

“Alternative Treatment Modalities for Dengue Insights from a Survey”

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Date of Submission: 20-01-2025

Date of Acceptance: 30-01-2025

ABSTRACT: Dengue is a viral infection transmitted to humans through the bite of infected mosquitoes bite of *Aedes aegypti* mosquito with Seasonality of July to November. A decreasing WBC and platelet count makes the diagnosis of dengue very likely. Dengue is a serious mosquito-borne viral infection that requires immediate and comprehensive medical attention to prevent severe complications. There are no definitive curative medications for dengue; management is supportive. Judicious fluid resuscitation during the critical phase of dengue is the cornerstone of management. Several compounds with anti-dengue potential are being studied; no anti-dengue drug is available so far. The World Health Organization classifies dengue into probable dengue, dengue with warning signs, and severe dengue. Severe dengue, characterized by plasma leakage, severe bleeding, or organ impairment, entails significant morbidity and mortality if not treated timely. Although dengue virus infections are usually self-limiting, dengue infection has come up as a public health challenge in the tropical and subtropical nations. This article provides a detailed overview on dengue virus infections, varied clinical manifestations, diagnosis, differential diagnosis, and prevention and treatment.

KEYWORDS: Dengue, mosquito-borne, curative medications, plasma leakage, manifestations, diagnosis.

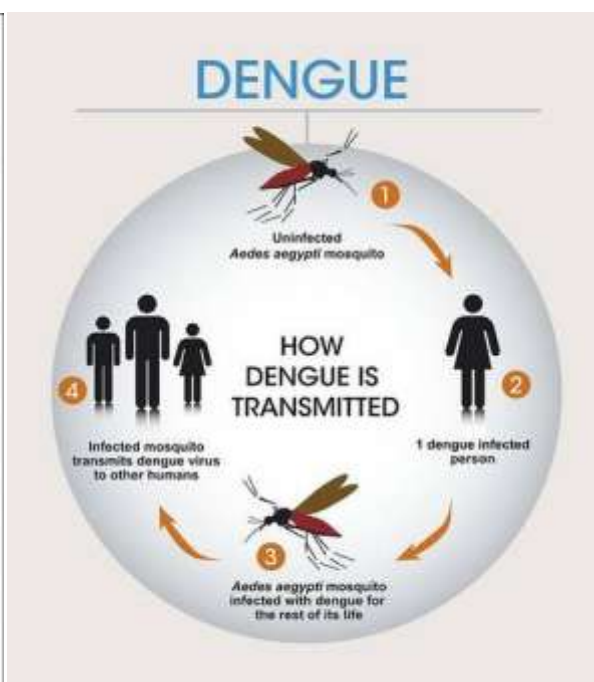
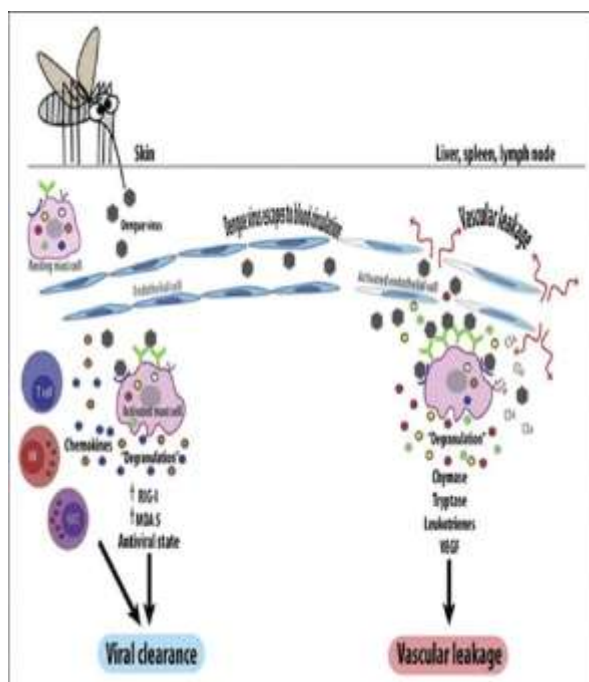
AIM: To contribute to a broader understanding of alternative treatment modalities, providing data that can inform future research, clinical practices, and patient education in dengue management.

