



A Comparative Study of Dengue Verses Malaria in Tertiary Care Hospital versus Government Hospital in Khammam: Multi-Centered Prospective Observational Study

Rathna Kumari.G¹, G.Khavya Sri¹, Dr.J.Bhargava Narendra².

^{1,2}Department of Pharmacy Practice, Anurag Pharmacy College, Kodad, Telangana, India.

ABSTRACT

In an attempt we are assessing a clinical study, knowledge, awareness and preventive measures acknowledgement of Communicable Diseases such as Dengue and Malaria among patients in Tertiary Care Hospital Versus Government Hospital in Khammam, to compare the probability of communicable disease such as Dengue and Malaria in selected Hospital. To compare the prevalence of Dengue and Malaria among Urban and Rural people in selected hospitals. The present study was a multi-centered prospective observational study conducted in Mamatha General Hospital and Khammam Government Hospital, Khammam, Telangana, India. The total number of cases collected during the study period 6 months was 500. A multi-centered prospective observational study. The major finding of this study is that the probability of Communicable diseases such as Malaria and Dengue among patients. In this study the population is 500, the highest Prevalence is Dengue i.e. 465(93%) than Malaria i.e. 35(7%). In these Female patients are high i.e. 252 compared to Male i.e. 248. According to study evaluation females are more affected. The occurrence of Dengue is observed in the Age group of 41-50 years i.e. 90 patients. The Rural group related patients i.e. 342 are more when compared to urban group related patients i.e. 158. The present multi-centered prospective observational study was conducted in subjects(n=500) from inpatients of Department of General Medicine, Mamatha General Hospital and Khammam Government Hospital, Khammam, Telangana, India, to assess the Probability of Malaria and Dengue, Knowledge assessment among patients about Malaria and Dengue, and also Acknowledging the patients about Dengue and Malaria.

Key words:

Communicable Diseases, Dengue and Malaria, prospective observational study, Tertiary Care Hospital, Government Hospital.

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*Corresponding Author

Name: G.Khavya Sri

Email: khgodasi@gmail.com

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vital element of planning and evolution of prevention and control programs¹.

INTRODUCTION

Now days, the communicable diseases control is announced as one of the most important health issues to prevent the spread of the diseases. The increase of the new emerging and re-emerging communicable diseases including Dengue, Malaria and Typhoid according to seasonal changes. Regardless of tremendous advances of medical sciences in the areas of prevention and treatment of communicable diseases unfortunately, a communicable disease with the potential capacity to cause epidemics is still a public health problem throughout the world. The burden of communicable and infectious diseases has not been reduced; instead, it has been increasing during the last years. However besides them, the incidence and prevalence of infectious diseases and controlled infectious diseases has been re-emerged progressively too.

World Health Organisation (WHO) ranks dengue, as the major mosquito-borne viral disease in the world. The incidence of dengue cases has been increasing by 2% each year. The situation in our country is reflected by the occurrence of major dengue outbreaks go over the preceding few years.

To reduce the burden of communicable diseases, especially in developing countries data production should be strengthened by the creation of precise and possible surveillance to this situation and their risk factors. In many parts of the world, patient surveillance has been committed and has been recognised as one of the significant components of prevention and control programs. Communicable disease reporting is a

AIM AND OBJECTIVE

AIM

To assess a clinical study, knowledge, awareness and preventive measures acknowledgement of Communicable Diseases such as Dengue and Malaria among patients in Tertiary Care Hospital Versus Government Hospital in Khammam.

OBJECTIVE

1. To compare probability of communicable disease such as Dengue and Malaria in selected Hospital.
2. To compare the prevalence of Dengue and Malaria among Urban and Rural people in selected Hospital.
3. To assess knowledge and awareness regarding Dengue and Malaria among patients.
4. Acknowledging preventive measures of Dengue and Malaria to patients.

MATERIALS AND METHODS

The present study was a multi-centered prospective observational study conducted in Mamatha General Hospital and Khammam Government Hospital, Khammam, Telangana, India. The total number of cases collected during the study period 6 months were 500.

INSTITUTIONAL ETHICS COMMITTEE APPROVAL

Prior to start of study, approval was obtained from the Institutional Ethics Committee (ANNEXURE I), Anurag Pharmacy College, Ananthagiri, Kodad, Telangana.

STUDY DESIGN – A multi-centered prospective observational study.

SOURCE OF DATA – Before collecting data Informed Consent Form (ANNEXURE II) is obtained from every individual patient who is willing to participate in the study. The study was conducted by collecting data (ANNEXURE III) from patients, interviewing patients and acknowledging patients about Prevention of Mosquito breeding(ANNEXURE V), Preventive Measures of Dengue and Malaria(ANNEXURE VI) and Natural Remedies of Dengue and Malaria(ANNEXURE VII) in the Department of General Medicine, Mamatha General Hospital and Khammam Government Hospital, Khammam, Telangana.

STUDY PERIOD – The study was conducted 6 months of duration.

INCLUSION CRITERIA

- Patients with any age group.
- Patients who are visiting General Medicine Ward (I.P) with dengue and malaria cases.
- Patients who are diagnosed with dengue and malaria and treated.
- Patients who are visiting hospital from urban and rural areas.

