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To Assess the Prescription Pattern in Children Suffering from Dengue in a Secondary Care Hospital



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HUMAN

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ABSTRACT

This present study aimed to assess the prescription pattern in children suffering from dengue. A prospective cross-sectional study was carried out in an inpatient department of pediatrics in district hospital, King Koti. Duration of the study was six months. Total 30 children suffering from dengue were included in this study after obtaining written consent from their caretaker. Majority 63.33% and 36.67% of patients were male and female respectively. Majority 76.67% of the patients were in the age group of more than 5 years. In this present study, 83.33% patient's dengue serology reports found to be NS1 positive. In this present study all the patients were prescribed with antipyretics. However, most commonly 70% of patients were prescribed with ringer lactate intravenous fluid (IV) fluid. Most commonly 73.33% of patients were prescribed with antibiotic ceftriaxone. Injection vitamin K was prescribed to 16.67% patients with low platelet count to reduce platelet transfusion. Results from this present study showed that the treatment for Dengue fever in pediatric patients was with supportive therapy and symptom based i.e., with IV fluid therapy, antipyretics, antiulcer, and antiemetics medication. Antibiotics were prescribed to all the patients and it was found to be irrational. Pharmacist need to collaborate with the pediatrician to promote the rational use of drugs. Thus, pharmacists can assess prescription patterns and promote rational treatment among children suffering from dengue.



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INTRODUCTION

Dengue, a mosquito-borne viral infection transmitted to humans via *Aedes aegypti* mosquito belonging to Flaviviridae family. The four distinct serotypes of dengue virus are DENV-1, DENV-2, DENV-3, DENV-4. Any of the four serotypes can cause the whole spectrum of the disease. A subclinical infection, a moderate case of self-limiting dengue fever (DF), or dengue hemorrhagic fever or dengue shock syndrome (DHF/DSS), a severe sickness with potentially fatal effects are some of the several presentations.

According to World Health Organization (WHO), there has been a tremendous increase in number of dengue cases in the last two decades. It annually affects greater than 100 million people worldwide most commonly in tropical and sub-tropical areas. Children under the age of 15 are especially at high risk.

Children in South East Asian countries like India are affected by the significant health problem known as DF. This is a result of rapid urbanization, haphazard construction projects, and poor sanitation. Adults are less likely than children to suffer from severe DF. Epidemiological studies conducted in India show that children are more commonly affected by severe dengue.

Studies on prescription trends help different populations to use medications rationally. The WHO core drug use indicators are an excellent tool for assessing drug use patterns. Much needed to encourage safe drug use, particularly in developing nations. Data about the medicine use patterns in DF are extremely inadequate, particularly in children's age group.

The WHO emphasizes that the management of dengue infections should be symptomatic and supportive because there is no specific treatment or antiviral therapy for DF. Fluid management is the core of treatment as to prevent consequences from dehydration. The treatment provided to dengue patients are usually symptom-based to reduce fever, muscle and joint pains and to keep them hydrated, platelet transfusions are done when the platelet count drops below 20,000 cells/micro litre. In this case, avoid aspirin and NSAIDS as per the Dengue WHO guidelines. Assessment by the WHO core drug use indicators leads to further encouragement in proper utilization of medications and create better-targeted treatment for DF (Rammohan S *et. al.* 2018). Hence, it is necessary to assess the prescription pattern in children suffering from Dengue in a secondary care hospital located in Hyderabad.

Thus, aim of the study was to assess the prescription pattern in children suffering from Dengue.

METHODOLOGY

A prospective cross-sectional study was carried out in an inpatient department of Pediatrics in the district hospital, King Koti for six months from August 2022 to January 2023. All patients of age between 0 to 15 years presented with symptoms of dengue were included in this present study. Patient's parents or guardians those ready to give consent were included. All patients above 15 years of age and patients not suffering with dengue and patients with serious illness were excluded in this study. Patient's parent or guardians who were not willing to give consent were excluded in this study. Total 30 patients were included after obtaining consent from patient's parent or guardian. The data was collected in a specially designed data collection form. It comprised of demographics i.e. patient name, age, gender, and phone number. Also data was collected about weight, height, complaints on admission, patient history, laboratory investigation reports such as complete blood picture, biochemical reports, urine analysis, dengue serology report (NS1, IgG, IgM), treatment chart details such as drug name, dose, route of administration, frequency and duration, discharge medications.

