



COMPARATIVE STUDY OF THE KNOWLEDGE AND THE CURRENT PRACTISE AMONG THE EMERGENCY PHYSICIANS AND OTHER PHYSICIANS REGARDING THE ADMISSION CRITERIA OF DENGUE FEVER IN KOLKATA.

Emergency Medicine

Dr. Rukuzo Nyeka MEMPGT, Peerless Hospital And B.K.Roy Research Centre, Kolkata.

Dr. Indraneel Dasgupta* MRCS(EDINBURGH), MRCS(GLASGOW), MCEM (U.K), Clinical Director, Department Of Emergency Medicine, Peerless Hospital And B.K.Roy Research Centre, Kolkata. *Corresponding Author

ABSTRACT

Introduction: Dengue fever is a mosquito-borne viral disease caused by a flavivirus. There are four distinct serotypes of dengue virus, namely DEN-1, 2, 3 and 4. Female *Aedes aegypti* and *Aedes albopictus* mosquitoes are the primary and secondary vectors in Malaysia, respectively. Evidently, dengue is the most rapidly spreading arboviral disease in the world.

Aim: To know about the knowledge and current practice of the emergency physicians and other physicians regarding admission criteria of dengue fever in Kolkata. To preserve the resource and to prevent unnecessary utilization of hospital facilities during dengue epidemics by following up the proper criteria of admission for acute febrile patient suspecting of dengue fever/ dengue hemorrhagic fever/ dengue shock syndrome from the emergency department.

Materials and methods: This is a questionnaire-based study and the study was conducted in peerless hospital and b.k roy research centre. The duration of the study was one year (from 1/01/2019- 31/12/2020). A pre validated questionnaire was distributed among the emergency physicians and other general physicians who deal with management of dengue patients and the responses so obtained were analysed. Total 125 participants were present in this study.

Result: We found that 5(4.0%) doctors work in Cardiology department, 40(32.0%) doctors work in Emergency medicine department, 6(4.8%) doctors work in Gynecology department, 46(36.8%) doctors work in Medicine department, 8(6.4%) doctors work in Nephrology department, 8(6.4%) doctors work in Neurology department, 8(6.4%) doctors work in Orthopedic department and 4(3.2%) doctors work in Surgery department.

Conclusion: However, a knowledge gap has been reported regarding important issues in clinical presentation, treatment, prevention, and control. Practices regarding frequent clinical monitoring were consistent with local and international guide-lines.

KEYWORDS

Knowledge, Dengue, Physicians, Emergency physician.

INTRODUCTION

Dengue fever is a mosquito-borne viral disease caused by a flavivirus. There are four distinct serotypes of dengue virus, namely DEN-1, 2, 3 and 4. Female *Aedes aegypti* and *Aedes albopictus* mosquitoes are the primary and secondary vectors in Malaysia, respectively. Evidently, dengue is the most rapidly spreading arboviral disease in the world. The Global Burden of Disease reported that dengue incidence has multiplied to six-folds from 1990 to 2013, with Southeast Asia region contributing 52% of the disease burden¹. World Health Organization (WHO) estimates that 50 million to 100 million cases occur annually. The disease is currently endemic in more than 100 countries, with South-East Asia being among the worst affected region.

Dengue fever was established in Malaysia ever since the first reported case of dengue in 1902. From at that point on, the numbers of cases proceeded to rise in spite of numerous initiatives undertaken by the Ministry of Health to curb the disease². As stated by WHO, the recent cumulative case number in Malaysia from 1 Jan to 2 Mac 2019 was 157% higher than that of the same period in 2018. In addition, a total of 79,151 dengue cases have been reported until end of July 2019 nationwide, with Selangor state contributing more than 50% of the cases (n = 40,849, 51.6%).

Vector control and observation is still the mainstay of dengue prevention strategies since there is no specific treatment for disease and vaccination remains a non-viable option. Local programs like Communications for Behavioral Changes (COMBI) in Malaysia have proved their potential effect in reducing dengue morbidity⁴ but it requires understanding from community as well. Besides, vector control measures eg. larval survey, fogging, ULV sprays and laws such as the Destruction of Disease Bearing Insects (Amendment) Act 2000, require support, cooperation and participation from the community. Therefore, an understanding of the society's baseline knowledge, attitudes and practices (KAP) of dengue is essential for effective vector control. Health education is equally important in the prevention of dengue. Hence, apart from evaluating the KAP of the community with regards to dengue, providing basic knowledge of the disease and its preventive methods is of paramount importance.