EXCLUSION CRITERIA

- Pregnant women and lactating mothers.
- Patients who are not diagnosed with dengue and malaria.
- Patients who discharged with Left against Medical Advice (LAMA) case.

This prospective observational study was comprised of Questionnaire (ANNEXURE IV) distributed among different age group to evaluate awareness of Malaria and Dengue in patients of different age to conclude knowledge among them. About 500 individuals (n=441) (infants 59 are excluded) participate in this study age from 15-30, 30-45, and above 45 years old was given questionnaire. Our aim was to identify the difference of general knowledge of both the diseases between patients of different ages. The questions included a general overview of both the diseases in simple language for the convenience of the general public. After detailed surveillance studies results were analyze and interpret and compared with different age groups to draw conclusion.

RESULTS

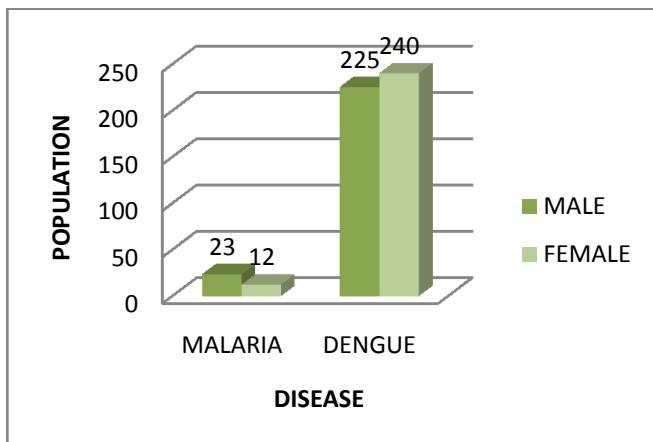
Number of study subjects is 500. From total 500 subjects 248 were males and 252 were females.

Table 5.1: Gender category.

SEX	MALARIA	DENGUE	TOTAL
Male	23(9.2%)	225(90.7%)	248(49.6%)
Female	12(48%)	240(95.2%)	252(50.4%)

Total	35	465	500
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Graph 5.1: Male vs Female

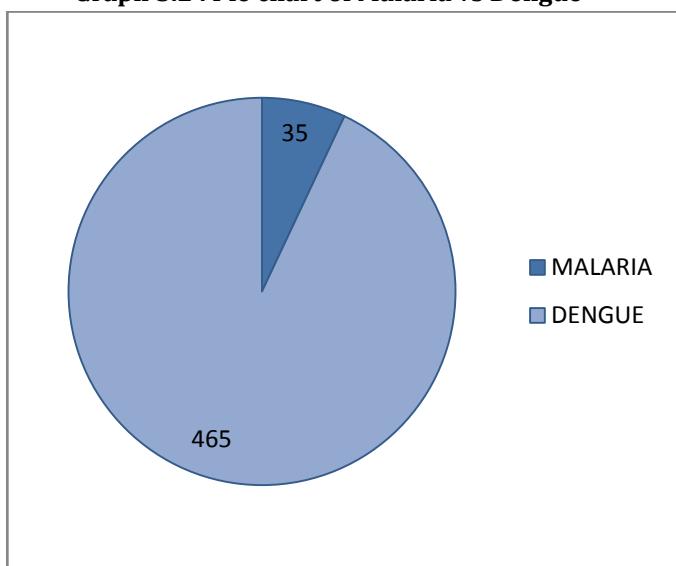


In the present category Males and Females are separated according to disease state. The Male percentage in this category is 49.6%. The female percentage is 50.4%. The chi-square statistic is 3.9093. The p-value is 0.048021. The result is significant at $p < 0.05$. As the total number of subjects are 500. The total number of Malaria cases are 35. The total number of Dengue cases are 465.

Table 5.2: Disease Category

DISEASE	POPULATION
Malaria	35 (7%)
Dengue	465 (93%)
Total	500

Graph 5.2 : Pie chart of Malaria vs Dengue



In the present category Malaria and Dengue cases are separated. The Malaria percentage is 7%. The Dengue percentage is 93%.

