Feeding Pattern Followed by Hospitals for Patients with Dengue Fever: An Observational Study

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Abstract

Background: Dengue is an acute viral infection and occurs in three different conditions- Dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome. Supportive and symptomatic treatment is indicated during infection, however less is known about feeding care obligatory in its management.

Objective: it was aimed to study feeding care offered to DF patients admitted to hospitals.

Materials and Method: An observational study was conducted on 48 patients (16 children and 32 adults) diagnosed for dengue fever and admitted to hospital (3 -government and 2-private hospitals were included) during the months of January to May. Details regarding medical symptoms, body temperature, state of consciousness, food tolerance and food intake from day 1 to day 5 was obtained. Oral intake of water and IV infused were recorded.

Results: Relationship existed between symptoms, state of consciousness and tolerance to food and water; accordingly patients were classified as seriously sick, moderately sick and mildly sick. Patients with body temperature >102°F, abdomen pain, hepatomegaly and dehydration was associated with food intolerance and non-responsiveness (seriously sick), they took significantly longer time to develop food tolerance compared to their counterpart with less serious conditions ($p < 0.0001$). Severity of sickness affected hospital stay, severely sick patients stayed longer as compared to the mildly sick (children 4.67±0.94 vs 4±0; adults 6.43±3.16 vs 3.67± 1.11 days).

Majority of adults (71.9%) and children (56.3%) received normal diet. Energy and protein intake of patients (adults and children) in all the three groups were markedly lower than the RDA. Energy intake increased significantly from 1st to 5th day in all three groups. Differences in energy intake (adults-5.0±2.6 Kcals to 18.0±6.5 and children 10.0±3.8 - 29.0±6.8 Kcal/kg/day) was extremely significant ($p< 0.001$) among severely sick compared to the moderately (adults 11.0±1.6- 17.0±4.9 and children 20.0±2.9- 23.0±6.9 Kcal/kg/day) and mildly sick patients (adults 17.0±2.1- 21.0±3.8 and children 38.0±7.8- 39.0±5.7 Kcal/kg/day). Protein intake among both adults and children was very low. All patients regardless of the conditions received IV fluids at time of hospital admission. Severely sick received higher volumes of IV infusions and less quantity of oral fluids compared to the moderate and mildly sick. With improvement in conditions, it crisscrossed with reduced IV infusions and increased oral intakes. Each patient had different fluid needs and varied each day.

Conclusion: Presently, diet management of DF patient is less judicious. In view of poor tolerance and unconsciousness that prevail, food selection should be carefully managed. Easily digestible and nutritious drinks such as fruits juices and soups should be included

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to complement for improving electrolyte disturbance and dehydration. Data base should be developed about feeding requirements for DF patients.

Keywords: *Dengue fever, Severity of disease, Food tolerance, Nutrient intake, Oral fluids, IV infusions, Adults and Children.*

Introduction

Dengue infection is one of the most common arbo-viral diseases worldwide. It is prevalent in most of the tropical and sub-tropical countries and is caused by four serotypes (DEN-1, DEN-2, DEN-3 and DEN-4) in humans.[1] The World Health Organization (WHO) estimates that every year 50–100 million symptomatic dengue virus (DENV) infections occur worldwide, resulting in approximately 500,000 hospitalizations and 22,000 deaths.[2-5] In India, dengue is a long-standing public health problem having significant health impacts and loss of life. Shephered et.al (2014) estimated that dengue costs India approximately $1.11 billion annually.[2,6]

Presently, dengue is found to emerge in more than 60 countries making it a classic example of re-emerging infectious disease with a significant and widespread public health impact.[2,7] In addition, an alternative DENV vector, Aedes albopictus, has spread into temperate geographical regions, further expanding the global range of the virus.[2,5,8,9] The characteristic symptoms of dengue are: a sudden-onset fever, headache (Typically behind the eyes), arthralgia, myalgia, nausea, flushing and rashes Dengue is also referred as “break-bone fever” owing to the presence of muscle and joints pains. In few cases abdominal symptoms such as nausea, vomiting, abdominal pain, hepatomegaly and tenderness in the right iliac fossa are also reported. The course of infection is divided into three phases: febrile phase in which body temperature rises to over 40°C (104°F), followed by critical phase. During critical phase a significant fluid accumulation occurs in chest and abdominal cavities. The third phase follows organ dysfunction and severe bleeding (Typically from the gastrointestinal tract) leading to shock and haemorrhage. 95.8% of patients with platelet count between 20,000-50,000/cu.mm and 61% of patients less than 25000 had bleeding manifestations.[9]

