the prevalence of asthma in India varies between 2.05 to 3.5 per cent (17-30 million patients) (Engel and Pedley, 2008). The estimated cost of asthma treatment per year for the year 2015 has been calculated to be approximately □139.45 billion (Murthy and Sastry, 2015). An estimated 15 million disability adjusted life years (DALYs) are lost due to asthma.

Epilepsy

Epilepsy is one of the most common neurological diseases causing significant medical and social morbidity. Epilepsy is

characterized by recurrent, usually unprovoked, epileptic seizures, as well as by the cognitive, psychosocial, and social consequences of this condition (Chang and Lowenstein, 2003; Engel and Pedley, 2008). The disturbances of neuronal activity that occur during seizures may result in strange sensations, emotions, and behaviors. They may also sometimes cause convulsions, abnormal movements, and loss of consciousness (Giourou *et al*., 2015). There are 50 million people living with epilepsy worldwide, and most of them reside in developing countries. It is estimated that there are more than 10 million persons with epilepsy (PWE) in India. Its prevalence is approximately 1% of our population and is higher in the rural (1.9%) compared with the urban population (0.6%). The burden of epilepsy, as estimated using the disability-adjusted life years (DALYs), accounts for 1% of the total burden of disease in the world. This does not take into account the morbidity caused by social stigma and isolation, which PWE in our country face; this in turn leads to escalation of the disease burden (Tripathi *et al*., 2012). The disorders affect both male and female subjects and can develop at any age. Despite advances in epilepsy treatment, a large treatment gap exists in India, which can be attributed to the lack of knowledge of antiepileptic drugs (AEDs), poverty, cultural beliefs, stigma, poor health care infrastructure, and shortage of trained professionals. The annual economic burden of epilepsy in India is 88.2% of the gross national product (GNP) per capita and 0.5% of the GNP (Thomas *et al*., 2001).

Aim: To Assess the Prevalence of Disease States and to find out Medication Taking Behavior of Patients in Rural Area in Guntur.

Objective

- To assess the disease states prevailing in rural areas
- To assess medication taking behavior of patient
- To identify the most commonly used OTC products in that area

Study methodology

A crossectional study was conducted in the community setting (Rural Areas around the Guntur) for a duration of 6 months period i.e., from January 2016 to June 2016. Subjects of either gender of age above 18 years, willing to participate and answer the queries were included in the study. Subjects below 18 years of age and unwilling to participate in the study were excluded. After enrolling the subjects into study the details on demographic data, regarding the disease status, medication taking behavior, usage of OTC medication, were collected. Then the collected data was tabulated.

RESULTS

A Total of 252 subjects were identified and were included in the study. Table 1 depicts Age, Gender, Employment, Education, Income level/month of which 14.6% people were 18 and below 30 years of age; 53.1% were above 30 and below 50 years of age and 32.1% were above 50 years of age, 54.7%, 44.2% were males & females respectively, 60.3%, 39.6% were Employed & Unemployed respectively, 31.3% 42%, 21.4%, 5.1% were Illiterate, Primary, Secondary, Graduate respectively, 61.5% were earning a financial amount <10,000 per month, 33.3% were earning a financial amount 10,000-20,000 per month and 5.1% were earning a financial amount >20,000 per month respectively.

Table 1. Patient characteristics

Parameter	No of subjects (N=252) n	Percentage (%)
Age		
18-30	37	14.6%
30-50	134	53.1%
>50	81	32.1%
Gender		
Male	138	54.7%
Female	114	44.2%
Employment		
Employed	152	60.3%
Unemployed	100	39.6%
Education		
Illiterate	79	31.3%
Primary	106	42%
Secondary	54	21.4%
Graduate	13	5.1%
Income level/month		
<10,000	155	61.5%
10,000-20,000	84	33.3%
>20,000	13	5.1%

