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Socioeconomic Status of Dengue Patients Receiving Platelet Transfusion: Original Article

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Abstract- Dengue is the most prevalent mosquito borne world wide disease, representing a major social, economic and health burden to many countries. Platelet transfusion is given in those patients who is either bleeding or having haemorrhagic symptoms along with thrombocytopenia. The study was conducted in the Vijayanagar Institute Of Medical Sciences (VIMS), Blood Bank, Bellary between September 2012 to November 2012 for a period of 3 months. A total of 264 patient attenders were interviewed who had come to the blood bank with a requisition for platelet concentrate. By seeing the locality and monthly income, 190(72%) of the individuals belonged to low-socioeconomic group and 74(28%) belonged to high-socioeconomic group. Public health educational campaign targeting hot-spot areas could be a logical approach to minimize the impact of the disease. Judicious use of platelet concentrate is suggested as the disease is more prevalent in low-socioeconomic group.

Index Terms- Platelet transfusion, low socioeconomic group, high socioeconomic group , dengue

I. Introduction

Dengue is the most prevalent mosquito borne disease world wide, representing a major social, economic and health burden to many countries with limited resources.[1]Dengue virus is a flavivirus that affects 50-100 million people annually. Over half of the world's population resides in areas potentially at risk for dengue transmission, making dengue as one of the most important viral disease transmitted by arthropod vectors in terms of mortality and morbidity.[2]In developing countries like India, Pakistan, Srilanka, Myanmar, preventable disease such as Dengue Fever(DF)/ Dengue Haemorrhagic Fever(DHF) have the potential to cause the greatest mortality rate. The widespread distribution and rising incidence of dengue virus infection is related to a wider distribution of Aedas Aegypti.[1] The distribution of dengue and its vectors has expanded dramatically over the last 30 years. There are many factors which contribute in the rise of dengue.[3]

- Population Growth: It is one of the important factor for the increase in dengue. Day to day the population is increasing. The incorporation of land for food production and haphazard deforestation, in combination towards global warming creates the condition for the vector borne diseases like dengue.
- Unplanned Urbanization: This factor is vitally important in developing countries like India, due to constant migration from country side to the cities, nearly always accompanied by the lack of water for human consumption, inadequate disposal of liquid and solid wastes leads to the rise in dengue.
- Air Travel: Along with internal migration, the marked increase in air travel favours the movement of dengue virus between the endemic areas and the areas free from the disease. Due to people's arrival during the incubation period and subsequent infection of local mosquitos and development of epidemics.
- Poor sanitary conditions: The main factor directly or indirectly influencing the magnitude of dengue transmission is the low socio-economic conditions and poor sanitary conditions.

The South-East countries such as India, Thailand, Myanmar are at the highest risk of DF/DHF accounting for nearly half of the global risk. In India, epidemics are becoming more frequent and are straining the limited resources of the public health system. Many dengue cases are self- limiting but bleeding in dengue is one of the most dreaded complications and is associated with higher mortality rate in DFH. Platelet transfusion is given in those patients who is either bleeding or having haemorrhagic symptoms along with thrombocytopenia. There is shortage of blood and blood components in most of the developing world. The resources are inadequate in terms of meeting the ever growing demand of blood components especially platelets. Appropriate use of blood components is required to ensure their availability.[2] This study was therefore undertaken to evaluate the socio-economic status of the dengue patients receiving platelet transfusion.

II. Materials and Methods

The study was conducted in the Vijayanagar Institute Of Medical Sciences (VIMS) Blood Bank, Bellary between September 2012 to November 2012 for a period of 3 months.

A total of 264 patient attenders were interviewed who had come to the blood bank with a requisition for platelet concentrate. They were interviewed in a local language with a well set of questionnaire as shown in Table-1. People who failed to respond to all the questions or who left before completing the interview were excluded. Socio-economic status was assessed based on the monthly income (>/<Rs.15000) and locality (type of

the house, no. of rooms, no. of individuals living in the house, water stagnation around the house, animal rearing and rented /own house). Both these variables were used in our questionnaire. Every individual was given a total score based on these two variables in order to categorize them into high and low socio-economic groups. Anyone scoring >50% was categorized as belonging to the high socio-economic group while people scoring <50% were categorized as low socio-economic group. At the end of the interview each respondent was provided a handout with information related to dengue fever.