In 1997, two cases of vertical transmission of dengue fever in Malaysia were reported for the first time. A total of 16 dengue cases in pregnancy

were reported in a study conducted in Malaysia from 2000 to 2004, which concluded that dengue infection in pregnancy may lead to poor maternal and foetal outcomes³. A hospital-based prospective study conducted in Vientiane, Laos found dengue to be the most common infection among febrile pregnant women. Symptomatic dengue infection during pregnancy or delivery may even lead to preterm births, infants with low birth weight⁴, haemorrhagic complications, maternal death, vertical transmission of dengue to symptomatic infants, and other neonatal complications⁵. Since prompt treatment and admission are needed, the community should be more aware of the impact of dengue during pregnancy. However, to date no data has been reported on the community's knowledge regarding dengue in pregnancy. Therefore, this study also provides an opportunity to assess and clarify any misconceptions regarding dengue infection in pregnancy among the community.

AIM OF THE STUDY

- To know about the knowledge and current practice of the emergency physicians and other physicians regarding admission criteria of dengue fever in Kolkata.
- To preserve the resource and to prevent unnecessary utilization of hospital facilities during dengue epidemics by following up the proper criteria of admission for acute febrile patient suspecting of dengue fever/ dengue hemorrhagic fever/ dengue shock syndrome from the emergency department.

MATERIAL AND METHOD

This is a questionnaire-based study and the study was conducted in peerless hospital and b.kroy research centre. The duration of the study was one year (from 1/01/2019- 31/12/2020). A pre validated questionnaire was distributed among the emergency physicians and other general physicians who deal with management of dengue patients and the responses so obtained was analysed.

Study design:

Author will conduct a unicentre, prospective survey among the emergency physicians and other physicians who deal with dengue patients.

Study populations:

Study sample: for the purpose of this proposal ,data was collected

from all participants fulfilling the inclusive criteria. The expected sample size that was recruited for this study is calculated with the help of "raosoft" sample size calculator.

The following data were entered:

Population size: 100, Confidence level: 99%, Margin of error: 5%, Response of distribution: 50%

INCLUSION CRITERIA:

- Physicians in the emergency department who deal with dengue patients.
- Other physicians who deal with dengue patients.

EXCLUSION CRITERIA:

- Doctors who are not involved in seeing dengue patients.
- Doctors who are not willing to participate in spite of meeting the inclusion criterion.

RESULT AND ANALYSIS

In our study, 19(15.2%) patients were 21-30 years old, 29(23.2%) patients were 31-40 years old, 39(31.2%) patients were 41-50 years old, 28(22.4%) patients were 51-60 years old and 10(8.0%) patients were 61-70 years old. 66(52.8%) patients were Female and 59(47.2%) patients were male. 5(4.0%) doctors work in Cardiology department, 40(32.0%) doctors work in Emergency medicine department, 6(4.8%) doctors work in Gynecology department, 46(36.8%) doctors work in Medicine department, 8(6.4%) doctors work in Nephrology department, 8(6.4%) doctors work in Neurology department, 8(6.4%) doctors work in Orthopedic department and 4(3.2%) doctors work in Surgery department. 40(32.0%) patients were in Emergency medicine and 85(68.0%) patients were in other department. 13(10.4%) patients were in M SES, 84(67.2%) patients were in MC SES, 17(13.6%) patients were in UC SES and 11(8.8%) patients were in UMC SES. 15(12.0%) patients were live in rural residence and 110(88.0%) patients were live in urban residence. 53(42.4%) patients were married. 16(12.8%) patients were bleeding from any site. 58(46.4%) patients had decrease in platelet count. 43(34.4%) patients had persistent high grade fever. 20(16.0%) patients had severe abdominal pain. 40(32.0%) patients were persistent vomiting.