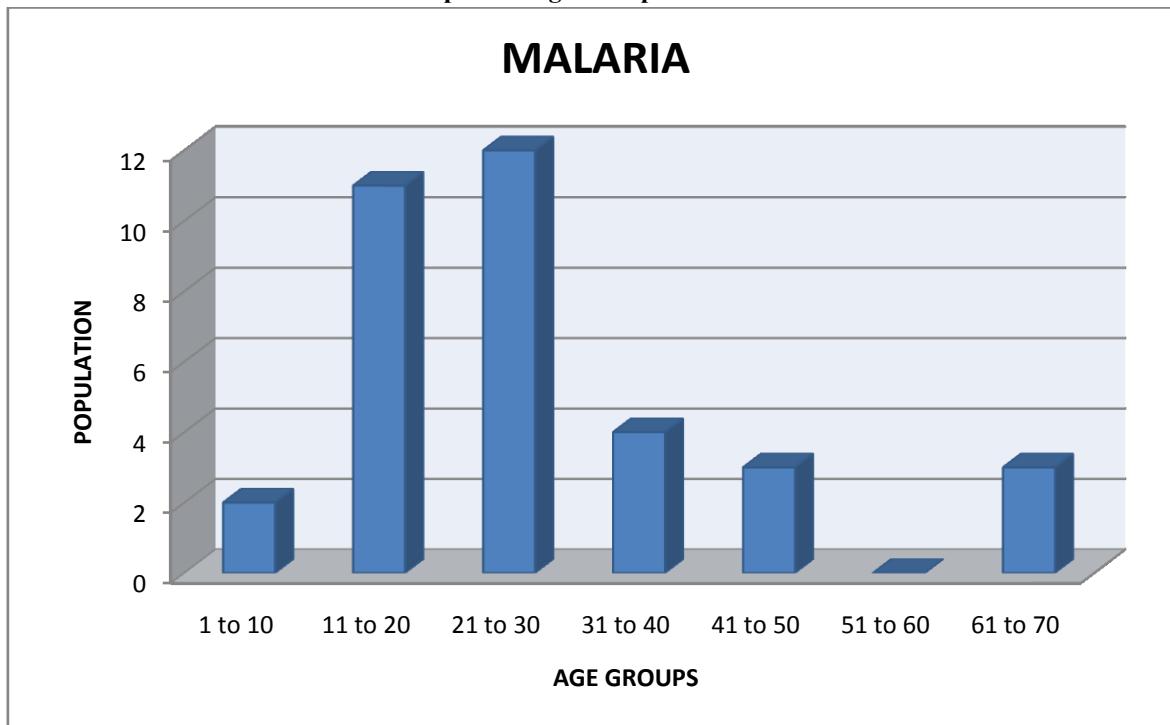
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In this category, Age is divided into Six Groups of Malaria cases i.e., 1 - 10Y, 11 - 20Y, 21 - 30Y, 31- 40Y, 41-50Y, 51 - 60Y, 61- 70Y.

TABLE 5.3: Age category of Malaria cases

1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	TOTAL
2 (5.7%)	11(31.4%)	12(34.2%)	4 (11.4%)	3(8.5%)	0	3(8.5%)	35

Graph 5.3: Age Groups of Malaria

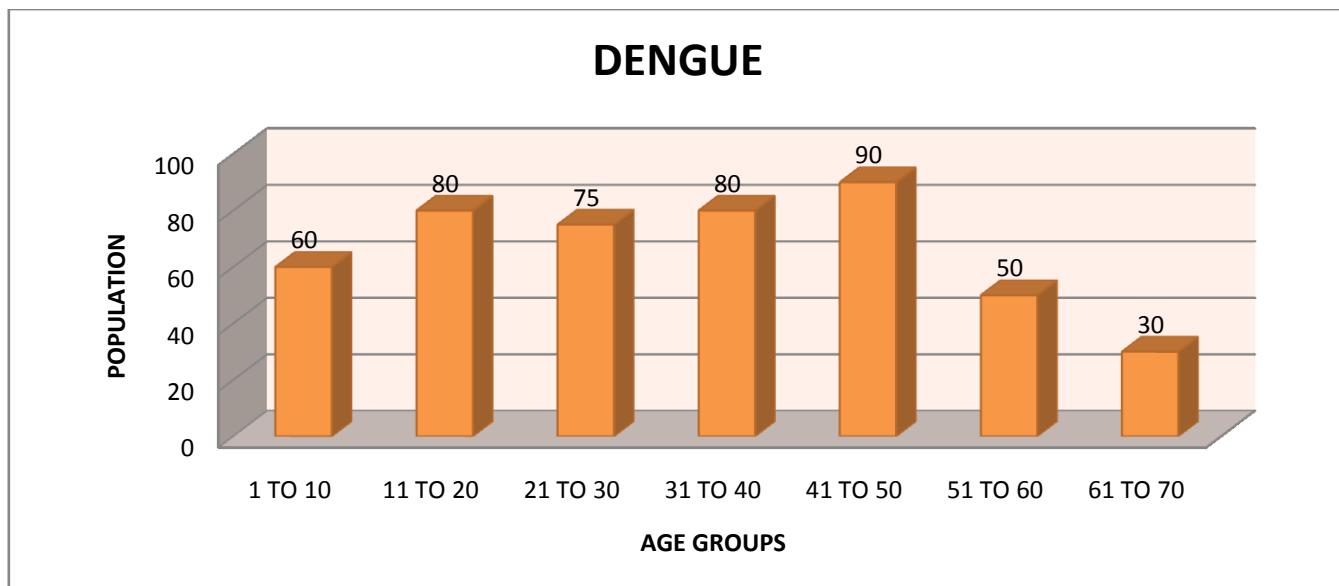


The age group's percentage of Malaria cases as follows, 1-10Y (5.7%), 11-20Y (31.4%), 21-30Y (34.2%), 31-40Y (11.4%), 41-50Y (8.5%), 51-60Y (0%), 61-70Y (8.5%). In this category, Age group of Dengue cases are divided into Six Groups i.e., 1 - 10Y, 11 - 20Y, 21 - 30Y, 31- 40Y, 41-50Y, 51 - 60Y, 61- 70Y.