Table-1 showing the questionnaire for dengue fever

QUESTIONNAIRE FOR DENGUE FEVER. BLOOD BAG NO:

Patient's Residential Address			
Age			
Sex	M	F	
Hometown			
city			
Village			
Taluk			
District			
State			
Relatives			
Name Father / Husband			
Mother Name			
Brothers			
Sisters			
Education of fathers / husband			
Education of mother			
Education	(Un educated)(SSLC) (PUC) (Degree) (Double Degree)		
Annual Income	BPL	Non-BPL	Amount
Surrounding Home environment (If it is YES then tick Right)			
Own House	Rented house	Hut	Rcc house / How many rooms are there?
Drainage in front of house	Garbage in front of house	Road in front of house	
Lighting	Lamp	Bulb	Tube light
Roof -	Floor	Tiles	Mud
Type of land (If it is YES then tick Right)around the house			
Irrigation land	Yes / No	Dry land	House in town
Type of water			
Bore water			
Tap water			
Filter water			
Well water			
River water			

01

Family background			
Occupation			
Farmer			
Business			
Non govt. Servant			
Government Servant			
Coolie			
Retired			
Unemployed			
Bath room			
Bath room	Y	N	
Stagnant water	Y	N	
Mosquito control			
Mosquito net	Y	N	
Mosquito smoke	Y	N	
Mosquito coil	Y	N	
Mosquito bite time			
Morning			
Afternoon			
Evening			
Night			
Animal rearing			
Cowl			
Buffalo			
Ship			
Goat			
Hen			
Are there pigs near your home			
Water stagnation around the house.			
Drum			
Barrel			
Pit			
Open syntax tank			
Air cooler			
Tyres			
Coconut bowl			
Gujari wastage			
Bottles			
Garbage			
Whether patient had dengue previously			
If yes, How many months back-			

02

III. Results

A total of 319 individuals were interviewed in this study. Fifty five (17.24%) had to leave before completion of the interview. The response rate for the study was 264(82.75%). Data so obtained from these respondents were used for the analysis of the study.

Out of 264 patients who had come for platelet transfusion, 150(56.81%) were males and 114(43.19%) were females. Patients between the age group of 0-10years 93(35.22%) were more followed by 11-20years (30.68%), 21-30 years (21.59%). Majority of the individuals had education upto 10th standard 35.22% and 38.63% of the individuals were working in the non-government sectors as shown in Table-2.

Table-2 showing the basic demographic features:

AGE(years)	0-10 10-20 20-30 30-40 >40 Total	93(35.22%) 81(30.68%) 57(21.59%) 21(7.95%) 12(4.54%) 264(100%)
SEX	MALE FEMALE	150(56.81%) 114(43.19%)
EDUCATION	UPTO 10th std INTERMEDIATE UNDER-GRADUATE POST-GRADUATE	93(35.22%) 78(29.54%) 78(29.54%) 15(5.68%)
INCOME	<Rs.15,000/month >Rs.15,000/month	214(81 %) 50(19 %)
OCCUPATION	FARMER NON-GOVT. SECTORS GOVERNMENT EMPLOYEE LABOUR RETIRED UNEMPLOYED TOTAL	78(29.54%) 102(38.63%) 39(14.77%) 30(11.36%) 3(1.13%) 15(5.68%) 264(100%)

By seeing the locality and monthly income, 190(72%) of the individuals belonged to low-socioeconomic group and 74(28%) belonged to high-socioeconomic group as shown in Table-3.In the low-socioeconomic group the most important breeding place for mosquitos were reported as drum, gujari wastage and garbage. Air coolers was the most common cause of mosquito breeding in the high-socioeconomic group as shown in Table-3.

Table-3 showing locality

TYPE OF HOUSE	OWN HOUSE RENTED HOUSE HUTS RCC HOUSE TOTAL	36(13.63%) 54(20.45%) 81(30.68%) 93(35.22%) 264(100%)
TYPE OF WATER	BORE WATER CORPORATION WATER FILTER WATER WELL WATER RIVER WATER TOTAL	54(20.27%) 132(50.34%) 22(8.39%) 26(9.79%) 30(11.18%) 264(100%)
WATER STAGNATION AROUND THE HOUSE	DRUM BARREL PIT AIR COOLER TYRES COCUNUT BOWL GUJARI WASTAGE BOTTLES GARBAGE	78(12.32%) 78(12.32%) 48(7.58%) 54(8.53%) 36(5.68%) 57(9.01%) 87(13.74%) 69(10.90%) 69(10.90%)
ANIMAL REARING	COWS BUFFALO SHEEP GOAT HEN NONE	54(15.38%) 81(23.07%) 57(16.23%) 36(10.25%) 36(10.25%) 87(24.78%)

With regards to the knowledge of the preventive practices, 100% of the high-socioeconomic group and 30% of the low-socioeconomic group were aware of mosquito control. When these individuals were questioned about the mosquito bite time, the high-socioeconomic group (81.5%) voted morning whereas low-socioeconomic group (99%) voted through out the day. Previous dengue attack was seen in 12(4.5%) off the patients as shown in Table-4.