Severe cases however, are reported in less than 5% of all dengue cases. The recovery phase occurs next, with resorption of the leaked fluid into the bloodstream. This usually occurs over a period of two to three days. Mortality rate is higher among severe cases.[7]

Current management of dengue infection does not have any specific treatment except cautious monitoring and appropriate fluid replacement therapy.[10,8] The treatment is supportive and includes diminishing the fever and balancing fluids and electrolytes. During the time of infection patients are not able to eat & drink because of unconsciousness, loss of appetite, poor tolerance to food & eating problems.[10]

Generally patients complain of fatigue & weakness and therefore, expectedly there is weight loss following an episode of dengue infection.[11] There are very few reported studies to indicate the nutritional care warranted for dengue.[12,13] It is important to develop data base about nutritional care obligatory during dengue infections and post infective periods. The objective of the present investigation is to review the feeding care offered to patients admitted to hospitals.

Methodology

The investigation was an observational study carried out during months January to May. The prospective patients were identified at time of their admission to hospital after being diagnosed for dengue fever (DF). A total of five hospitals (3 -government and 2-private) from Mysore city- a major city from south India were included for the study. Criteria charted for the final selection of subjects included the following: patients having diagnosed with dengue fever and having following symptoms: fever and general aches and pain (myalgia, headache, Retro-orbital pain), stomach problems like abdomen pain, loose motion, nausea IgG, IgM, NSl positive, platelet counts between 20,000-50,000/cu.mm, age 1-85yrs also those who agreed to participate in the study. Exclusion criteria included were: Age > 85 years, pregnant and lactating women, patients with DHF or any other complications. The study was approved by IHEC, University of Mysore. Forty eight patients participated in the study, among them 16 were children (<17years) and 32 were adults. Patients were visited daily.

SOAP was obtained from medical records. Especially patient’s condition such as symptoms, state of consciousness, body temperature, and food tolerance, diet prescribed and volume of IV infused were obtained from medical record of the respective patients. Food intake was recorded individually with the

help of patient's attendant. Attendants were requested to record food eaten including water intake daily for five consecutive days using a standardized cup provided to them.

State of food tolerance was recorded daily to identify number of days required to develop food tolerance and improvement in eating. Each patient participant was followed till he/she was discharged

Results and Discussion

A total of 48 patients' were included for the study, selection was strictly based on criteria charted for the study. All the patient participants were those identified with dengue fever (DF) without any complications and admitted to medical wards. Sixteen children and thirty two adults formed the study population, there were 56.3 and 65.5% male children and adult patients while the rest were female patients (43.8% children and 34.4% Adults). Percentage of male patients with DF was higher among both children and adults; however, Chi.Sq analysis did not indicate significant association. Several studies from S E Asia have also reported higher incidences of DF and DHF among male subjects[14].

