



Tracking Endemic Disease Patterns: An Observational Approach to Understanding Impact and Risk

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ABSTRACT

Aim: To assess the prevalence and spread of endemic disease among the patients admitted to District Government General Hospital Rajahmundry over a specific time period. Objectives: to determine the overall frequency of endemic diseases among patients who are admitted in District Hospital Rajahmundry. Identify the most common and often endemic diseases diagnosed among the patients. Analyze seasonal patterns in disease prevalence and spread.

Methodology: a prospective observational study over six-months was conducted to assess the prevalence of specific diseases and their co-morbidities at a 500-bed Tertiary Care Teaching Hospital spanning from November 2023 to April 2024. The study focused on identifying various diseases with diverse clinical spectrums and associated risk factors. Data was collected from patient case surveys, capturing demographic and diagnostic details. The age groups ranging from under 20 to over 81 years were included and categorized into distinct groups for analysis.

Results: In our study, the endemicity of HIV was found to be the maximum out of all the other diseases i.e., 17%, Dengue ranks the second highest i.e., 12.9%, followed by malaria which shows 10.5%, after that CKD ranks next to the former and its percentage is 9.2 %, followed by the others like TB , Pancreatitis, CLD etc.

Conclusion: the most prevalent diseases are HIV (17%), dengue (12.9), malaria (10.5%), CKD (9.2), Tuberculosis (8.2) respectively. The least prevalent diseases are found to hepatitis A (0.4%), influenza (2.0%), hepatitis C (2.6%).

Keywords: Endemic Diseases, Co-morbidities, HIV, Dengue, Malaria, Prevalence.

INTRODUCTION

AIMS AND OBJECTIVES:

- To assess the frequency and occurrence of endemic diseases among patients admitted to Rajamahendravaram District Hospital.
- To understand the overall impact of endemic diseases on the patient population.
- To make a list of the most frequently diagnosed endemic diseases among the patients highlighting those with the highest incidence rates.
- To analyze how prevalence of the diseases gets influenced by the seasonal changes and identifying patterns that could influence when and how outbreaks occur.
- To provide recommendations for enhancing the hospitals management, prevention, and strategies to better control and prevent the spread of infectious diseases in the region.

INTRODUCTION

The term endemic is coined by Hippocrates. An endemic disease can be defined as the constant presence of a disease or infectious agent within a given geographic area or population group and it can also be defined as the normal

prevalence of a particular disease within a particular area or group.¹ Endemic diseases need not be occurred at a high rate; they can also be at a low rate. But the hallmark trait is the disease must consistently occur within a specific geographical area, regardless of whether the number of cases is high or low.² Examples of endemic diseases include malaria, hepatitis B, dengue, typhoid, influenza, HIV, Chagas disease, Lassa fever, Ebola, meningitis, leptospirosis etc.

Common Endemic Diseases in district hospital Rajahmundry. Malaria is found to be an endemic disease in nearly 100 countries in which the most are from the Africa and about 90% of the deaths caused by malaria occur in Africa. Malaria is one of the communicable diseases that is caused by the plasmodium species through the bite of female anopheles' mosquito.³ The other species like P. vivax, P. ovale, P. malaria causes infection in the humans.⁴ The malarial parasite completes its life cycle in two hosts, asexually in man and sexually in female anopheles' mosquito. In man, it mainly affects the hepatocytes and RBCs and causes the symptoms like grades fever, chills, and anemia and may lead to coma.⁵