Table 5.4: Age category of Dengue cases

1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	TOTAL
60(12.9%)	80(17.2%)	75(16.1%)	80(17.2%)	90(19.3%)	50(10.7%)	30(6.4%)	465

Graph 5.4: Age Category of Dengue

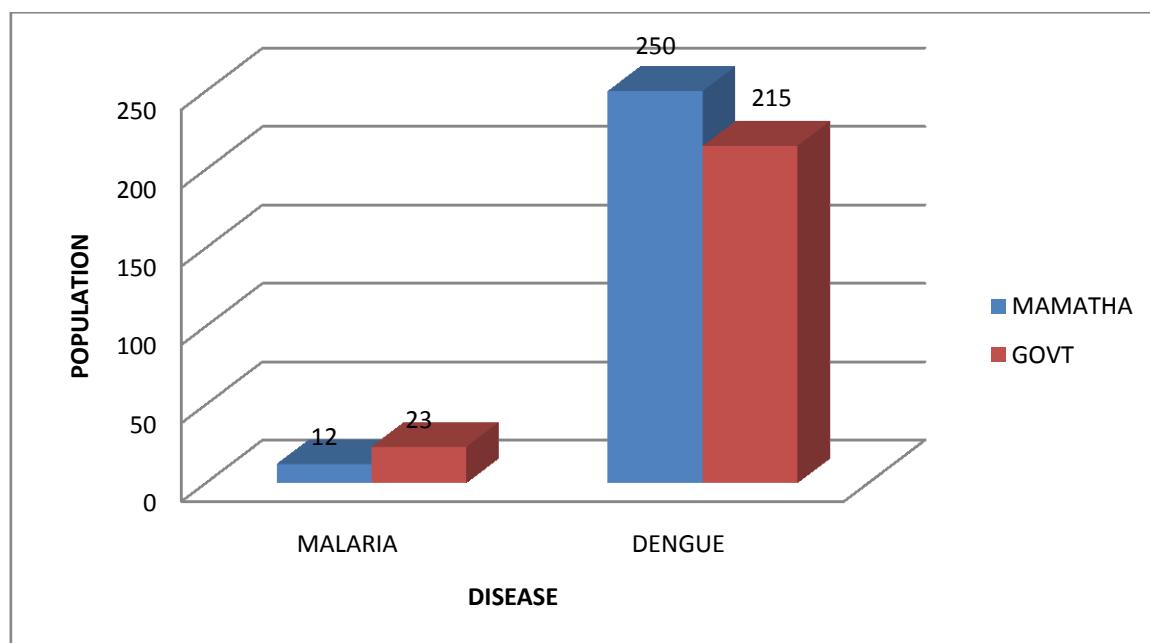


The age group's percentage of Dengue as follows 1-10Y (5.7%), 11-20Y (31.4%), 21-30Y (34.2%), 31-40Y (11.4%), 41-50Y (8.5%), 51-60Y (0%), 61-70Y (8.5%). In this category, the total number of cases i.e. 500 are separated according to two different hospitals i.e. Mamatha Hospital and Khammam Government Hospital with respective of Malaria and Dengue Cases.

Table 5.5: Mamatha Hospital vs government hospital

DISEASE	MAMATHA HOSPITAL	GOVERNMENT HOSPITAL	TOTAL
MALARIA	12(4.5%)	23(9.6%)	35
DENGUE	250(95.4%)	215(90.3%)	465
TOTAL	262(52.4%)	238(47.6%)	500

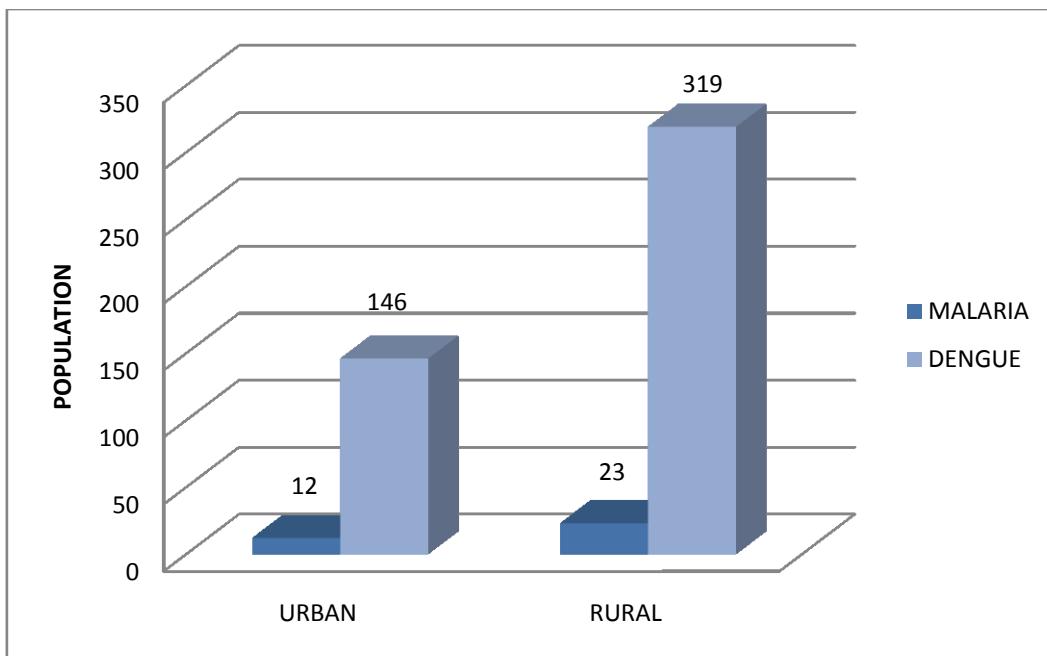
Graph 5.5: Mamatha Hospital Cases Vs Government Hospital Cases