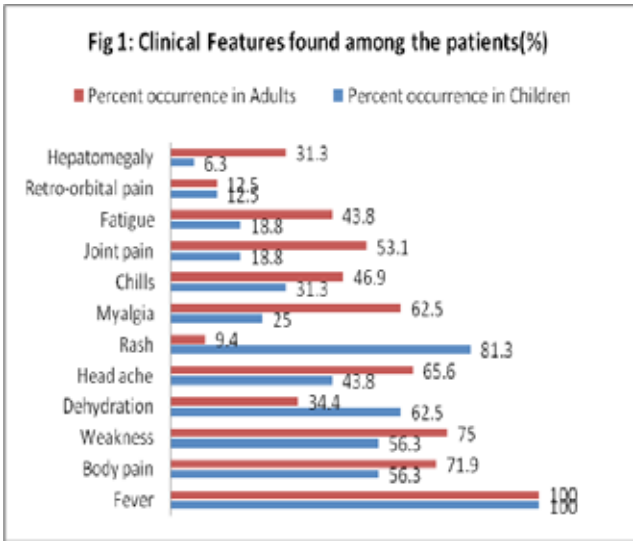


Fig. 1 presents clinical features found among participants at the time of admission to hospital. All the patient participants had fever, while presence of other symptoms occurred in varied frequencies. Symptoms that are seen in higher frequency were body pain (56.3 children, 71.9 adults), weakness (56.3 % children, 75.0 %adults), dehydration (62.5% children, 34.4 %adults) and head ache (43.8% children, 65.6% children).Other symptoms that appeared in relatively higher proportion were myalgia (25% children, 62.5 % adults), chills (31.3% children, 53.1 % adult), fatigue (18.8 % children, 43.8 % adults), Retro-orbital pain (12.5 % children, 12.5 % adults) and hepatomegaly (6.3 % children, 31.3 % adults). Rash was found in markedly higher proportion (81.3%) among children.

State of consciousness and tolerance to food and water seen among DF patients appeared to have an association with the medical conditions. We speculate these to be important influencing factors with concern to feeding care of patients with DF.

Therefore, we made an attempt to associate the symptoms found among patients, state of consciousness and tolerance to food and water and tentatively classified patients as seriously sick, moderately and mildly sick.

We have presented symptoms as those as '**constant**' because these symptoms were present in all the patient participants while the '**occasional** symptoms' were considered as those that occurred in majority of patients. A perusal of table 1 presents the details; there is clear evidence that constant presence of fever >102°F, abdomen pain, hepatomegaly and dehydration was associated with intolerance and non-responsiveness in both children and adult patients.

On the other hand low grade or intermittent fever and absence of hepatomegaly were associated with delayed / good response and better tolerance to food and water. It is obvious therefore that presence of certain symptoms in patients warns for special feeding care at least during the initial days until patients developed tolerance. There are sufficient references to indicate importance of feeding care when body temperature is high.

We also recorded time taken by DF patients to gain consciousness and develop tolerance to food and water, the data is presented in table 2. It is obvious from the table that those whom we grouped as seriously ill took relatively longer time to develop tolerance to food and water as compared to less serious conditions. Children who were seriously sick took 2.83±0.90 days while those who were moderately and mildly sick required 2.5±1.26 and 2±0 days respectively. The difference in time taken was not statistically significant at 5% level. Adults on the other hand took longer time to develop tolerance; seriously sick patients took 4.29± 1.67days, moderately sick took 3.58±1.80 and mildly sick patients had better tolerance and were able to consume food and water by 1.58± 0.64 days.

Table 1: Details about the patient's condition: food tolerance, associative symptoms and state of responsiveness

Food tolerance at the time of admission	Patients Nos (%)	Associative symptoms		State of Responsiveness	We referred the Condition As
		Constant	Occasional		
Totally Intolerant	Children 6 13%	Fever (>102°F), Headache, Body pain, Myalgia, Chills, Weakness	Abdomen pain, Hepatomegaly, Dehydration, Joint pain,	Non Responsive	Severely sick
	Adults 7 15%	Fever >102°F), Head ache, Body pain, Myalgia, Chills, Weakness	Abdomen pain, Hepatomegaly, Dehydration, Joint pain, Weakness.		
Moderately tolerant	Children 6 13%	Intermittent Fever (±99°F), Body pain, Dehydration, Weakness	Abdomen pain, Myalgia, Head ache	Delayed Response > 11 seconds	Moderately sick
	Adults 13 27%	Intermittent Fever (±99°F), Headache, Body pain, Myalgia, Chills, Weakness	Abdomen pain, eye pain, Dehydration, joint pain, Weakness		
Tolerant	Children 4 8%	Intermittent Fever (±99°F), Body pain	Joint pain, Chills, Weakness, giddiness	Immediate Response < 10 seconds	Mildly sick
	Adults 12 25%	Intermittent Fever (±99°F), body pain, Head ache, Chills	Myalgia, joint pain, Giddiness, Weakness		

The time taken by the adult patients to develop tolerance to food and water was statistically extremely significant ($p < 0.0001$).