OBJECTIVES:

1. To identify and categorize the various alternative treatments or complementary therapies being used for dengue fever, including herbal remedies, dietary supplements, and traditional healing practices.
2. To improve patient compliance.
3. Identify Safety Concerns.
4. To avoid the resistance of antibiotics.
5. Screen patients for dengue fever based on presenting symptoms, travel history, and exposure risk.

I. INTRODUCTION

Dengue is a mosquito-borne viral infection that can cause severe flu-like symptoms. It is caused by the dengue virus, which is transmitted to humans through the bite of infected *Aedes* mosquitoes, particularly *Aedes aegypti*. Dengue is an acute arthropod-borne viral infection that places a heavy socioeconomic and disease burden on many tropical and subtropical regions, and is the most frequent arboviral disease globally.¹ The Global Burden of Disease study reported that dengue is increasing at a higher rate than any other communicable disease. We review recent updates and insights into dengue prevention and control measures, its pathogenesis relevant for vaccines and therapeutics, its clinical manifestations, and patient management. The dengue virus is a single stranded, small enveloped RNA virus. They possess 4 distinct serotypes DEN1, DEN2, DEN3 & DEN4.



Transmission:-Dengue is transmitted by the bite of an infected female mosquito. Non-vector transmission can also occur, for example, through blood transfusion, organ transplantation, needle stick injuries, and mucosal splashes.^{84–86} Unlike Zika virus,⁸⁷ sexual transmission of dengue has not yet been reported. However, a recent single-case report documented prolonged shedding of dengue virus in the semen.⁸⁸ In contrast, another study in five patients with dengue confirmed by PCR, dengue virus was not detected in semen.⁸⁹ Persistent shedding of DENV-RNA was demonstrated in vaginal secretion up to 18 days from symptom onset.⁹⁰ Vertical transmission is common among mothers who are viraemic at delivery;⁹¹ transplacental transmission is not thought to happen from infections that occur earlier during gestation, but formal data are lacking. Dengue virus was retrieved from 75% of 12 infected breastfeeding mothers, so transmission via

breastfeeding is plausible, although no cases have been reported.

Causes

- Lethargy and/or restlessness , Severe abdominal pain
- Difficulty in breathing or palpitation or breathlessness.
- Persistent vomiting >3 times a day.
- Postural hypotension - dizziness.
- Pale, cold clammy extremities.
- Not able to drink and no urine output for 4-6 h or urine output less than 0.5 ml/kg/h
- Bleeding: epistaxis, scanty haemoptysis, haematemesis, gum bleeding, black coloured stools, excessive menstrual bleeding, dark-coloured urine or haematuria others, so transmission via breastfeeding is plausible, although no cases have been reported.

Sudden behavioural changes and Convulsions.

Febrile Phase	Critical Phase	Recovery Phase
Lasts for 2 to 7 days. Symptoms: Headache, Myalgia, Arthralgia, Retro-orbital pain Children: anorexia, N/V Progressive decrease in WBC (TC)	Warning signs between days 3 and 7 of illness. Increased capillary permeability causing plasma leakage. A Rising Hematocrit is the earliest sign of plasma leakage.	Gradual re-absorption of extra-vascular compartment fluid takes place in following 48 to 72 hours. General well- being improves Isles of white in the sea of red Fluid Overload may happen
Dehydration, High fever à neurological disturbances & febrile seizure	Shock from plasma leakage: severe hemorrhage and organ impairment	Hypervolemia and acute pulmonary oedema