In the present category, Malaria cases in Mamatha Hospital are 12(4.5%) and in Khammam Government Hospital are 23(9.6%). Dengue cases in Mamatha hospital are 250(95.4%) and in Khammam Government Hospital are 215(90.3%). Overall Mamatha Hospital cases are 262(52.4%), and Khammam Government Hospital cases are 238(47.6%). The chi-square statistic is 4.951. The p-value is 0.026076. the result is significant at $p < 0.05$. In this category the total number of cases i.e. 500 are separated according to urban and rural groups with respective of Malaria and Dengue cases.

Table 5.6 : Urban Group Vs Rural Group

DISEASE	URBAN	RURAL	TOTAL
MALARIA	12(7.5%)	23(6.7%)	35
DENGUE	146(92.4%)	319(93.2%)	465
TOTAL	158(31.6%)	342(68.4%)	500

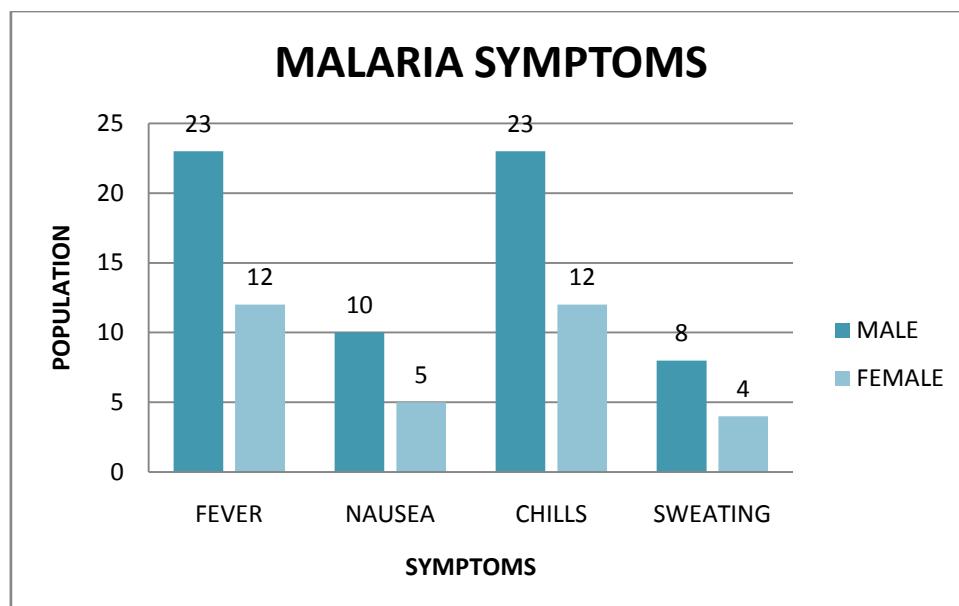
Graph 5.6: Urban Group Vs Rural Group

In the present category the, Malaria cases of Urban group are 12(7.5%) and Rural group are 23(6.7%). Next, Dengue cases of urban group are 146(92.4%) and rural group are 319 (93.2%).The total overall urban groups are 158(31.6%) and rural group are 342(68.4%). In this category major Symptoms of Malaria occurred in patients are estimated and calculated. The major symptoms which occurred in patients are Fever, Nausea/Vomiting, Chills/Shivering and Sweating.

Table 5.7: Major Symptoms of Malaria

S.NO.	SYMPTOMS	MALE (n=23)	FEMALE(n=12)
1.	Fever	23(100%)	12(100%)
2.	Nausea/ Vomiting	10(43%)	5(41%)
3.	Chills/ Shivering	23(100%)	12(100%)
4.	Sweating	8(34%)	4(33%)

Graph 5.7: Major Symptoms of Malaria



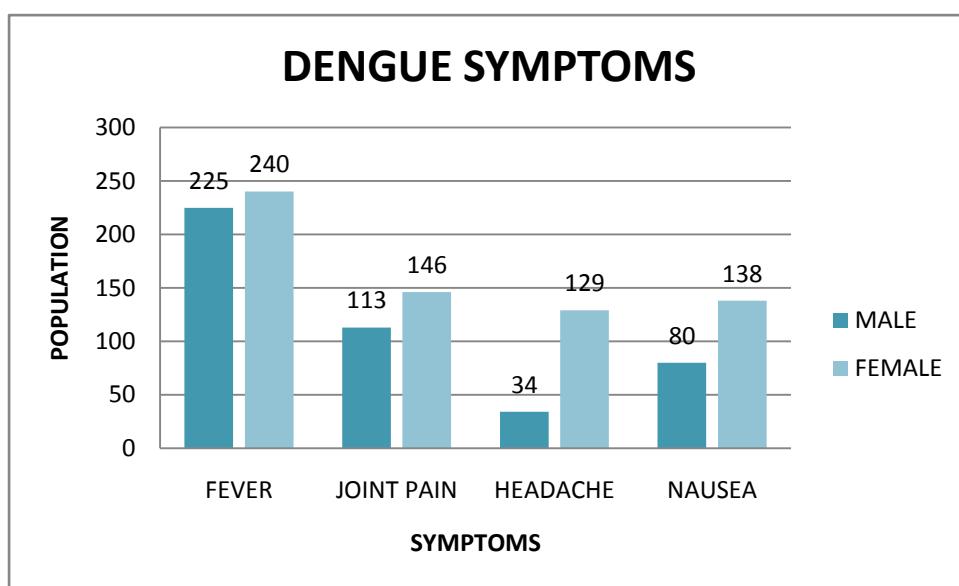
In the present category the number of patients and percentage of major Symptoms of Malaria as follows in Males, Fever – 23 (100%), Nausea/Vomiting- 10 (43%), Chills/Shivering – 23 (100%), Sweating-8 (34%). In Females, Fever – 12 (100%), Nausea/Vomiting- 5(41%), Chills/Shivering – 12 (100%), Sweating- 4 (33%).