Our results explicitly indicate the condition among adult patients to be poor compared to children. It is also important observation that patients with serious condition required longer hospitalisation. Mean days of hospitalisation for children were 4.67±0.94, 4.33± 1.80 and 4±0 days while those for adults was 6.43±3.16, 4.58± 1.89 and 3.67± 1.11 days for seriously sick, moderately and mildly sick patients respectively. The differences in days of hospitalisation was however, not significant statistically.

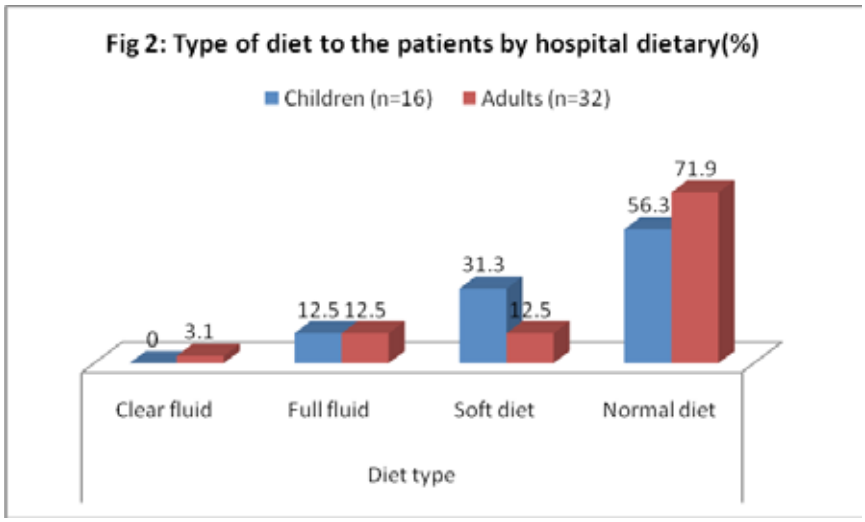
Diets provided by the hospitals are presented in fig 2. Majority of the patients were provided normal diet (56.3 and 71.9%children and adults) followed by soft diet (31.3 and 12.5% children and adults). Only a small percentage of patients were provided with full fluid and only one adult (3.1%) patient was given clear fluid. The pattern of food offered was based on the tolerance level of the patient.

Energy and protein intake of the patients (adults and children) were calculated for five days to realize the energy and protein provided by food consumed by patients.

Table 2: Mean number of days required for food tolerance and hospital stay of the patients

N	State of tolerance	No of days taken to develop tolerance (Mean±SD)	Hospital stay (Mean±SD)
Children			
6	Totally intolerant	2.83±0.90	4.67±0.94
6	Moderately tolerant	2.5±1.26	4.33± 1.80
4	Tolerant (Improved eating)	2±0	4±0

N	State of tolerance	No of days taken to develop tolerance (Mean±SD)	Hospital stay (Mean±SD)
ANOVA- df:2, Sig.at 1% F-0.8965 -NS F- 0.7140 - NS			
Adults			
7	Totally intolerant	4.29± 1.67	6.43±3.16
13	Moderately tolerant	3.58±1.80	4.58± 1.89
12	Tolerant (improved eating)	1.58± 0.64	3.67± 1.11
ANOVA df: 2, Sig.at 1% F-9.7874 *** F- 1.8235 NS			



It can be seen from table 3, mean Kcals intake /kg body weight by severely sick individuals varied between 5.0±2.6 to 18.0±6.5 Kcals during day 1 to day 5 and are markedly lower than the RDA for adults according to ICMR.

An eventual improvement in food intake from day 1 was observed with every passing day, thereby on 5th day of hospitalization mean energy intake increased to 18.0±6.5 Kcal /kg body weight, differences in intakes were statistically highly significant ($p< 0.001$) among the severely sick. Energy intake among the moderately and mildly sick patients were comparatively better compared to severely sick although their intake were also markedly lower than RDA.