Our study showed that 40(32.0%) patients had Signs of dehydration. 31(24.8%) patients had Drop in temperature. 31(24.8%) patients had cold skin. 26(20.8%) patients had Hypotension. 24(19.2%) patients had Narrow pulse pressure. 35(28.0%) patients had tachypnoea. 81(64.8%) patients were in High risk Group. In above table showed that the mean Age (mean $\pm$ s.d.) of patients was 44.3520 $\pm$ 11.4682 year. In EM Group, 14(35.0%) patients were 21-30 years old, 18(45.0%) patients were 31-40 years old and 8(20.0%) patients were 41-50 years old. In OTHER Group, 5(5.9%) patients were 21-30 years old, 11(12.9%) patients were 31-40 years old, 31(36.5%) patients were 41-50 years old, 28(32.9%) patients were 51-60 years old and 10(11.8%) patients were 61-70 years old. Association of Age in Group vs group was statistically significant ($p<0.0001$). In EM Group, 23(57.5%) patients were Female and 17(42.5%) patients were male. In OTHER Group, 43(50.6%) patients were Female and 42(49.4%) patients were male. Association of Gender vs group was not statistically significant ($p=0.4702$). In EM Group, 40(100.0%) doctor work in Emergency medicine department. In OTHER Group, 5(5.9%) doctor work in Cardiology department, 6(7.1%) doctor work in Gynecology department, 46(54.1%) doctor work in Medicine department, 8(9.4%) doctor work in Nephrology department, 8(9.4%) doctor work in Neurology department, 8(9.4%) doctor work in Orthopedic department and 4(4.7%) doctor work in Surgery department. Association of Department of work vs group was statistically significant ($p<0.0001$).

We found in EM Group, 5(12.5%) patients were in M SES, 24(60.0%) patients were in MC SES, 3(7.5%) patients were in UC SES and 8(20.0%) patients were in UMC SES. In OTHER Group, 8(9.4%) patients were in M SES, 60(70.6%) patients were in MC SES, 14(16.5%) patients were in UC SES and 3(3.5%) patients were in UMC SES. Association of SES vs group was statistically significant ($p=0.0135$). In EM Group, 3(7.5%) patients were live in rural residence and 37(92.5%) patients were live in urban residence. In OTHER Group, 12(14.1%) patients were live in rural residence and 73(85.9%) patients were live in urban residence. Association of Residence vs group was not statistically significant ($p=0.2882$). In EM Group, 29(72.5%) patients had marital status. In OTHER Group,

24(28.2%) patients had marital status. Association of Marital status vs group was statistically significant ($p<0.0001$). In EM Group, 8(20.0%) patients were bleeding from any site. In OTHER Group, 8(9.4%) patients were bleeding from any site. Association of Bleeding from any site vs group was not statistically significant ($p=0.0983$). In EM Group, 22(55.0%) patients had decrease in platelet count. In OTHER Group, 36(42.4%) patients had decrease in platelet count. Association of Decrease in platelet count vs group was not statistically significant ($p=0.1859$). In EM Group, 11(27.5%) patients had persistent high grade fever. In OTHER Group, 32(37.6%) patients had persistent high grade fever. Association of Persistent high grade fever vs group was not statistically significant ($p=0.2652$).

Our study showed that in EM Group, 10(25.0%) patients had severe abdominal pain. In OTHER Group, 10(11.8%) patients had severe abdominal pain. Association of Severe abdominal pain vs group was not statistically significant ($p=0.0597$). In EM Group, 19(47.5%) patients were persistent vomiting. In OTHER Group, 21(24.7%) patients were persistent vomiting. Association of Persistent vomiting vs group was statistically significant ($p=0.0108$). In EM Group, 11(27.5%) patients had Signs of dehydration. In OTHER Group, 29(34.1%) patients had Signs of dehydration. Association of Signs of dehydration vs group was not statistically significant ($p=0.4593$). In EM Group, 20(50.0%) patients had Drop in temperature. In OTHER Group, 11(12.9%) patients had Drop in temperature. Association of Drop in temperature vs group was statistically significant ($p<0.0001$). In EM Group, 6(15.0%) patients had cold skin. In OTHER Group, 3(3.5%) patients had cold skin. Association of Cold skin vs group was statistically significant ($p=0.0206$). In EM Group, 15(37.5%) patients had Hypotension. In OTHER Group, 11(12.9%) patients had Hypotension. Association of Hypotension vs group was statistically significant ($p=0.0016$). In EM Group, 12(30.0%) patients had Narrow pulse pressure. In OTHER Group, 12(14.1%) patients had Narrow pulse pressure. Association of Narrow pulse pressure vs group was statistically significant ($p=0.0354$). In EM Group, 4(10.0%) patients had tachypnoea. In OTHER Group, 31(36.5%) patients had tachypnoea. Association of Tachypnoea vs group was statistically significant ($p=0.0021$). In EM Group, 24(60.0%) patients were in High risk Group. In OTHER Group, 57(67.1%) patients were in High risk Group. Association of High risk Group vs group was not statistically significant ($p=0.4408$). In EM Group, the mean Age (mean $\pm$ s.d.) of patients was 33.9000 $\pm$ 5.6831. In OTHER Group, the mean Age (mean $\pm$ s.d.) of patients was 49.2706 $\pm$ 10.1317. Difference of mean Age with both Group was statistically significant ($p<0.0001$).