Dengue is a widespread infectious disease which is highly endemic and that primarily affects tropical and subtropical regions and is caused by one of the four different serotypes of dengue virus: DENVs 1-4.⁶ It is a mosquito borne disease that is commonly transmitted by the mosquito Aedes



aegypti. Clinical manifestations of dengue can range from asymptomatic infection to severe multiple organ failure and may also lead to hemorrhagic fever.⁷ This pattern emphasizes how urgently comprehensive public health initiatives are needed to stop dengue fever from spreading and lessen its negative effects on the population.⁶ typhoid is one of the communicable diseases that is caused by the species *Salmonella Typhi* which is a human host restricted organism.⁸ The mode of transmission is mainly through the fecal-oral route through contaminated food and water.⁹ The most commonly used diagnostic test to diagnose typhoid fever is Widal test. The clinical presentations of the typhoid are abdominal pain, high fever, diarrhea, headache, weakness etc., and the incubation period is 1-14 days.¹⁰ Human immunodeficiency virus is an infection which targets the white blood cells [CD4 cells] of our body resulting in weakening the immune system.¹¹ The mode of transmission of HIV is mainly through body fluids like blood, semen, vaginal fluids, and breast milk of infected persons.¹² If HIV is untreated for long period, it may progress into AIDS which is the final stage of HIV. Comorbidities like TB, COPD and CKD etc. Prevention can be done by taking some preventive measures such as safe sex, avoiding needle sharing, safe blood transfusions and educating the people by conducting awareness programs on HIV.¹³ Treatment is given by antiretroviral therapy [ART].¹¹

Pancreatitis is inflammation of pancreas which is characterized by destruction of acinar components of pancreas, which is a leaf shaped gland present behind the stomach, in between the J shape of duodenum. It happens due to self-destruction of pancreatic cells by digestive enzymes.¹⁴ Pancreatitis may cause structural changes to pancreas. It can be either acute or chronic. It worsens over a period rather than improving its condition whereas acute pancreatitis cures on the treatment.¹⁵ Acute pancreatitis is mostly caused by gall stones.¹⁶ Pancreatitis cause severe complications such as kidney failure, breathing problems, vulnerable to infection, pseudo cyst, malnutrition, diabetes and pancreatic cancer.¹⁷ The main leading cause for acute pancreatitis in endemic areas is ascariasis.¹⁸ chronic obstructive pulmonary disease is an irreversible chronic inflammatory disease of lungs associated with severe airway obstruction and inflammation resulting in difficulty in breathing.¹⁹ Chronic bronchitis is inflammation of bronchioles which results in excess mucus production in the airways and there is a continuous cough and difficulty in breathing.²⁰ The main cause for COPD is smoking. The risk factors include autoimmune, environmental factors such as air pollution, atmospheric dust, allergens and chemicals, host factors such as genetically predisposition, alpha-anti trypsin deficiency, airway hyper responsiveness and impaired lung growth.²¹

chronic kidney disease is the 16th leading cause of death worldwide.²² During CKD, kidneys loss their ability to function effectively, this may gradually progress and worsens the kidneys condition. CKD is broadly classified into six subtypes based on the glomerular filtration rate.²³ CLD has become a leading cause of mortality, particularly in

developing nations. Recently, there has been a noticeable rise in the incidence of this debilitating condition. There are various reasons for causing chronic liver disease, but some of the most common are alcoholic liver disease which is due to alcohol intake, nonalcoholic fatty liver disease, chronic viral hepatitis, genetic causes such as alpha-1antitrypsin deficiency, hereditary hemochromatosis and Wilson disease and autoimmune causes include autoimmune hepatitis, primary biliary cirrhosis, etc., and other include drugs that induce CLD.²⁴ Around 50% of deaths are due to non-alcoholic fatty liver disease. Cirrhosis is the final stage of the chronic liver disease.²⁵

hepatitis is inflammation of liver which is due to various infectious viruses and noninfectious factors, causing a spectrum of health issues, some potentially deadly. Hepatitis virus has five main strains, they are hepatitis A, B, C, D and E.²⁶ Hepatitis can be short-term infection or long-term infection, some type's cause's only acute infections and other can cause both acute and chronic infections.²⁷ Hepatitis A and E spread through contaminated food and water whereas, hepatitis B, C, and D spread through blood contact with infected person in which hepatitis B and D can also spread through other body fluids such as semen, breast milk, vaginal secretions etc. Hepatitis can result in complications like cirrhosis, liver failure, and liver cancer. This can be prevented by early diagnosis and treatment.²⁸

METHODOLOGY

A hospital based Prospective observational study was conducted in Government teaching general hospital, East Godavari, India. Survey of all the collected 534 cases with co-morbidities management consisting of inpatients were accomplished over a period of six months from June 2024 to November 2024. The required data were collected from the case files of the patient and patient counseling in ward rounds. Cases were segregated as per their demographics, Concomitant co-morbidities, past & personal history of patients and therapeutic considerations in order to interpret and draw inferences.