WHO core prescribing indicators (Rammohan S *et. al.* 2018) and Dengue Guidelines for diagnosis, treatment, prevention and control of WHO (<https://www.who.int/publications-detail-redirect/9789241547871>) were utilized for assessing prescription pattern.

WHO core prescribing indicators:

The average number of drugs per prescription – It was calculated by dividing the total number of drugs, by the total number of prescriptions in this study.

Percentage of the drugs prescribed by generic name – It was calculated by dividing the total number of drugs prescribed by generic name by total number of drugs prescribed, then multiplied by 100.

Percentage of the drugs prescribed from the essential drug list – It was calculated by total number of drugs prescribed from the essential drug list by the total number of drugs prescribed, then multiplied by 100.

Percentage of injectable drugs prescribed per encounter – It was calculated by dividing the number of prescriptions prescribed with injectable drugs by a total number of prescriptions, and then multiplied by 100.

Percentage of antibiotics prescribed per encounter – It was calculated by dividing the number of prescriptions prescribed with antibiotics by total number of prescriptions, then multiplied by 100.

The obtained data was entered in the Excel sheet and was analyzed statistically.

RESULTS AND DISCUSSION

Gender status:

Table No. 1: Gender wise distribution (N=30)

S. No.	Gender	Number (N)	Percentage (%)
1.	Male	19	63.33
2.	Female	11	36.67
	Total	30	100.00

The data related to gender wise distribution is represented in Table No. 1. Rammohan S *et. al.* in 2018 year reported that 44.5% and 55.5% were male and female respectively. This present study results were contradictory to it (Rammohan S *et. al.* 2018).

Age-wise status: Table No. 2: Age wise distribution (N=30)

S. No.	Age in years	Number (N)	Percentage (%)
1.	0 to less than or equal to 1 year	1	3.33
2.	More than 1 to less than or equal to 5 years	6	20.00
3.	More than 5 to less than or equal to 10 years	11	36.67
4.	More than 10 to less than or equal to 14 years	12	40.00
	Total	30	100.00

The data related to gender-wise distribution is represented in Table No. 2.

Religion status:

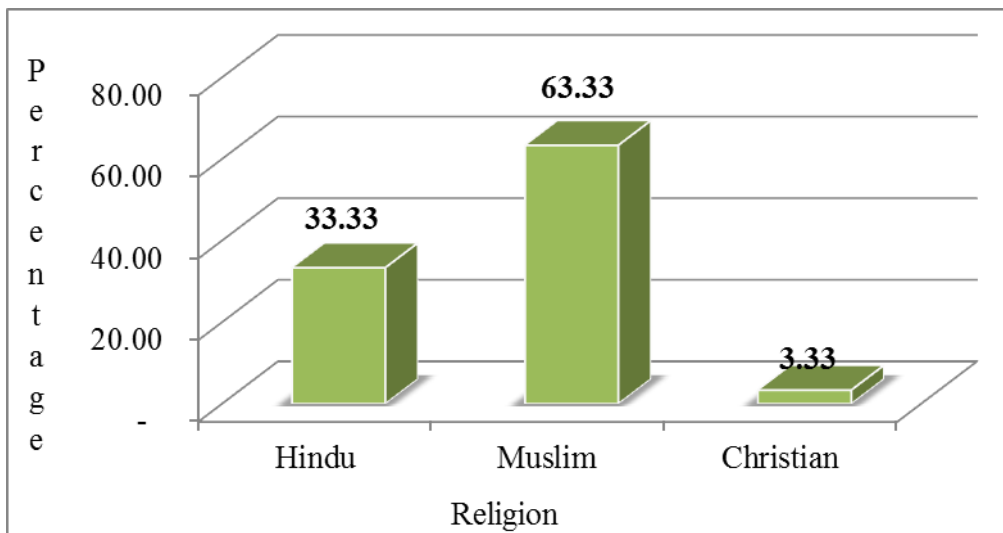


Fig. No. 1: Religion status (N=30)

The data related to gender-wise distribution is represented in Fig. No. 1.