Table-4 showing knowledge of dengue preventive measures

MOSQUITO CONTROL	Mosquito Net	78(30.58%)
	Mosquito Smoke	84(31.81%)
	Mosquito Coil	93(35.22%)
	Total	255(100%)
MOSQUITO BITE TIME	Morning	89(33.71%)
	Afternoon	71(26.89%)
	Evening	52(19.69%)
	Night	52(19.69%)
	Total	264(100%)
PREVIOUS DENGUE ATTACK	-	12(4.5 %)

IV. Discussion

Dengue Infection is primarily a mosquito-borne disease found in urban and semi-urban settings. This is a major public health problem in India which is endemic in this area. Seasonal distribution has also been reported with the Aedes aegypti population density and DF/DHF incidence being associated with elevated temperature and rainfall in certain regions. In Bellary, epidemics are becoming more frequent and are straining the limited resources of the public health system. Many dengue cases are self- limiting but complications such as haemorrhage and shock can be life threatening. Investigation of sociodemographic, environmental perspectives can provide foresight into the appropriateness of dengue control efforts, and gives answers to unexpected vector control responses and contribute to effective management solutions in an ever changing environment.[4] Few studies have estimated the economic impact and disease burden of dengue at the national level. In the last two decades, several studies have investigated the risk factors for DF/DHF in an affected communities including those with poor living conditions, social inequalities and illiteracy.[5] In some cases, a useful set of socio-economic and environmental factors made a central component of analysis of temporal and spatial relationship of dengue incidence.

Among the 264 patients who needed platelet transfusion, 93(35.22%) patients were in the age group of 0-10 years. This is similar to other studies from Indonesia, Thailand and Myanmar.[6]As per other workers most patients were in the age group of 5-9years and recorded 60-180 infections/1000 children from 2001 to 2003. In contrast with observations from Asian countries where DHF is limited almost entirely to young children, in the America older age groups are widely involved having reached a peak of 432.7/1,00,000 individuals in the 30-49 year age group in 2002.[7]In the present study 150(57%) were males and 114(43%) were females this was similar to the work of Ahmed Itrat et al.[2]In this study majority of them were illiterates(education less than 10th standard) with 35.22% and 53.4% of the patients were from rural areas. Majority of the people had heard about dengue, but a good proportion had deficiency in their knowledge about the disease. But study done in Pakistan reported 38.5% of the sample to possess sufficient knowledge of dengue. However, it should be kept in mind that the previous study used slightly different knowledge variables. Human migration allows multiple exposure to aedes aegypti bites among migratory people; in other words, mobile persons have a greater chance of coming into close contact with various bites at multiple locations, especially in public spaces. In the present study we did not come across about this.

The incidence of dengue infection was increased in low socioeconomic group. In such group the aedes larval breeding sites in the domestic and peridomestic environment could increase due to poor hygiene and failure to check for breeding and reluctance to have their premises living in landed properties was also associated with a higher DF/DHF incidence as it has been consistently observed that there are more breeding habitats in these premises. The poor living conditions in the low-socioeconomic areas and slums not only contribute to the spread of the disease but also make it difficult for health services to curtail the vector population effectively in these areas. Large numbers of household members were more at risk for significant exposure to dengue transmission compared to small ones. In addition rented house-holders could be less responsible in cleaning up their premises. Living in landed properties was also associated with a higher DF/DHF incidence as it has been consistently observed that there are more breeding habitats in these premises. This findings was supported by the previous study that people gathering with daily activities in a house created the exposure and frequency of the bites with dengue-virus infected aedes.[8]

The present study shows the decrease in the prevalence of dengue infection in high-socioeconomic group which correlates with better knowledge scores. They have factors other than a better education influencing their awareness about the particular subject like internet facilities, TV, newspaper and 100% of high socio-economic group were aware of mosquito control. Previous attack in this study was 12(4.5%).[9]Insufficient knowledge was found to be more in the group where no person in the family had previously been exposed to dengue .We can thus assume that drift of information occur within a family and that knowledge seeking behaviour also improves in such families. Decreased prevalence of poor knowledge was seen as the income increased.[10]

In this study, most of the patients 93(35.22%) were using mosquito coil whereas it was mosquito spray 219(54.91%) in the study by Ahmed Itrat et al . Preventive practises regarding dengue were consistent with their knowledge .[2]

V. Conclusion

Dengue being a mosquito borne disease, is one of the dreaded disease both in developing countries and developed countries. In this study done at VIMS we found out that majority of the patients were in paediatric age group. People who

were living in low socio-economic conditions (72%) were affected more. Until a safe and effective vaccine is available, the cost-effective integrated control measures such as public health educational campaign targeting hot-spot areas could be a logical approach to minimize the impact of the disease. As the prevalence of dengue is more in low socio-economic group the platelet transfusion practice should be used based on the platelet count, haemorrhagic symptoms. At the same time platelet are scarcely available as the life span of platelet is only 6 days, platelet concentrate are expensive hence a judicious use is suggested. Councelling of the patient is very important in dengue.

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