DISCUSSION

This is a questionnaire-based study and the study was conducted in peerless hospital and B.K. Roy research centre. The duration of the study was one year (from 1/01/2019- 31/12/2020). Total 125 patients were present in this study.

In our study out of 125 patients, 19(15.2%) patients were 21-30 years old, 29(23.2%) patients were 31-40 years old, 39(31.2%) patients were 41-50 years old, 28(22.4%) patients were 51-60 years old and 10(8.0%) patients were 61-70 years old. The mean Age (mean $\pm$ s.d.) of patients was 44.3520 $\pm$ 11.4682 year. Number of female patients [66(52.8%)] were higher than the male patients [59(47.2%)].

Tham KY et al⁶ (2004) showed that among 10,075 persons discharged from the ED, there were 28 reattending patients who were admitted and diagnosed with SARS, giving an under triage rate of 0.3% (95% confidence interval [CI] 0.1% to 0.4%). The sensitivity of an ED admission for SARS was 89.4% (95% CI 85.6% to 93.1%), and specificity was 89.7% (95% CI 89.2% to 90.3%). The positive predictive value was 17% (95% CI 15.7% to 18.4%), and the negative predictive value was 99.7% (95% CI 99.6% to 99.8%).

In our study 72 (57.6%) patients were unmarried and 53(42.4%) patients were married. 29(72.5%) married patients and 11 (27.5%) unmarried patients were present in Emergency medicine department. In OTHER Group, 24(28.2%) married patients and 61(71.8%) unmarried patients were present in others department which was statistically significant ($p<0.0001$).

Lye DC et al⁷ (2008) found that 30 percent were above the minimum platelet threshold of 80,000/uL, but 50 percent had safe levels of platelets between 50,000 and 80,000/uL. After admission, platelet nadir was below 20,000/uL in only 9 percent and below 10,000/uL in only 2 percent of cases.

In our study total 58(46.4%) patients platelet count was decreased from which 22(55.0%) patients were from Emergency medicine department and 36(42.4%) patients were from others department. It was not statistically significant ($p=0.1859$).

We found that 3(34.4%) patients had persistent high grade fever. In Emergency medicine department, 11(27.5%) patients had persistent high-grade fever. In others department, 32(37.6%) patients had persistent high-grade fever. Association of Persistent high grade fever vs group was not statistically significant ($p=0.2652$).

Lye DC et al⁷ (2008) found that 33 percent had vomiting, 13 percent abdominal pain, 18 percent had bleeding problem.

It was found that 20(16.0%) patients had severe abdominal pain from which 10(25.0%) patients were from Emergency medicine department and 10(11.8%) patients were from others department which was not statistically significant ($p=0.0597$). Total 40(32.0%) patients had persistent vomiting where 19(47.5%) patients were from Emergency medicine department and 21(24.7%) patients were from others department which was statistically significant ($p=0.0108$).

We found that 40(32.0%) patients had Signs of dehydration from which 11(27.5%) patients were from Emergency medicine department and 29(34.1%) patients were from others department. It was not statistically significant ($p=0.4593$).

We examined that 16(12.8%) patients had bleeding from any site. 8(20.0%) patients from Emergency medicine department and 8(9.4%) patients from others department had bleeding from any site which was not statistically significant ($p=0.0983$).

In our study, 31(24.8%) patients had Drop in temperature from 20(50.0%) patients were from Emergency medicine department and 11(12.9%) patients were from others department which was statistically significant ($p<0.0001$).

We examined that 31(24.8%) patients had cold skin. In Emergency medicine department, 6(15.0%) patients had cold skin and in others department, 3(3.5%) patients had cold skin. It was statistically significant ($p=0.0206$).

It was found that total 26(20.8%) patients had Hypotension and from them 15(37.5%) patients were from Emergency medicine department and 11(12.9%) patients were from others department which was statistically significant ($p=0.0016$).