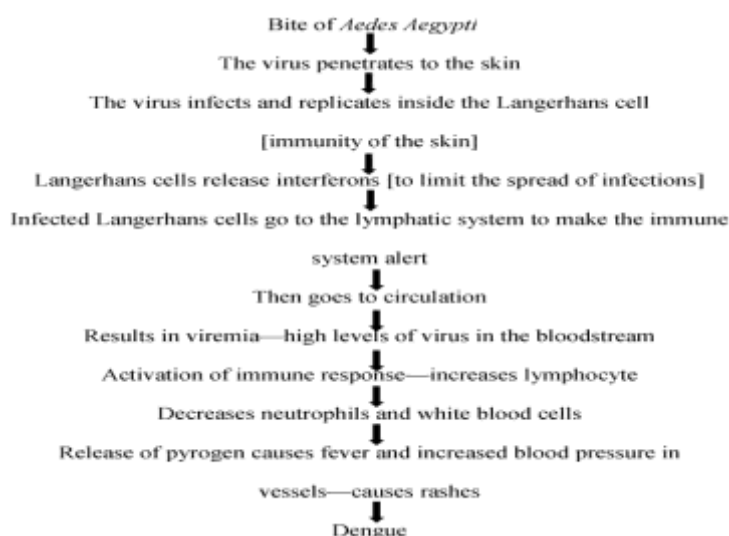
Pathophysiology

Belonging to the Flaviviridae family, the dengue virus is a 50-nm virion comprising 3 structural and 7 nonstructural proteins, a lipid envelope, and a 10.7-kb-capped positive-sense single strand of RNA. Infections are asymptomatic in up to 75% of affected individuals. The disease spectrum ranges from self-limiting dengue fever to severe hemorrhage and shock. A fraction of infections, between 0.5% and 5%, develop into severe dengue. Without proper treatment, fatality rates may exceed 20%, particularly among children. The typical incubation period for the disease is 4 to 7 days, with symptoms lasting from 3 to 10 days. Symptoms appearing more than 2 weeks after exposure are unlikely to be attributed to dengue fever.

The consequences of a mosquito bite injecting the dengue virus into the skin remain

unclear. Skin macrophages and dendritic cells are believed to be the initial targets. These infected cells are thought to migrate to the lymph nodes and disseminate through the lymphatic system to other organs. Viremia, the presence of the virus in the bloodstream, may occur for 24 to 48 hours before the onset of symptoms.

The presentation of dengue fever, whether asymptomatic, typical, or severe, is influenced by a complex interplay of host and viral factors. Severe dengue fever, characterized by heightened micro vascular permeability and shock syndrome, is often associated with infection by a second dengue virus serotype and the patient's immune response. However, severe cases of dengue fever can also arise from infection by a single serotype. Interestingly, micro vascular permeability tends to escalate as viral titers decrease.



Clinical Evaluation:-

- History taking
- Clinical examination
- Investigations
- Diagnosis and assessment of disease phase and severity

Laboratory Diagnosis of Dengue Virus:-

- NS1 Antigen Detection
- Serology: The study of the diagnosis of disease by measuring antibody levels in serum is referred to as serology.
- IgM-captured enzyme-linked immunosorbent assay (MAC ELISA)
- Neutralization
- Indirect IgG ELISA
- Rapid test
- RT-PCR and Real time RT PCR
- Virus Isolation and Culture

Any one of the NS1Ag and IgM assays is confirmatory for diagnosis of Dengue if done through ELISA method.

Other Required Investigations: As per Clinical Judgement

- -Complete Blood Count
- -Chest X-ray (PA & Lateral Decubitus)
- -Blood Sugar
- -USG abdomen including IVC

Materials and Methods

- STUDING MULTIPLE REPORTS OR DIAGNOSTIC DATA OF INFECTED PERSONS

- - Liver Function Test & Renal Function Test, also called Kidney Function Test, which checks whether your kidneys are working fine or are damaged or infected. [LFT and RFTdiameter]
- -Serum Amylase/Lipase
- - ABG Arterial blood gas analysis [pH: 7.35-7.45.]
- -Serum Electrolytes and Bicarbonate or lactate
- -Cardiac enzyme and Electrocardiogram (ECG)

At present the treatment given by the doctors to the dengue patient are in various forms allopathic as well as Ayurvedic form in which various drugs are used for the treatment they are as follows given at the below.