Study Design:

A prospective observational study.

Study Site:

The study was conducted in Government teaching general hospital, Rajamahendravaram, India.

Study Population:

534 cases were collected from general medicine cases in wards according to study criteria.

Study Period:

Inclusion Criteria:

1. Patient of Any age.
2. Patients of either sex.
3. Patients with Co-morbid conditions.



4. Patient with past and personal history**Exclusion Criteria:**

Pregnant and lactating women.

The Patient went on LAMA.

A collection of data:

Data of patients matching inclusion criteria were recorded.

Total 534 cases were collected.

The study was carried out for 6 months duration and Data like name, age, sex, prescription drugs including antibiotics used were recorded in the prepared case record form.

Data Analysis:

Data was analyzed on MS Excel and descriptive statistics were used for analyzing the result of the study.

RESULTS & DISCUSSION**Table 1:** Percentage on diseased population on particular age groups

S.no	Age	Male	Female	Total	P-value
1.	<20	36	19	55	<0.005
2.	21-40	147	79	226	
3.	41-60	110	81	191	
4.	61-80	31	31	62	
	TOTAL	324	210	534	

Table 2: Percentage of particular disease with comorbidities

S.no	Morbidity	No. of Patients	Comorbidity	No. of Patients	Percentage %
01	Malaria	55	DM	2	3.636%
			DM+ HTN	1	1.818%
			HTN	5	9.09%
02	Typhoid	20	HTN	5	25%
			DM	3	15%
03	LRTI	18	HTN	4	22.2
			DM+HTN	2	11.11
04	Dengue	69	DM+HTN	8	11.59
			HTN	13	18.8
			DM	11	15.9
05	HIV	91	HTN	15	16.4
			DM	12	13.1
			DM+HTN	6	6.593
06	TB	44	HTN	5	11.36
			DM	9	20.4
			DM+HTN	4	9.090
07	Hepatitis -B	28	DM	4	14.2
			HTN	1	3.5
			DM+HTN	5	17.8
08	COPD	32	HTN	15	46.8
			HTN+DM	5	15.6
			DM	1	3.125
09	CKD	49	HTN	11	22.4
			HTN+DM	14	28.5
			DM	7	14.2
10	Pancreatitis	40	HTN	3	7.5
			DM	6	15
			HTN+DM	1	2.5
11	Thyroid	21	DM	9	42.8
			HTN	2	9.52
			DM+HTN	4	19.09
12	CLD	40	DM	8	20
			HTN	5	12.5
			DM+HTN	3	7.5
13	Hepatitis-C	14	HTN	6	42.8
			DM+HTN	1	7.14

Table 3: Percentage of patients having particular diseased condition

S.no	Diagnosis	Male	Female	Total	Percentage %	P-value
1.	HIV	46	45	91	17.04%	<0.005
2.	DENGUE	38	31	69	12.92%	
3.	MALARIA	29	26	55	10.30%	
4.	CKD	37	12	49	9.18%	
5.	TB	24	20	44	8.24%	
6.	PANCREATITIS	37	3	40	7.49%	
7.	CLD	34	6	40	7.49%	
8.	COPD	26	6	32	5.99%	
9.	HBV	9	19	28	5.24%	
10.	THYROID	6	15	21	3.93%	
11.	THYPHOID	14	6	20	3.75%	
12.	HCV	5	9	14	2.62%	
13.	LRTI	11	7	18	3.37%	
14.	INFLUENZA	7	4	11	2.06%	
15.	HEP A	1	1	2	0.37%	
	TOTAL	324	210	534	100.00%	