Table 3: Mean energy and protein intake of patients for first 5 days of hospital stay –adults (intake/kg/day)

Adult Patients	No.	Days of feeding					ANOVA df- 4
		1	2	3	4	5	
Severely sick (SS) Mean Energy intake Kcals	7	5.0±2.6	8.0±3.5	12.0±5.9	16.0±5.0	18.0±6.5	F- 8.4474 P- 0.0001
Mean Protein intake g		0.1 ±0.1	0.2 ± 0.1	0.2 ± 0.1	0.3 ± 0.1	0.4 ± 0.1	-
Moderately sick (MoS) Mean Energy intake Kcals	13	11.0±1.6	14.0±3.9	14.0±4.6	14.0±1.6	17.0±4.9	F- 4.5746 P – 0.01
Mean Protein intake g		0.3 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	0.3 ±0.1	0.4 ± 0.1	-
Mildly sick (MlS) Mean Energy intake Kcals	12	17.0±2.1	19.0±4.3	20.0±2.1	20.0±0.7	21.0±3.8	F- 3.2670 NS
Mean Protein intake g		0.3 ±0.0	0.4 ± 0.0	0.4 ±0.1	0.3 ±0.1	0.4 ±0.1	-
ANOVA df- 2	F=	75.3291	18.1325	11.0824	12.7731	2.2640	-
	P	0.0001	0.0001	0.001	0.001	NS	

Adult Patients	No.	Days of feeding					ANOVA df- 4
		1	2	3	4	5	
Tukey's Post Hoc Test for Energy Intake							
Significant differences found in mean intake between days of feeding							
Severely sick	Day: 1 vs 4; 1vs 5; 2vs 4; 2 vs 5 differences were statistically significant						
Moderately sick	Day: 5 significantly different from days 1,2, 3 & 4						
Differences in mean intake due to severity of sickness							
Days	**1**		**2**	**3**	**4**	**5**	
	SS vs MoS SS vs MlS MoS vs MlS		SS vs MoS SS vs MlS MoS vs MlS	SS vs MlS MoS vs MlS	SS vs MlS MoS vs MlS	NS	

Mean differences in energy intake of the moderately sick patients from day- 1 to day 5 were mildly significant statistically ($p< 0.01$). Tukey's post hoc test was employed to indicate the significance. It is also clear from table 3 that differences in energy intake between the three groups of patients with different severity is different and were significant statistically on each day of comparison.

Energy intake was significantly higher among the mildly sick patients. Protein intake was extremely low among all the three group of patients varying from 0.1 ±0.1g /kg body weight (severely sick) to 0.3 ±0.0 g / kg body weight (moderately and mildly sick), although there was a small increase in intake by 5th day of hospitalisation. No statistical analysis was performed.

A perusal of Table 4 indicates energy and protein intakes by children, a trend similar to that of adults can be seen. Energy intake by children exhibited proportionality to severity of sickness; mildly sick children consumed higher proportion of calories than those with moderate sickness while severely sick children consumed least amount of energy during days1 to 4. Differences between the groups for all the days of comparison were significant statistically ($p< 0.0001$ –day1; $p< 0.01$-day2 & 3; $p< 0.05$-day 4). Mean protein intakes were lower among children in all the three groups, however, small increase in intakes were noted during the five days assessment period. It is obvious from tables 3 and 4 that patients with DF were unable to eat and the reasons for poor intake could be intolerance, loss of appetite, anorexia due to high body temperature, and food rejection. Literature provides limited references to diet management in dengue infection, however, according to WHO, management of dengue does not have any specific treatment. Prompt and meticulous fluid resuscitation and monitoring are the main stay of life saving measures.[15-17]

Table 4: Mean energy and protein intake of patients for first 5 days of hospital stay-Children (intake/kg/day)

Patients-Children	No.	Days of feeding					ANOVA
		1	2	3	4	5	
Severely sick (SS) Mean Energy intake Kcals	6	10.0±3.8	18.0±3.0	19.0±4.3	27.0±6.3	29.0±6.8	df 4 F=13.679 P-0.0000
Mean Protein intake g		0.3±0.1	0.6±0.3	0.5±0.4	0.8±0.1	0.8±0.3	
Moderately sick (MoS) Mean Energy intake- Kcals	6	20.0±2.9	22.0±4.7	24.0±7.8	27.0±8.2	23.0±6.9	df- 4 F=0.974 NS
Mean Protein intake g		0.5±0.1	0.4±0.1	0.6±0.1	0.5±0.1	0.4±0.1	
Mildly sick (MlS) Mean Energy intake Kcals	4	38.0±7.8	31.0±6.4	36.0±8.1	39.0±5.7	-	df 3 F=1.013 NS
Mean Protein intake g		0.8±0.3	0.7±0.3	0.7±0.2	0.8±0.2	-	-