In this category major Symptoms of Dengue occurred in patients are estimated and calculated. The major Symptoms which occurred in patients are Fever, Joint pain/Body pains, Headache and Nausea/Vomiting.

Table 5.8: Major Symptoms of Dengue

S.NO.	SYMPTOMS	MALE (n=225)	FEMALE(n=240)
1.	Fever	225(100%)	240(100%)
2.	Joint pain/ Body pains	113(50%)	146(60%)
3.	Headache	34(15%)	129(53%)
4.	Nausea/ Vomiting	80(35%)	138(57%)

Graph 5.8: Major Symptoms of Dengue



In the present category the number of patients and percentage of major Symptoms of Dengue as follows in Males : Fever – 225 (100%), Joint Pain - 113 (50%), Headache – 34 (15%), Nausea/Vomiting - 80 (35%). In Females - Fever – 240 (100%), Joint Pain - 146 (60%), Headache – 129 (53%), Nausea/Vomiting - 138 (57%).

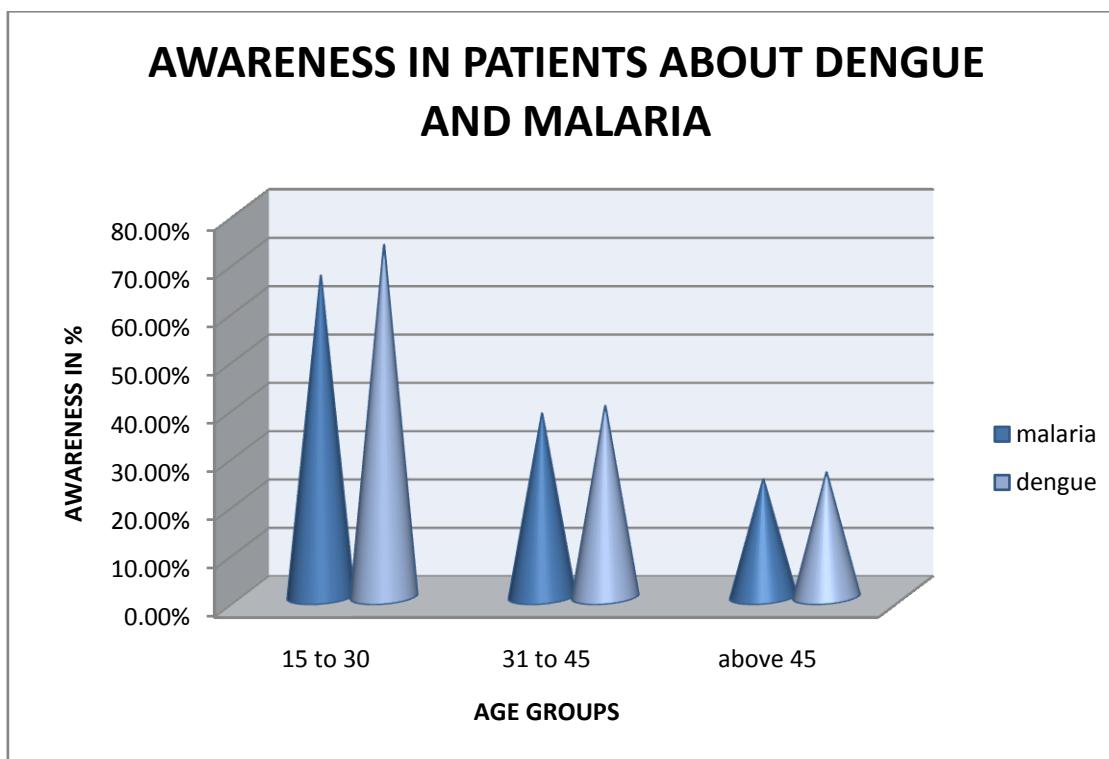
The above **Table 5.9.** clearly reveals the fact that there is huge lack in sufficient knowledge of Dengue and Malaria difference and prevention control in different age group which clearly showed that the youngest age group i.e. from age 15-30 showed highest level of literacy of Malaria and Dengue fever difference and prevention (66.4% in Malaria and 72.75% in Dengue), age group between 31-45

showed low level of awareness(37.9% in Malaria and 39.45% in Dengue) but more than 45 years age people showed very low level of awareness(24.29% in Malaria and 25.69% in Dengue).