We found that 24(19.2%) patients had Narrow pulse pressure from which 12(30.0%) patients were from Emergency medicine department and 12(14.1%) patients were from others department which was also statistically significant ($p=0.0354$).

We also found that 35(28.0%) patients had tachypnoea. Higher number of patients [31(36.5%)] were present in others department who had tachypnoea compared to Emergency medicine department patients [4(10.0%)]. It was also statistically significant ($p=0.0021$).

It was found that 81(64.8%) patients were in High risk Group from which most of the patients [57(67.1%)] were present in others department who were in High risk Group compared to Emergency medicine department patients [24(60.0%)] which was not statistically significant ($p=0.4408$).

Table: Distribution of Department of work, Group and SES

		Frequency	Percent
Department of work	Cardiology	5	4.0%
	Emergency medicine	40	32.0%
	Gynecology	6	4.8%
	Medicine	46	36.8%
	Nephrology	8	6.4%
	Neurology	8	6.4%
	Orthopedic	8	6.4%
	Surgery	4	3.2%
	Total	125	100.0%
Group	EM	40	32.0%
	OTHER	85	68.0%
	Total	125	100.0%

SES	M	13	10.4%
	MC	84	67.2%
	UC	17	13.6%
	UMC	11	8.8%
	Total	125	100.0%

SUMMARY AND CONCLUSION

In our study, 19(15.2%) patients were 21-30 years old, 29(23.2%) patients were 31-40 years old, 39(31.2%) patients were 41-50 years old, 28(22.4%) patients were 51-60 years old and 10(8.0%) patients were 61-70 years old.

We found that 5(4.0%) doctors work in Cardiology department, 40(32.0%) doctors work in Emergency medicine department, 6(4.8%) doctors work in Gynecology department, 46(36.8%) doctors work in Medicine department, 8(6.4%) doctors work in Nephrology department, 8(6.4%) doctors work in Neurology department, 8(6.4%) doctors work in Orthopedic department and 4(3.2%) doctors work in Surgery department.

In our study, 16(12.8%) patients were bleeding from any site, 58(46.4%) patients had decrease in platelet count, 43(34.4%) patients had persistent high grade fever, 20(16.0%) patients had severe abdominal pain, 40(32.0%) patients were persistent vomiting, 40(32.0%) patients had Signs of dehydration, 31(24.8%) patients had Drop in temperature, 31(24.8%) patients had cold skin, 26(20.8%) patients had Hypotension, 24(19.2%) patients had Narrow pulse pressure, 35(28.0%) patients had tachypnoea, 81(64.8%) patients were in High risk Group.

It was found that persistent vomiting, Drop in temperature, cold skin, hypotension, Narrow pulse pressure and tachypnoea were more in Emergency medicine department compared to other department which were statistically significant but bleeding from any site, decrease in platelet count, severe abdominal pain and, Signs of dehydration were not significantly associated with Emergency department.

However, a knowledge gap has been reported regarding important issues in clinical presentation, treatment, prevention, and control. Practices regarding frequent clinical monitoring were consistent with local and international guide-lines.

REFERENCES

1. Stanaway JD, et al. The global burden of dengue: an analysis from the Global Burden of Disease Study 2013. *Lancet Infect. Dis.* 2016;16:712–723.
2. Ahmad R, et al. Factors determining dengue outbreak in Malaysia. *PLoS One.* 2018;13:e0193326.
3. Ismail M, et al. Seropositivity of dengue antibodies during pregnancy. *Sci. World J.* 2014;2014:436975.
4. Friedman EE, et al. Symptomatic dengue infection during pregnancy and infant outcomes: a retrospective cohort study. *PLoS Negl. Trop. Dis.* 2014;8:e3226. [PMC free article] [PubMed] [Google Scholar]
5. Arragain L, et al. Vertical transmission of dengue virus in the peripartum period and viral kinetics in newborns and breast milk: new data. *J. Pediatr. Inf. Dis. Soc.* 2017;6:324–331. [PubMed] [Google Scholar]
6. Tham KY. An emergency department response to severe acute respiratory syndrome: a prototype response to bioterrorism. *Annals of emergency medicine.* 2004 Jan 1;43(1):6–14.
7. Lye DC, Chan M, Lee VJ, Leo YS. Do young adults with uncomplicated dengue fever need hospitalisation? A retrospective analysis of clinical and laboratory features. *Singapore medical journal.* 2008 Jun 1;49(6):476.