Table 4: Percentage of patients having comorbidities

S.no	Comorbidities	Male	Female	Total	P-value
1.	YES	192	120	312	<0.005
2.	NO	132	90	222	
3.	TOTAL	324	210	534	

The gender-wise distribution of participants highlights that out of a total of 534 individuals, 324 were male (60.67%) and 210 were female (39.33%). This indicates a male predominance in the study population, which could reflect gender-specific health-seeking behavior or disease prevalence trends. The age distribution of the 534 participants shows that the largest age group was 21–40 years, comprising 226 individuals (42.34%), followed by 41–60 years (191 participants, 35.77%). Males predominated across all age groups, particularly in the 21–40 years category, where they accounted for 65% of participants. A statistically significant difference (p -value < 0.005) was observed in the age distribution between genders. Analysis of comorbidities revealed that 312 participants (58.43%) reported the presence of at least one comorbid condition, with a higher prevalence in males (192 cases, 59.26%) compared to females (120 cases, 57.14%). The remaining 222 participants (41.57%) reported no comorbidities. The p -value (< 0.005) indicates a significant difference between genders, emphasizing the need to investigate the underlying causes of this disparity.

Table 3 provides an analysis of the medical diagnoses among 534 participants, breaking them down by gender, frequency, and percentage. **HIV** emerged as the most common diagnosis, affecting 91 individuals (17.04%) with a nearly equal gender distribution (46 males and 45 females). **Dengue** (12.92%) and **Malaria** (10.30%) were the second and third most frequent diagnoses, with males showing

slightly higher prevalence in both conditions. Statistically significant differences (p -value < 0.005) were observed in **Tuberculosis (TB)** cases, which were more frequent in males (24) compared to females (20). Some conditions, such as **Hepatitis A** (2 cases) and **Influenza** (11 cases), were rare within the study population. In co-morbid condition HIV with HTN, DM, HTN + DM are more when comparative to that of other diseases. Next to that DENGUE & CKD with HTN, DM, HTN + DM are more in number. The least number of cases were found to be LRTI with co - morbidity.

Gender-specific trends revealed that males were predominantly affected by chronic conditions such as **chronic kidney disease (CKD)** (37 males vs. 12 females), **Pancreatitis** (37 males vs. 3 females), and **Chronic Liver Disease (CLD)** (34 males vs. 6 females). Conversely, females showed higher prevalence in **Hepatitis B Virus (HBV)** (19 females vs. 9 males) and **Thyroid Disorders** (15 females vs. 6 males). These observations emphasize the need for gender-specific healthcare strategies, as the data reflects both biological and potentially socio-environmental influences on disease patterns. Such insights are crucial for tailoring public health interventions and resource allocation to meet the unique needs of both genders.

CONCLUSION

The endemic studies have shown the maximum prevalence of HIV. The Prevalence of HIV in this current study was 33%. The age between 21-40 years has a higher prevalence.



Dengue patients are prevalent. Before prescribing to the patients, evaluation of medications with the suitable Criteria is required. Prescribing medicines by generic names Would help in less expensive treatment. Remaining Cases were either with one (or) more co-morbid Conditions. Institutional patient's mortality and Morbidity due to certain endemicity among the in-Patient population is currently essential to reduce the impact of clinical consequences.

ETHICAL CONDUCT OF THE STUDY:

This study was led in agreement with the acknowledged rendition of the Announcement of Helsinki, US Food and Drug Association (FDA) Regulation, in consistency with International Council for Harmonization (ICH) Good Clinical Practice (GCP) E6 R2 rules, and as indicated by the proper administrative necessities of India, where the review was led. The clinical review convention, convention revisions, materials used to select subjects, informed consent Forms (ICFs) and materials to archive assent, and some other proper review-related records were evaluated and supported by IEC before the inception of the review at the review place.

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