



“NUTRITIONAL STATUS AND ITS IMPACT ON OUTCOME OF DENGUE PATIENTS AT OUR HOSPITAL”

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Abstract

Dengue infection has been reported worldwide and cause severe form of disease including DHF and DSS with poor outcome. Nutrition plays vital role on immunity status and immunological outcome. The impact of nutritional status on outcome of dengue infection has been reported from no impact, good impact and poor impact. In the present study 283 dengue infected patients were studied during the study period from June 2021 to September 2022. 183 (65.37%) were male, 98(34.62%) females and 29(10%) were pediatric patients of them 110(38.86%) were well nourished 54(19%) were undernourished and 119(42%) were over-nourished. The direct outcome in terms of development of DHF and DSS was not observed in none of the patient. The indirect outcome in terms of morbidity by measuring their average length of stay was 4.03 days in well-nourished while 3.90 days in undernourished and 3.94 days over nourished patients. The overall findings of the current study suggestive of non-significant relationship of nutritional status over the outcome in terms of average length of stay, however nutritional status plays very vital role in recovery and illness it is always recommended that proper evaluation of nutritional assessment helps in effective intervention and nutrition support provision.

Keywords- Dengue, nutrition, malnutrition, nutritional status, DHF, DSS.

Aims / Objectives:

The present study was aimed to find out the impact of nutritional status on the recovery rate of Dengue virus infected patients.

Introduction / Background

Over the past few years, Dengue infection has rapidly emerged as a global threat to human health, its rate of occurrence, geographic distribution and clinical severity increasing its global burden significantly. Dengue infection has been reported from >100 countries and the reported incidences are at least three times lower than the true burden of dengue. The pathophysiology of Dengue virus infection and hosts immune response are not completely understood. Hence nutritional status is a strong predictor of immunity and it is known fact that malnutrition is most common cause of immunodeficiency worldwide.

As properly functioning immune system requires adequate nutrition support to prevent damage of cells participating in immune response and restore tissue damage as a result of host defence against infection. Studies on one way are suggestive of malnourished person are likely to develop severe course of dengue infection, while contradictory studies reported that malnourished patients are less likely to develop DHF/DSS.

Overall, the association between nutritional status and risk of dengue virus infection is unclear. There is no evidence to suggest that nutritional status could interrupt transmission or alter the susceptibility of infection after the bite of a dengue infected mosquito, however hosts nutritional status as nutritional supplementation as adjunctive therapy could lower the probability of progress of disease to severe form. Dengue infection has become the second most commonly found fever after covid 19 pandemic. People are suffering with dengue in larger number and few parts of the country reported deaths with the complications of it. During second wave of covid 19 in June 2021, we have also observed dengue patients coming to our out patients as well as in In- patient unit for their treatment and management. Choithram hospital and research centre is the multispeciality hospital of the Indore city of Madhya Pradesh State. Madhya Pradesh is situated in the central part of India in the map. Choithram Hospital and Research centre is a NABH accredited hospital and as a part of

so its mandatory to do the nutritional screening and detailed nutritional assessment for each patient who get admitted to our tertiary care facility. It is very well-known fact that nutrition has a very important role in all conditions and also in fever it is required to provide good nutritional support to all age group individuals. In the present study, we have done detailed analysis of nutritional status for all the patients who got admitted with the Dengue fever and thrombocytopenia during their hospital stay and observed their recovery rate before the discharge.

Methodology

All age subjects with Dengue fever and thrombocytopenia were observed since June 2021, Paediatrics, male and female both has taken to this observational analysis.

All subjects received medical management individualised as per their clinical conditions. They have been provided with optimal hydration through intravenous route with normal saline 0.9% or ringer lactate and a multivitamin supplement were added in their prescription along with proton pump inhibitor +_ antiemetic if required or paracetamol orally or intravenously to control fever. The duration of above management was dependent as per the patient's clinical conditions. If the patient is tolerating well oral liquids than intravenous fluids has been decreased gradually.

Nutrition care process model has been implemented for all recruited subjects and their nutritional status have been performed at the time of hospitalisation by using ABCD method of nutritional assessment. Which includes weight in kilograms, height in centimetres, Ideal body weight analysis, Body mass index, Biochemical parameters: Hb, Total leucocyte count, Platelets, CRP and associated blood parameter for comorbid conditions, Clinical history was taken in detail along with Dengue and Thrombocytopenia, Detailed diet history was performed which included their eating habit, vegetarian, non -vegetarian, ovo-vegetarian, their 24 hours diet recall. Also, their palatability of food and taste factor has been taken into consideration during the nutritional assessment.