Allopathic Drugs used for treatment

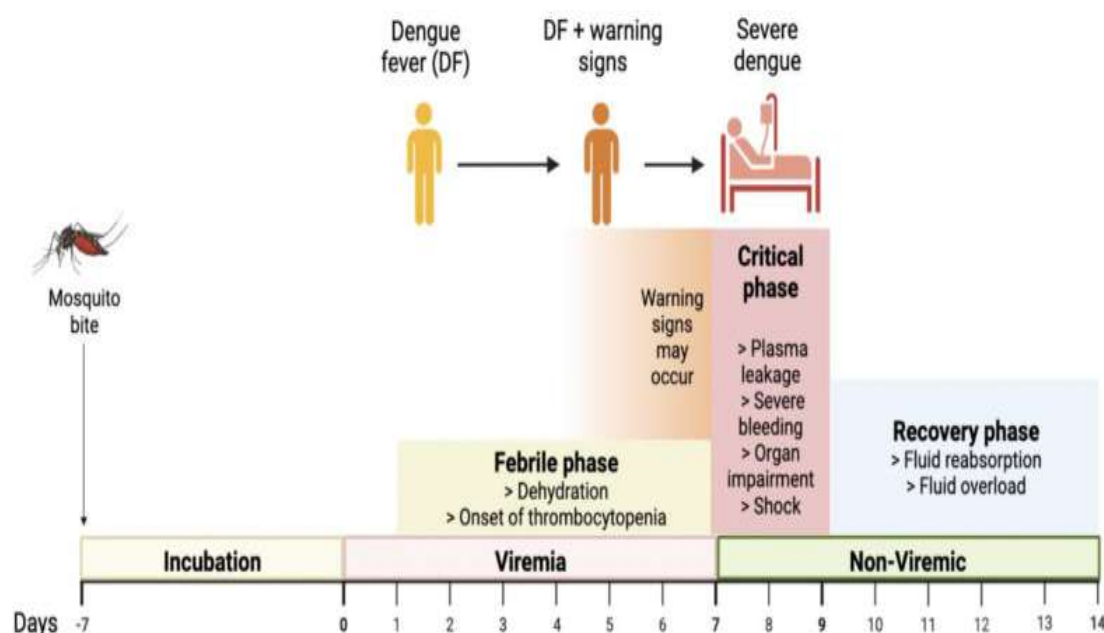
List of medications:-

The dengue fever medications that your doctor may prescribe include: Acetaminophen, Metoclopramide, Dimenhydrinate, Loratadine, Oral rehydration salts.

Ayurvedic Drugs used for treatment

List of medications

Carica papaya, Azadirachta indica, Ocimum basilicum L, Fenugreek seeds, **Zingiber officinale Rosc**, Pomegranate juice Beetroot, Turmeric Aloe vera juice, Spinach, Nettle leaf tea,



Current clinical management	Symptomatic care - Acetaminophen - Oral rehydration	Hospitalisation required - Tapering IV fluids therapy (crystalloids supplemented with colloids); diuresis for fluid overload - Blood/platelet transfusion in case of severe bleeding
Proposed novel therapeutics	Direct acting anti-virals - JNJ-A07 - Ivermectin - Doxycycline Thrombopoietic medications - Eltrombopag Others - CPL - Vitamin E	Monoclonal therapeutics - VIS13 Host-targeted medications - Mast cell inhibitors - Ketotifen - Montelukast - Metabolic targets - Metformin

METHOD-

1] Approach to clinical management :

Depending on the clinical manifestations, presence of warning signs and other high-risk factors, patients may be classified as following-

1] Mild dengue (A): May be managed on OPD basis

hospital management

3] Severe dengue (C): Require emergency treatment and urgent referral.