Patients-Children	**No.**	**Days of feeding**					**ANOVA**
		1	**2**	**3**	**4**	**5**	
ANOVA df 2	F	41.330	9.598	7.7296	4.442	-	
	P	0.0001	0.01	0.01	0.05	-	
Tukey's Post Hoc Test For Energy Intake							
Significant differences found in mean intake between days of feeding							
Severely sick	Days: 1 vs 3; 1 vs 4; 2vs 3; 2vs 4; 2 vs5; 3 vs 5.						
Differences in mean intake due to severity of sickness							
Days	1	2	3	4	5		
	SS vs MoS, SS vsMlS Mos vs MlS	SS vs MlS MoS vs MlS	SS vs MlS MoS vs MlS	SS vs MlS MoS vs MlS	-		

Recently published studies on fluid infusions both oral and IV (intra vascular) suggests that total fluid requirement significantly increase with severity of sickness.[8] Senanayake AM Kularatne (2015) reported that incidences of vomiting and abdominal pain are linearly proportional to severity of patient's condition haemorrhagic fever (DHF) require increased fluid resuscitation than leading to dehydration, hence patient with Dengue haemorrhagic fever (DHF) require increased fluid resuscitation than those with DF.[8] Appropriate and timely fluid replacement allows patient recovery and prevents development of severe condition; this stresses the need for initiating appropriate fluid therapy at the early stages of dengue infection. Normal Saline should be the first line IV fluids for all.[8,13,15]

Table 5: Mean water consumed orally and IV given to patients during first six days of hospital stay-children

Patients children	**No.**	**Daily oral intake of water (ml) -- days Mean ± Sem**					**ANOVA F=**
		1	**2**	**3**	**4**	**5**	
Severely sick	6	508.0±192.7	533.0±199.9	700.0±262.5	375.0±109.4	475.0±133.4	0.396 NS
Moderately sick	6	492.0±37.4	558.0±166.9	692.0±38.1	700.0±66.6	850.0±61.2	6.139 P- 0.01
Mildly sick	4	1000.0±50.0	1025.0±0.0	1550.0±0	1466.7±0.0	-	266.065 P-0.01
ANOVA P =0.01	F=	3.390 NS	3.360 NS	6.748 Sig	38.299 Sig	-	-
Tukey's Post Hoc Test for Water Intake							
Significant differences found in mean water intake between days							
Moderately sick	Days: 1 vs 5 and 2 vs 5.						
Mildly sick	Days: 1 vs 3and 2 vs 3.						
Differences in mean intake **due to severity of sickness**							
Days	1	2	3	4	5		
	NS	NS	1 vs 3	2 vs 3	-		
Volume of IV fluid given (ml)							
Severely sick	6	732.0±244.9	712.0±376.6	300.0±41.2	300.0±45.8	195±18.37	1.569 NS

Patients children	No.	Daily oral intake of water (ml) -- days Mean ± Sem					ANOVA F=
		1	2	3	4	5	
Moderately sick	6	464.0±113.6	712.0±164.0	442.0±44.2	520.0±123.4	490.0±10.0	1.296 NS
Mildly sick	4	476.7±171.7	520.0±40.0	600.0±0	100.0±0.0	-	12.699 NS
ANOVA P=0.01	F=	0.838 NS	0.141 NS	12.887 Sig	5.416 NS	-	-
TUKEY'S POST HOC TEST FOR IV FLUID							
Differences in mean daily IV fluid infused **due to severity of sickness**							
Days	1		2	3		4	5
	NS		NS	1 vs 2 & 3; 2 vs 3		NS	-

Table 6: Mean water consumed orally and IV given to patients during first six days of hospital stay-Adults