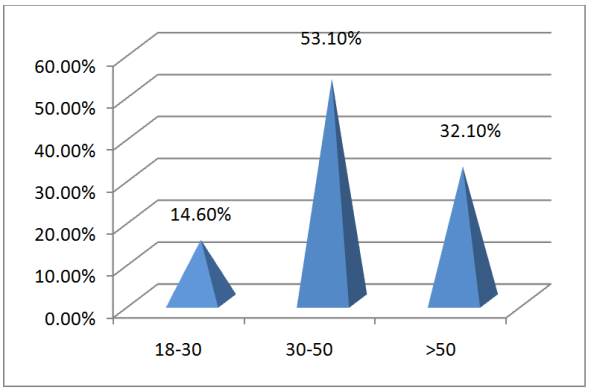


Figure 1. Age wise distribution

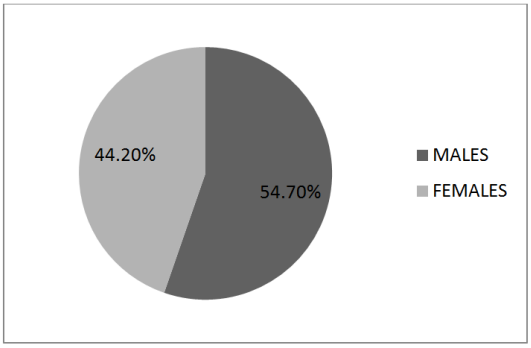


Figure 2. Gender wise distribution

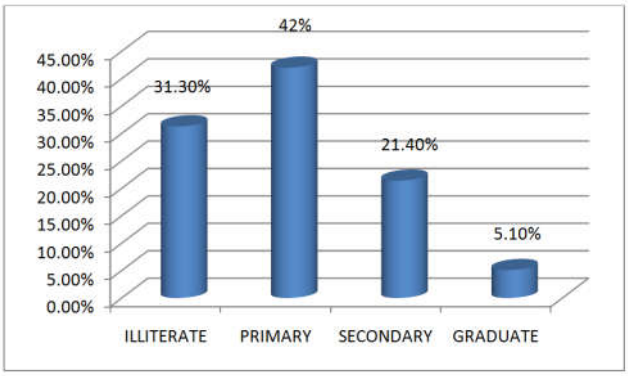
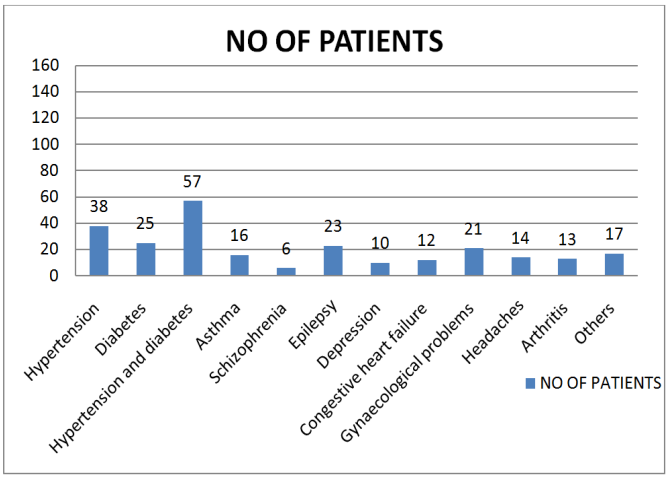


Figure 3. Education level of the study participants

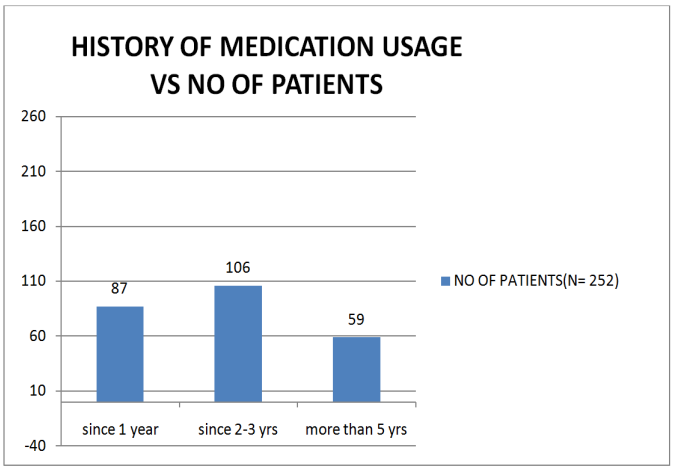
Table 2. Prevalence of diseases vs no of patients