Weight status:

Table No. 3: Weight status (N=30)

S. No.	Weight in kilogram(kgs)	Number (N)	Percentage (%)
1.	More than 6 – less than or equal to 12 kgs	6	20.00
2.	More than 12 – less than or equal to 30 kgs	20	66.67
3.	More than 30 kgs	4	13.33
	Total	30	100.00

The data related to gender-wise distribution is represented in Table No. 3.

Dengue serology report status:

Table No. 4: Dengue serology reports status (N=30)

S. No.	Dengue serology report	Number (N)	Percentage (%)
1.	NS1 positive	25	83.33
2.	IgM positive	2	6.67
3.	IgG positive	3	10.00
	Total	30	100.00

The data related to gender-wise distribution is represented in Table No. 4. Usha Rani D *et. al.* reported that 26.5% of patients were NS1 positive, followed by 4.4% patients were IgM positive. This present study results were slightly similar to it (Usha Rani D *et. al.* 2014).

Platelet count report status:

Table No. 5: Platelet count report status (N=30)

S. No.	Platelet count report at admission (cells/cu mm)	Number (N)	Percentage (%)
1.	Less than 1,50,000	13	43.33
2.	1,00,00 to 1,50,000	10	33.33
3.	50,000 to 1,00,000	6	20.00
4.	More than 50,000	1	3.33
	Total	30	100.00

The data relating to gender-wise distribution is represented in Table No. 5. Usha Rani D *et.al.* reported that the majority of the patient’s platelet count were above 1,00,000 cells/cu mm i.e., 36.8%, followed by 33.8% patient’s platelet count were ranging between 51,000 to 1,00,000 cells/cu mm. This study results were slightly similar to it (Usha Rani D *et. al.* 2014). Usually in dengue platelet count falls and to avoid bleeding and plasma leakage due to decreased platelet count doctors prefer platelet transfusion.

Hematocrit value status:

Table No. 6: Distribution based on Hematocrit value (N=30)

S. No.	Hematocrit value at the time of admission	Number (N)	Percentage (%)
1.	Less than 30%	1	3.33
2.	30-34.9%	5	16.67
3.	35-39.9%	8	26.67
4.	40-44.9%	11	36.67
5.	45-49.9%	5	16.67
	Total	30	100.00

The data related to gender-wise distribution is represented in Table No. 6.

Usha Rani D *et.al.* reported that 38.2% of patient’s hematocrit value were ranging between 30 to 34.9%. This present study results were contrary to it (Usha Rani D *et. al.* 2014).

IV fluids prescription status:

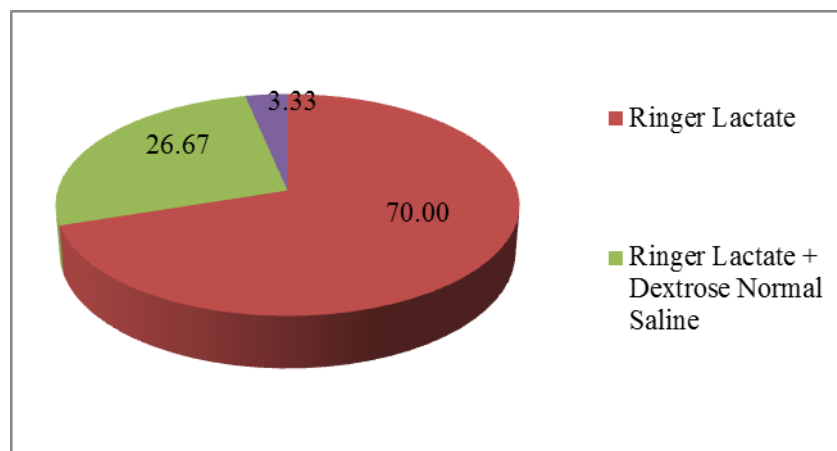


Fig. No. 2: IV Fluids prescription status(N=30)

The data related to gender wise distribution is represented in Fig. No. 2. According to the study conducted by Rammohan S *et. al.* mostly IV fluid prescribed was Normal Saline i.e., 60.9%. This present study results shown that Ringer Lactate was given to 70% of patients and it was contrary to it (Rammohan S *et. al.* 2018).