Patients adults	No.	Daily oral intake of water (ml) -- days Mean ±Sem					ANOVA Sig. at 0.01 F=
		1	2	3	4	5	
Severely sick	7	1057.0±106.6	1064.0±101.4	1393.0±173.9	1464.0±191.9	1450.0±192.7	1.706 NS
Moderately sick	13	1431.0±91.2	1654.0±171.6	2000.0±145.5	2167.0±200.0	2120.0±184.3	3.796 Sig
Mildly sick	12	1317.0±99.8	1638.0±182.2	1809.0±143.2	1663.0±98.6	1667.0±68.0	2.112 NS
ANOVA	F=	2.992 **NS**	2.812 **NS**	3.343 **NS**	4.393 **NS**	4.659 **NS**	-
Tukey's Post Hoc Test for Water Intake							
Significant differences found in mean water intake between days							
Moderately sick		Days: 1 & 2 vs 3, 4, 5.					
Volume of IV fluid given (ml)							
Severely sick	7	1083.0±129.9	1050.0±144.3	917.0±129.9	750.0±94.5	500.0±0.0	4.543 Sig
Moderately sick	13	1085.0±91.5	818.0±66.7	722.0±95.0	750.0±120.1	750.0±69.3	2.723 NS
Mildly sick	12	883.0±105.9	760.0±76.5	500.0±0.0	667.0±68.0	500.0±0.0	6.386 Sig
ANOVA	F=	1.2600 NS	2.414 NS	5.515 Sig	0.231 NS	9.326 Sig	-
Tukey's Post Hoc Test for IV Fluid							
Significant differences in mean IV fluid infused between days							
Severely sick		Days: 1, 2 & 3vs 4,5.					
Mildly sick		Days: 1 & 2 vs 3,4, 5					
Differences in mean daily IV fluid infused due to severity of sickness							
Days	1		2	3		4	5
	NS		NS	1 vs 2 & 3; 2 vs 3		NS	-

Harris E, demonstrated that oral intake of plain water during the 24 h before being seen by a physician was statistically associated with decreased risk for hospitalization.[18] We assessed fluids consumed orally as well as the IV infusion (Tables: 5& 6). We found large inter and intra group variations, as evidenced by high SDs, it suggests that each patient has different needs and vary day to day, however they were statistically not significant. All the patients regardless of their conditions received IV fluids at the time of hospital admission; other reports endorse this observation indicating that normal Saline as IV was the first line of treatment for all patients.[8] IV infusions frequently pose a risk of fluid overload during the management of dengue patients

therefore providing oral fluids judiciously along with IV fluids is vital.[10]

In our study, Patients with severe sickness received higher volumes of IV infusions and less quantity of oral fluids as compared to those with moderate and mild sickness. With improvement in conditions, it crisscrossed wherein IV infusions reduced and oral fluids increased. Research evidence is scarce with regards to actual fluid requirement during critical phase of dengue infection.[8,13]

Conclusion

It is obvious therefore that, primarily the management of dengue patients befalls on medical treatment; however, diet is an important complementary element in the course of management. Electrolyte disturbances and hypokalemia leading to acute neuromuscular weakness and dehydration that are common to dengue infection[10] can be effectively handled through appropriate dietary manipulation.

Although, references about feeding patients with DF are sporadic, the available literature does suggest suitable foods for dengue patients.[10,19,20] In presence of food intolerance, vomiting and diarrhoea along with fever, diets should be simple and include digestible fluids, juices and soups.[10] Foods rich in vitamin C, magnesium, zinc are particularly reported to be of great importance.[19] Further, reports suggest benefits about use of certain foods such as juice of black grapes, pomegranate, amla (Phyllanthus emblica), guava and papaya as well as goat's milk. Chlorophyll is reported to be beneficial, nevertheless that extracted from guava leaves and papaya leaves have special mentions.[12,19] Infections in general cause loss of physiological reserves leading to malnutrition with serious consequences. Hence, it is utmost important that dieticians should volunteer in the feeding care of patients admitted to the hospital and adopt evidence based approaches. Dietary care is essential during sickness and complements medical treatment.

Ethical Clearance: obtained from Institutional Ethical Committee, University of Mysore.

Conflict of Interest: None

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