Table 5.9. Percentage in patient's awareness about Dengue and Malaria.

Knowledge about malaria and dengue	Age between 15-30 years		Age between 30-45 years		Age above 45 years old		Total
	YES%	NO%	YES%	NO%	YES%	NO%	
About Malaria	86.5%	13.5%	60.1%	39.9%	37.4%	62.6%	61.3%
About Dengue	80.1%	19.9%	51.5%	48.5%	33.48%	66.52%	55%
Difference between Malaria and Dengue	68.9%	31.1%	30.3%	69.7%	19.13%	80.87%	39.4%
Medications for Malaria	49.9%	50.1%	10%	90%	0%	100%	19.9%
Medications for Dengue	60%	40%	15%	85%	3.2%	96.8%	26%
Precautions (Malaria)	60.63%	39.37%	51.2%	48.8%	40.63%	59.37%	50.8%
Precautions (Dengue)	82%	13%	61%	39%	46.98%	53.02%	63.3%
Awareness of Malaria	66.4%	-----	37.9%	-----	24.29%	-----	42.86%
Awareness of Dengue	72.75%	-----	39.45%	-----	25.29%	-----	45.9%

Graph 5.9. Percentage of Awareness of Dengue and Malaria difference in different age groups.



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This graph clearly shows that there is insufficient rate of literacy of Malaria and Dengue fever in patients and only 30% follow precautions in age group 15-30 years. As rural group patients are more and they don't have much knowledge about these communicable diseases such as Malaria and Dengue.

DISCUSSION

The major finding of this study is that probability of Communicable disease such as Malaria and Dengue among patients. In this study the population is 500, the highest Prevalence is Dengue i.e. 465(93%) than Malaria i.e. 35(7%). In this Female patients are high i.e. 252 compared to Male i.e. 248. According to study evaluation females are more effected.

The occurrence of Dengue is observed in Age group of 41-50 years i.e. 90 patients. The Rural group related patients i.e. 342 are more when compared to Urban group related patients i.e. 158.

The major Symptoms observed in Male patients of Malaria as follows, Fever - 23(100%), Nausea/Vomiting- 10(43%), Chills/Shivering - 23(100%) and Sweating - 8(34%). In Female patients of Malaria as follows, Fever - 12(100%), Nausea/Vomiting - 5(41%), Chills/Shivering - 12(100%), and Sweating - 4(33%).

The major Symptoms observed in Male patients of Dengue as follows, Fever - 225(100%), Joint Pain - 115(50%), Headache - 34(15%), and Nausea/Vomiting - 80(35%). In Female patients of Malaria as follows, Fever - 240(100%), Joint Pain - 146(60%), Headache - 129(53%), and Nausea/Vomiting - 138(57%).

This study aimed to find out the awareness of Malaria and Dengue in patients according to the different ranges of ages i.e. 15 to 30, 31 to 45 and above 45, collected data is shown in **Table 9**. This table shows awareness of patients about Malaria and Dengue according to the age wise in age of 15 to 30 i.e. youngest age have a greater awareness about Malaria and Dengue as compared to each other, in this range 72.75% patients knows about Dengue and 66.4% patients knows about Malaria.

In the second range of age i.e. 30-45, 37.9% patients know about Malaria and 39.45% patients have knowledge about Dengue.

In above 45 age patients have very low knowledge i.e. 24.4% of Malaria and 25.6% of Dengue. The overall awareness of Malaria and Dengue is 61.3% and 55% respectively.

CONCLUSION

The present multi-centered prospective observational study was conducted in subjects(n=500) from inpatients of Department of General Medicine, Mamatha General Hospital and Khammam Government Hospital, Khammam, Telangana, India, with the aim of assessing the Probability of Malaria and Dengue, Knowledge assessment among patients about Malaria and Dengue, and also Acknowledging the patients about Dengue and Malaria.

The main purpose of health education on Dengue and Malaria was to raise awareness about the disease that could be prevented. The study highlights that educating patients is the need in improving the Knowledge, Awareness and Practice of preventive measures for the complete control over the endemic disease. After careful considerations from this study we have concluded that patients have very low Awareness about Dengue and Malaria.

Climatic change with intermittent rain provides a favourable environment for vector breeding and this accounted for the increase in vector borne diseases. The increase in awareness of living conditions and good sanitation might have resulted in decrease in vector borne diseases. Now a days, Dengue fever is a major public health problem in the entire state which is observed in the present study also as evidenced by the increase in the incidence from the year 2012.

The only way to prevent patients from Dengue and Malaria is preventing from a mosquito bite. However, if caught early on, it is easier to prevent complications. The current study was planned to target on counselling for Dengue and Malaria, which make a better improvement among public and take this measure as a community awareness outlook to spread alertness which can avoid outbreak of Dengue and Malaria.