Single therapy antibiotics prescription status:

Table No. 7: Single therapy Antibiotics prescription status (N=30)

S. No.	Single Antibiotics	Number (N)	Percentage (%)
I.	Cephalosporins		
	Monocef (ceftriaxone)	22	73.33
II.	Macrolide		
	Azithral (Azithromycin)	1	3.33
	TOTAL	23	76.67

The data related to gender-wise distribution is represented in Table No. 7. Usha Rani D *et.al.* reported that most commonly prescribed antibiotic was ceftriaxone. This present study results were similar to it (Usha Rani D *et. al.* 2014).

Dual therapy antibiotics prescription status:

Table No. 8: Distribution of antibiotics – dual therapy (N=30)

S. No.	Antibiotics	Number (N)	Percentage (%)
1.	Azithromycin and ceftriaxone	2	6.67
2.	Amikacin and ceftriaxone	4	13.33
	Total	6	20.00

The data related to gender wise distribution is represented in Table No. 8.

Triple therapy antibiotics prescription status:

Table No. 9: Distribution of antibiotics – Triple therapy (N=30)

S. No.	Antibiotics	Number (N)	Percentage (%)
1.	Augmentin and ceftriaxone	1	3.33
	Total	1	3.33

The data related to gender wise distribution is represented in Table No. 9.

Analgesics prescription status:

In this present study, analgesics or antipyretics were prescribed to 100% of patients. This study's results were similar to the study conducted by Usha Rani D *et.al.* and Rammohan S *et. al.* results (Usha Rani D *et. al.* 2014 and Rammohan S *et. al.* 2018).

Gastrointestinal tract drugs (GIT) prescription status:

Table No. 10: Distribution of GIT drugs according to class (N=30)

S. No.	Drug class	Number (N)	Percentage (%)
1.	Antiemetic		
	Zofer (Ondansetron)	24	80.00
2.	Antacid		-
	Proton pump inhibitor		-
	Pantop (pantoprazole)	28	93.33
3.	Antispasmodic		-
	Dicyclomine	2	6.67
4.	Probiotic		-
	Sporlac (lactic acid bacillus respules)	1	3.33
5.	Protectants		-
	Sucral (Sucralfate)	3	10.00
6.	Oral Rehydration Solution		-
	ORS Sachets	24	80.00
	Total	82	273.33

The data related to gender-wise distribution is represented in Table No. 10. In this present study for reducing symptoms associated with fever among these patients, the additional drugs prescribed were 80% antiemetic drugs, 93.3% of antacid drugs, 6.67% of anti-spasmodic drugs, 3.33% of probiotic drugs and 10% of protectant drugs. Rammohan S *et. al.* reported that antiemetics were prescribed to 70% of patients and this present study's results were similar to it (Rammohan *Set. al.* 2018).

Respiratory tract infection (RTI) drugs prescription status:

Table No .11: Distribution of RTI class (N=30)

S. No.	Drug class	Number (N)	Percentage (%)
1.	Bronchodilators		
	Asthalin (Salbutamol + Ns)	3	10.00
2.	Corticosteroids		-
	Budecort (Budesonide + NS)	1	3.33
3.	Anti Histamine		-
	Cetirizine	4	13.33
	Chlorpheniramine maleate	7	23.33
	Allegra (fexofenadine HCL)	3	10.00
4.	Mucolytics		-
	Ambrodyl (ambroxol hydroxide)	1	3.33
	ambroxol	7	23.33
5.	Expectorants		-
	Ascoril LS (levosalbutamol sulphate, ambroxol HCL and guaiphenesin expectorant)	1	3.33
	Total	27	90.00

The data related to gender-wise distribution is represented in Table No.11. This present study showed that to reduce secondary symptoms such as cold and cough, the treatment preferred were 23.33% of antihistamines drugs, 10% of bronchodilators drugs, 3.33% of corticosteroids and mucolytics drugs.

Vitamin supplements prescription status:

Table No. 12: Vitamin supplements prescription status (N=30)

S. No.	Drugs	Number (N)	Percentage (%)
	Multi-Vitamins		
1.	Zinc sulphate	2	6.67
2.	Zinc acetate	1	3.33
3.	Vitamin K	5	16.67
4.	Vitamin B Complex	1	3.33
5.	Calcium Carbonate	1	3.33
	Total	10	33.33

The data related to gender wise distribution is represented in Table No. 12. Mostly preferred drug was vitamin K which is also a hemostatic. In dengue, vitamin K is prescribed by doctors in patients with low platelet count to reduce platelet transfusion.