After nutritional assessment, nutritional intervention was performed for all subjects and they have been advised diets based on the assessment findings. Meal provision has been done from the hospital kitchen and their daily monitoring of nutrient intake including calorie, protein, total fluids was done closely. Repeated counselling has been done every day to encourage them to take optimum nutrient intake and to reach to the optimum adequacy of nutritional support. Gastro-Intestinal symptoms have been monitored alongside all other clinical and biochemical parameters during the hospitalisation.

At the time of discharge, they have been provided with the diet plan and nutritional counselling and advised to come back to dietician Outpatient clinic for follow ups.

Results

A total 283 subjects have been observed nutritionally during months from June 2021 to September 2022 with the Dengue fever and thrombocytopenia. The detailed monitoring has been performed for all along with the proper nutrition intervention and regular counselling's.

The observational findings were taken into consideration with corelation between nutritional status and its impact over the recovery for all patients.

Tables

1.1 Demographic Profile

S. No	PARAMETERS	TOTAL (N=283)
1.	Age in years	Mean 31.94 years
2.	Male	185 (65.37%)
3.	Female	98 (34.62%)
4.	Paediatrics	29 (10%)

1.2 Nutritional assessment parameters

S.NO	PARAMETERS	TOTAL(N=283)	MEAN
	ANTHROPOMETRIC		
1.	Weight (Kg)	17233	60.89
2.	Height (cm)	46083	162.83
3.	Ideal Body weight (Kg)	17913.4	63.29
4.	Body mass Index	5140	18.16
	BIOCHEMICAL		
5.	Haemoglobin	3934.77	13.90
6.	Total Leucocyte count		
7.	Platelets		
	CLINICAL		

8.	Dengue with TCP	189	
9.	Dengue with Diabetes	20	
10.	Dengue with HTN	02	
	Dengue DM with HTN	03	
	DIETARY		
11.	Vegetarian	169	
12.	Non-Vegetarian	84	
13.	Ovo- vegetarian	30	

1.3 Outcome Parameters

S.NO	PARAMETERS	TOTAL	% Values
	Premorbid nutritional status		
1.	Well nourished	110	38.86%
2.	Undernourished	054	19%
3.	Over nourished	119	42%
4.	Length of Hospital stay	1124 (mean 3.97)	
5.	Optimum Nutrition		
	Yes	191	
	No	092	
6.	NUTRITIONAL STATUS	LOS	
	Well nourished	444/110	4.03 days
	Undernourished	211/54	3.90 days
	Over nourished	469/119	3.94 days

Table 3 depicts the differential morbidity outcome in terms of their length of hospital stay. It is found that the Average length of stay 4.03 days in well-nourished while 3.90 days in undernourished and 3.94 days in over nourished patients admitted with dengue virus infection.

The difference of average length of stay among these three groups are not statistically significant.

Discussion

Worldwide dengue virus infection is infecting 390 million people each year and is most significant vector born viral disease. Role of nutrition and morbidity along with outcome of dengue infection is studied globally in different corners of world. Conflicting reports have been available ranging from nutritional status has less severe dengue manifestation (DHF/DSS) to increased disease severity in obese patients.

The immunological basis for same has been elaborated with evidence of poor nutritional status alters most immunity, imposing an effective response to infection.

In the present study paediatric patients were with dengue virus infection but none of them develop the severe form of dengue disease. In one of the studies sarunya et al pointed out that overweight patients were having increased risk of dengue severity while stunting was found associated with decreased risk of dengue severity. They have also concluded that malnutrition might influence the severity of dengue infection and recommended that overweight children with dengue infection should be closely observed for early sign of severe dengue infection.

Trang et al also had similar observation that there was no statistically significant association between DFF group and DSS group in malnutrition and overweight and obese patients, while on the other hand they have concluded that malnutrition may be protective factor against development of DFF/ DHF. Many scientists believe, that normal nutritional status is a risk factor of DSS, it may be due to poor host immune response among well-nourished patients in comparison to well-nourished patients. However, the similar report has been found by Hung et al, where they found that except TNF alfa and the serum levels of IFN-gama, IL-10 and IL-6 were not different between infants with or without malnutrition, except in laboratory setup in one of the experimental studies conducted by Choung et al. reported that obese or undernourished mice incur greater disease severity after dengue infection and establish a role for nutritional status in dengue disease severity.

Conclusion

Nutritional status plays very crucial role in recovery of any illness. However, the reports suggestive of conflicting outcome of dengue infection in relation of nutritional status of dengue infected patients. In the current study we are concluding our findings that nutritional status does not affect outcome of dengue infection statistically significant. This is a preliminary study and needs to be done on larger group of dengue subjects to get conclusive outcome. Hence it is recommended that dengue viral patients' nutritional status should be taken care into consideration before planning nutrition intervention and support.

There is no conflict of Interest related to our research article. Neither me nor any author of the study has any conflict of interest to disclose.

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Ethical approval has been obtained from the institutional ethics committee.

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