S.No.	Disease	No of patients (n= 252) n	Percentage (%)
1.	Hypertension	38	15.07
2.	Diabetes	25	9.92
3.	Hypertension and diabetes	57	22.61
4.	Asthma	16	6.34
5.	Schizophrenia	6	2.38
6.	Epilepsy	23	9.12
7.	Depression	10	3.96
8.	Congestive heart failure	12	4.76
9.	Gynaecological problems	21	8.33
10.	Headaches	14	5.55
11.	Arthritis	13	5.15
12.	Others	17	6.74



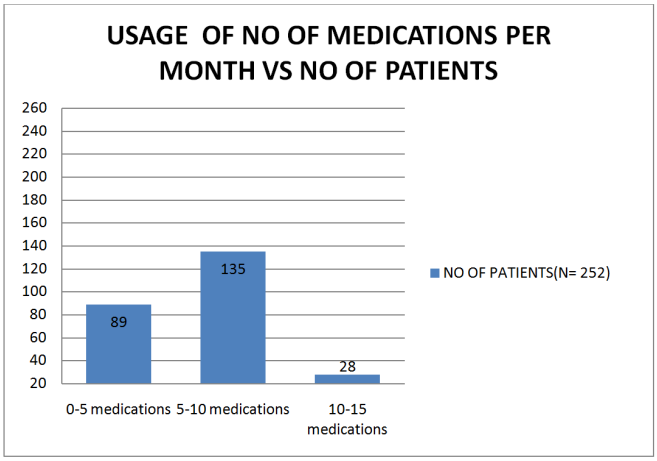
Medication usage timeline vs no of patients

S.No.	History of medication usage	No of patients (N= 252) n	Percentage (%)
1.	since 1 year	87	35
2.	since 2-3 yrs	106	42
3.	more than 5 yrs	59	23



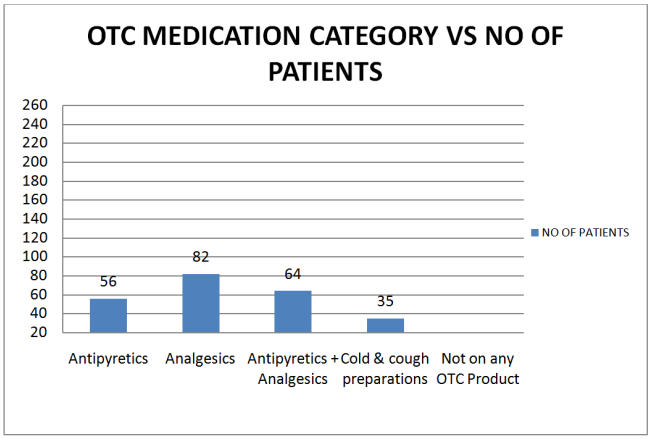
Number of medications vs no of patients

S.No.	Usage ofnumber of medication per month	No of patients (n= 252) n	Percentage (%)
1.	0-5 medications	89	35
2.	5-10 medications	135	54
3.	10-15 medications	28	11



OTC medication category vs no of patients

S.No.	Category	No of patients (N= 252) N	%
1.	Antipyretics	56	22
2.	Analgesics	82	33
3.	Antipyretics + Analgesics	64	25
4.	Cold & cough preparations	19	8
5.	Others	16	6
6.	Not on any OTC Product	15	6



DISCUSSION

Out of 252 subjects enrolled majority of the subjects were with in the age group of 30-50 yrs, and were males, employed, had primary education, income level per month was <10,000. Majority of the population surveyed were suffering from both hypertension and diabetes, followed by hypertension, diabetes, asthma alone etc. Most of the people were using medication from atleast 2 years and were on 5-10 medications. Majority of patients were using OTC products for minor ailments and was found to be analgesic category

Conclusion

This study concludes that Prevalence of disease states was alarming, and there is a need for cli nical pharmacist to recognize and to incorporate the necessary step to reduce the burden of diseases and to promote rational drug use. Pharmacists have a professional responsibility to reduce the burden of disease and improve health provide sound, unbiased advice and to ensure that self medication is reported to only when it is safe and appropriate to do so. This study also emphasizes that self medication must be correctly taught and

controlled and there is an alarming need for promoting appropriate usage of medications in health care system.

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Conflicts of Interest: None

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