Drugs prescription pattern status:

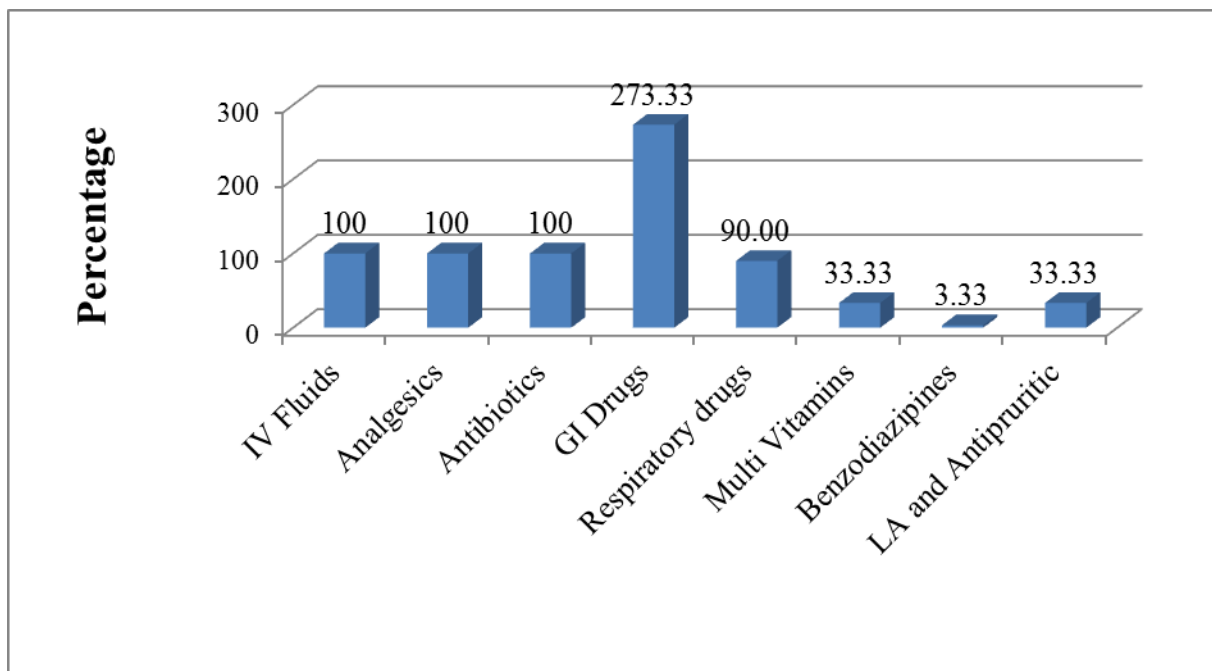


Fig. No. 3: Drugs prescription pattern status (LA* = Local Anesthetic)

The data related to gender wise distribution is represented in Fig. No. 3.

WHO core indicator status:

Table No. 13: WHO core drug use indicator

S. No.	Indicator	Percentage (%)
1.	Average number of drugs per prescription	7.33
2.	Percentage of drugs prescribed by generic name	7.27%
3.	Percentage of drugs prescribed from essential drug list	6.36%
4.	Percentage of injectable drugs prescribed per encounter	100%
5.	Percentage of antibiotics prescribed per encounter	100%

The data related to gender-wise distribution is represented in Table No. 13. Rammohan S *et. al.* concluded that, 2.7 were the average number of drugs per prescription. Percentage of drugs prescribed by generic name was 7.33%. Percentage of drugs prescribed from essential drug list was 88.3%. Percentage of injectable drugs prescribed per encounter were 62.72% and percentages of antibiotics prescribed per encounter were 12.73%. The present study results were contradictory to it (Rammohan S *et. al.* 2018).

CONCLUSION

The majority 63.33% followed by 36.67% of patients were male and female respectively. Majority 76.67% of the patients were in the age group of more than 5 years. Results from this present study showed that the treatment for Dengue fever in pediatric patients was with supportive therapy and symptom based i.e., with IV fluid therapy, antipyretics, antacids, antiemetics medications. Antibiotics were prescribed to all the patients though it is irrational. In order to promote the rational use of drugs, pharmacist need to collaborate with the prescriber. Limitation of this present study was small sample size. In future such studies need to be carried out including larger sample size.

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