BIBLIOGRAPHY

1. World Health Organization. Regional office for South-East Asia. New Delhi: Trend of Dengue cases and CFR in SEAR Countries. C2009 (cited 2009 October 23). <http://www.searo.who.int/en/Section332/Section2277.htm>.
2. Patz, J.A., et al., Effects of environmental change on emerging parasitic diseases. *Int J Parasitol*, 30(12-13): p. 1395 – 405 (2000).
3. Council for International organizations of Medical Sciences. Communicable Diseases, Provisional International Nomenclature. Geneva: World Health Organization: 1973.
4. Noji E, editor. Public health consequences of disasters. New York : Oxford University Press; 1997.
5. Qadri F, Khan AI, Faruque ASG, et al. Enterotoxigenic *Escherichia coli* and *Vibrio cholera* diarrhea, Bangladesh. *Emerging Infectious Diseases*. 2005; 11:1104-7.
6. World Health Organization. Acute jaundice syndrome. *Weekly Mortality and Morbidity Report*. 2006; 23:8.
7. Lifson AR. Mosquitoes, models, and dengue. *Lancet*. 1996; 347 : 1201 – 2.
8. World Health Organization. International Health Regulations. 2005.; <http://www.who.int/ehr/en/>
9. [https://www.harrison-principles-internal-medicine-19th edition.com/](https://www.harrison-principles-internal-medicine-19th-edition.com/)
10. WHO. Dengue and dengue haemorrhagic fever. Factsheet N° 117, revised May 2008. Geneva, World Health Organization, 2008 (<http://www.who.int/mediacentre/factsheets/fs 117/en/>).
11. <http://www.who.int/gb/ewha/WHA55/ewha5517>.
12. Leitmeyer KC. Dengue virus structural differences that correlate with pathogenesis. *Journal of Virology*, 1999, 73(6) : 4738-4747.
13. Lanciotti RS et al. Molecular evolution and epidemiology of dengue – 3 viruses. *Journal of General Virology*, 1994, 75 (Pt 1): 65-75.
14. Messer WB. Emergence and global spread of dengue serotype 3, subtype III virus. *Emerging Infectious Diseases*, 2003, 9(7) : 800-809.

15. Halstead SB . Patho-physiology and pathogenesis of dengue haemorrhagic fever. In: Thongchareon P, ed, Monograph on dengue/ dengue haemorrhagic fever.
16. Halstead SB. Antibody, Macrophages, dengue virus infection, shock, and hemorrhage : a pathogenic cascade. *Reviews of Infectious Diseases*.
17. Halstead SB, Heinz FX. Dengue virus : molecular basis of cell entry and pathogenesis, 25-27 June 2003, Vienna, Austria. *Vaccine*, 2005, 23(7) : 849 – 856.
18. Kouri GP, Guzman MG. Race : a risk factor for dengue hemorrhagic fever. *Archives of Virology*, 2006, 152(3); 533-542.
19. www.denguevirusnet.com
20. <http://www.cdc.gov.com>
21. <http://www.webmd.com>
22. <http://medscape.com>
23. Achee N. L., et al., in 2015. A critical assessment of vector control for dengue prevention.
24. www.who.int/
25. C.K. Murray, R. A. Gasser Jr., A. J. Magill, and R. S. Miller, "Update on rapid diagnostic testing for malaria," *Clinical Microbiology Reviews*.
26. Macro A. Biamonte, et al., *Recent Advances in Malaria Drug Discovery*.
27. <http://emedicine.com>
28. <https://www.zavamed.com>
29. World Health Organization. *International Health Regulations*, 2008; <http://www.who.int/ihr/en/>.
30. World health Organization. SARS: lessons from a new disease, in the *World Health Report 2003*. <http://www.who.int/whr/2003/en.pdf>.
31. Murray NEA, Quam MB, Wider -Smith A. Epidemiology of dengue: past, present, future prospects.
32. Guzman MG, Kouri G. Dengue : an update. *Lancet, Infect Dis*. 2002;2(1).
33. <http://www.health.westchestergov.in>
34. <http://www.ncbi.nlm.gov.in>
35. <http://sciencedirect.com>
36. www.medicinecomplete.com
37. sharma MK, et al., Surveillance of Communicable disease at a tertiary care hospital a tool for planning.
38. <http://www.cbhidhs.nic.in>
39. Sharma AK, Bhasin S, Chaturvedi S. Predictors of Knowledge about malaria in India. *J Vector Borne Disease*.
40. Kohli C, Kumar R, et al., A study on Knowledge and Preventive Practices about Mosquito Borne Diseases in Delhi. *J MAMC Medical Sciences*.
41. Mlahotra G, Yadav A, Knowledge, awareness and practice regarding dengue among rural and slum communities.
42. Kessels PJ, et al., Knowledge and use of prevention measures related to dengue in North Thailand.
43. World Health Organization (WHO) Global Strategy for Dengue Prevention and Control, 2012-2020.
44. Syed M, et al., Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups.
45. CDC, Centers for Disease Control and Prevention. *Dengue fever*. Colorado: 2008.
46. <http://www.cdc.gov/ncidod/dvbid/dengue/>
47. http://www.who.int/mediacentre/factsheetx/fs_117/en/
48. WHO. *Guidelines for the treatment of malaria*. 2nd ed. Geneva World Health
49. WHO. *Malaria rapid diagnostic test performance: results of WHO product testing of malaria RDTs round 6*. Geneva: World Health Organization; 2015.
50. <http://www.who.int/denguecontrol/mosquito/en/index.html>.
51. <http://www.who.int/csr/disease/dengue/impact/en/>.
52. <http://www.apfmj.com/content/10/1/1>.
53. <http://nvbdcp.gov.in/Doc/Annual-report-NVBDCP-2014-15>.