A]Management of Mild dengue patient (Group A)

Both the patients and their family members should be instructed regarding the following at the outpatient department

1. Educate about warning signs and to report if they appear
2. Patient need to take adequate bed rest.
3. Advice to consume adequate oral fluids (ORS/Coconut juice)
4. Over-hydration in infants and young children should be carefully observed.
5. Body temperature should be kept below 100°F. If the temperature goes beyond 100°F, give paracetamol. Paracetamol is available in tablet form or in syrup form.

Management of moderate and severe dengue

- Intravenous fluid therapy should be started in patients with poor oral intake or further

- increase in haematocrit and those with warning signs.
- The critical period of dengue fever refers to the period of plasma leakage which starts around the time from febrile to afebrile phase.
- Rapid fall of thrombocyte count may occur.

B]Management of Moderate Dengue patients (Group B)

dengue patients with warning signs and high-risk groups are considered to be as very ill.

Clinical approach for the management of moderate dengue patients

- admitted for in-hospital management.
- Baseline haematocrit (hct) test should be performed before starting fluid therapy if the investigation results are available immediately

- Blood glucose level and other laboratory tests should be done
- start intravenous fluid therapy of 0.9% NS or RL

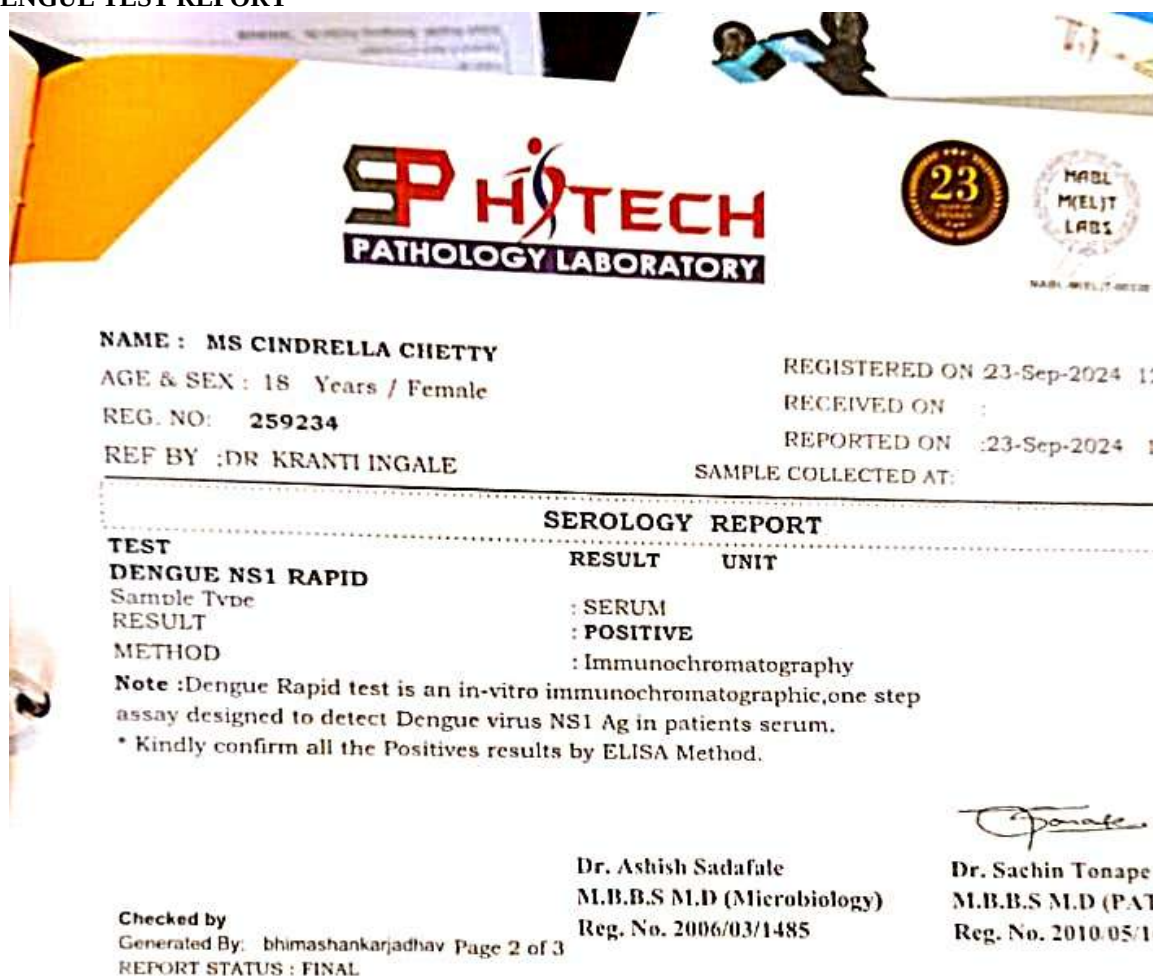
2} Data collection:

Data collection of the same was analysed to give us the best results for the patients wherein platelet counts, CBC count, Hb and dengue positive tests were mostly observed.

Various site studies were done and they included mauli Hospital, Unique Hospital, General Hospital, Atharva Hospital and references of many patients were taken, follow up was done and feedback was taken after treatment.

I have been collected some clinical data lab reports and some around 30 patient clinical data which are as follows in the tabular form:-

DENGUE TEST REPORT



SP HiTECH
PATHOLOGY LABORATORY

NAME : MS CINDRELLA CHETTY
AGE & SEX : 18 Years / Female
REG. NO: 259234
REF BY : DR KRANTI INGALE

REGISTERED ON 23-Sep-2024 12
RECEIVED ON :
REPORTED ON : 23-Sep-2024 1
SAMPLE COLLECTED AT:

SEROLOGY REPORT

TEST	RESULT	UNIT
DENGUE NS1 RAPID		
Sample Type	: SERUM	
RESULT	: POSITIVE	
METHOD	: Immunochromatography	

Note : Dengue Rapid test is an in-vitro immunochromatographic, one step assay designed to detect Dengue virus NS1 Ag in patients serum.
* Kindly confirm all the Positives results by ELISA Method.

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REPORT STATUS : FINAL

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Reg. No. 2006/03/1485

Dr. Sachin Tonape
M.B.B.S M.D (PAT)
Reg. No. 2010/05/16






NAME : MS CINDRELLA CHETTY

AGE & SEX : 18 Years / Female

REQ NO : 250234

REF BY : DR KRANTHINGALE

REGISTERED ON : 23 Sep 2024 12:21 pm

RECEIVED ON : 23 Sep 2024 1:04 pm

REPORTED ON : 23-Sep-2024 1:23 pm

SAMPLE COLLECTED AT :

CLINICAL PATHOLOGY			
TEST	RESULT	UNIT	
URINE ROUTINE & MICROSCOPY			
Sample Type	Urine		
Physical Examination			
Quantity	: 5 mL		
Colour	: Pale Yellow		
Appearance	: Slightly Hazy		
Chemical Examination			
Protein	: Absent		Absent
Sugar	: Absent		Absent
Ketone	: Absent		Absent
Bile Pigments	: Absent		Absent
Bile Salts	: Absent		Absent
Microscopic Examination			
Pus Cells	: 8-10	/hpf	0-5
RBC	: Absent	/hpf	Absent
Epithelial Cells	: 4-6	/hpf	Few
Casts	: Absent		
Crystals	: Absent		
Amorphous Material	: Absent		

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CLINICAL ANALYSIS

Table.4(A):Clinical Analysis Data

Sr no.	Patient name	age	sex	Dengue test	Hb	platelets	WBC	Temp (F)	BP (mmhg)	Spo 2 (%)	Treatment Duration (days)
1	Rutuja pinjan	24	F	+	11.8	99000	2000	101.4	120/70	96	5
2	Pooja kadam	38	F	+	12.4	105000	3500	102.3	110/80	98	4
3	Sachin more	45	M	+	11.2	97000	3000	100.6	130/80	97	7
4	Baban singh	32	M	+	13.4	89000	1500	102.4	120/90	92	5
5	Pawan kumar	44	M	+	13	126000	2700	100.3	130/90	94	7
6	Sahil pawar	24	M	+	10.8	80000	2600	101.0	110/70	95	5
7	Ajay shinde	56	M	+	12.5	98000	3000	100.7	140/80	98	5
8	Komal pagade	35	F	+	9.6	87000	4000	101.2	120/80	99	6
9	Aditi kumari	42	F	+	8.2	100000	1800	102.0	120/70	97	7
10	Mangal shinde	37	F	+	10.6	130000	3500	103.2	130/80	99	7

Table.4(B):Clinical Analysis Data

Sr no.	Patient name	age	sex	Dengue test	Hb	Platelets (150000-450000)	WBC (4000-10000)	Temp	BP	spo2	Treatment duration
11	Sourabh mahajan	48	M	+	14.2	100000	4000	101.2	120/70	98	7
12	Shruti gopale	52	F	+	12.4	86000	2000	103.0	130/80	96	6
13	Ashok vishnu	63	M	+	13	115000	2800	100.8	140/90	97	9
14	Cindrella chattey	18	F	+	12.6	128000	1200	102.2	110/80	99	6
15	Sanjay kulkarni	28	M	+	10.6	120000	3800	101.4	120/60	99	7
16	Shyam jain	37	M	+	11	80000	2500	100.0	130/60	97	8
17	Mangesh parsad	44	M	+	12	99000	1700	99.6	140/70	99	8
18	Shrikant bodke	26	M	+	9.2	200000	3500	101.6	110/60	98	6
19	Amit patil	18	M	+	15	96000	1800	99.8	120/80	95	7
20	Ujjwala yadav	62	F	+	8.4	88000	2600	101.4	140/90	98	6

II. CONCLUSION

- From the above literature review we have conducted a survey of about 30 patients and observe the medication and treatment given to those patient according to the doctors order various allopathy and ayurvedic drugs are used for the treatment of dengue.
- There are various parameters used for analysis of the patient for example age, sex, dengue test, blood pressure, platelet count, White blood cell, body temperature, blood pressure, saturation level, treatment duration and method of treatment.
- To prepare a formulation by using various plants, plant material their extracts such as Carica papaya, giloy, cladogynos, ginger, cymbopogon, neem, fingerroot, basil, termeric, alligator weeds, fenugreek etc. which will be more effective against dengue.
- Promote Awareness and Education in public by counseling and explaining importance of hygiene
- In this study, we provide an updated overview of dengue. We offer the basic and latest information in various aspects of dengue including clinical manifestation, mechanism of the disease, current treatment, control, and prevention of DENGU VIRUS.
- Our results indicate that understanding the DF/DHF pathogenesis, risk factors, and different types of therapeutic and control strategies used for the treatment of DENV are necessary.
- Dengue fever is currently a global public health threat that requires effective licensed vaccines, vector control measures, and early diagnostic tests to prevent the burden of this disease.
- various plants with pharmacological and ethnobotanical uses against dengue treatment was presented.
- Besides the global status of the dengue epidemic, existing vaccination measures have been conferred in the current review.
- Many plant species and their respective extracts and pure compounds have been shown to exhibit potential as anti-DENV medicaments.
- The plant bioactive metabolites exhibit antiviral response directly or through the stimulation of immunomodulatory response cascades against DENV at different infection stages.

12. Plant metabolites also help to reduce the antigen load and manipulate various immune factors in the host. Plant-mediated immunomodulation leads to the regulated cytokine production, enhanced platelet count, and phagocytic pathway activation.

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