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ORIGINAL ARTICLE

CLINICAL PROFILE, LABORATORY FINDINGS AND QUALITY OF LIFE IN 100 PATIENTS WITH CHIKUNGUNYA VIRUS INFECTION - 2025 OUTBREAK IN BANGLADESH

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Abstract

Background: *After a period of absence, a resurgence of chikungunya has been seen in Bangladesh. Therefore, this study aimed at to detect the clinical spectrum, laboratory parameters, and quality of life (QoL) of chikungunya patients during the 2025 outbreak.* ***Methods****: This observational study was carried out at Popular Medical College Hospital, Bangladesh, over a period of 3 months, including 100 adult chikungunya patients. QoL was assessed using the EQ-5D-3L (European Quality of Life 5 Dimensions 3 Level Version) tool.* ***Results:*** *The mean (SD) age was 50.6 (18) years with female (61%) predominance. Common manifestations were joint pain (96%), fever (86%), myalgia (57%), and rash (53%). Frequently involved joints were ankle (71%), proximal interphalangeal (60%), metacarpophalangeal (58%), and distal interphalangeal (54%) joints. Chikungunya was confirmed by polymerase chain reaction (59%) and anti-chikungunya IgM (41%). Laboratory findings showed leukopenia (19%) and thrombocytopenia (24%). QoL assessment revealed problems with mobility (62%), usual activities (71%), self-care (51%), pain/discomfort (64%), and anxiety/depression (27%). The mean (SD) and median (IQR) for EQ-VAS (EuroQol Visual Analogue Scale) score were 43.9 (22.2) and 40 (30-63), respectively.* ***Conclusion:*** *Common clinical presentations were fever and joint pain with a high preponderance to ankle and hand joints. Few patients had leukopenia and thrombocytopenia. Most patients suffered from poor QoL.*

Keywords: *clinical profile, laboratory findings, quality of life (QoL), chikungunya infection, 2025 outbreak, Bangladesh, EQ-5D-3L.*

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Introduction:

The name chikungunya is derived from a Kimakonde word of Tanzania called “kungunyala”, meaning “that which bends up” or “to become contorted” highlighting the stooped posture adopted by an effected person due to severe joint pain.[1, 2] It is caused by a single stranded RNA arbovirus from the Alphavirus genus of Togaviridae family and mainly transmitted by the bite of Aedes mosquitoes.[1,3] The first case of chikungunya infection was detected at Tanzania in 1952 and subsequently it has spread to >110 countries with the greatest prevalence in Southeast Asia, Africa and the Americas.[2,4] Before 2000 outbreaks of chikungunya virus were rarely seen but probably due to evolutionary changes and increased travel, frequent outbreaks are being reported after the year 2000.[5] The latest outbreak

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was observed in La Réunion, France, where over 47,500 cases were detected with 12 deaths as of May, 2025.[6]Foshan city of Guangdong Province in China recently reported 7000 new cases of chikungunya in the last month.[7]

In Bangladesh, there were two minor outbreaks of chikungunya in 2008 and 2011, followed by a major outbreak with more than 13,000 clinically confirmed cases being detected in 2017.[8-10]Thereafter, the condition nearly disappeared before it resurged again in late 2024. From 474 patients with febrile illness, 55 cases of chikungunya were detected by reverse transcription-polymerase chain reaction (RT-PCR) at International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDRB).[11] This led to the current outbreak with detection of around 153 confirmed cases from 337 suspected cases of chikungunya in the first 5 months of 2025 before even the start of monsoon season.[12]

Clinical spectrum and laboratory parameters have been described during the 2017 outbreak in Bangladesh.[3, 13-15] It was noted that features were different among adults and children.[14] Moreover, there were variation of clinical features with respect to geographical location.[15] While reports in Bangladesh showed fever and arthralgia as the most common symptoms of infection with particular involvement of small joints of the hands, other studies showed knee joint involvement as the most prevalent site in India and Colombia.[3, 15-17] There is yet no study published regarding the current outbreak of chikungunya infection. Hence, this study aims to determine the clinical profile, laboratory findings and quality of life (QoL) of chikungunya patients during the 2025 outbreak in Bangladesh.

Methods:

The study was conducted under the leadership and supervision of Professor Quazi Tarikul Islam, who created a panel, called CHIKV Study 2025, with a group of expert doctors for the purpose of this research. This was a cross-sectional observational study conducted in consecutive 100 laboratory confirmed adult chikungunya patients that either admitted to hospital or presented to outpatient services at Popular Medical College Hospital over a period of 3 months from June to August, 2025, excluding those patients suffering from hyperuricaemia, rheumatoid arthritis, other connective tissue disease and unwilling to give consent. Ethical clearance was taken from the Ethical Review Committee of Popular Medical College.

Data regarding socio-demographic characteristics (age, gender, religion, marital status, occupation, residence, contact number) and clinical presentation (duration from symptom onset to first consultation, fever, joint pain, joint swelling, joint redness, rash, myalgia, nausea/vomiting, retro-orbital pain, conjunctivitis, diarrhoea, past history of dengue/chikungunya, recent travel history, contact with suspected chikungunya patient, mosquito bite, comorbidities, length of hospital stay if admitted) were collected in a case record form by direct interview from suspected chikungunya patients that gave informed written consent to participate in the study during first contact with the patient. Based on the patients' presentations, appropriate laboratory investigations were sent. Chikungunya was confirmed either by PCR when patient visited within 7 days of symptom onset or by antibody test when patient presented after 7 days. Multiplex PCR of patient's serum was done to detect dengue, chikungunya or zika virus using Rotor-Gene Q PCR system by QIAGEN, Germany. Anti chikungunyaIgM and IgG antibodies were detected using ELISA (Enzyme-Linked Immunosorbent Assay).The results of the investigations such as PCR for chikungunya, anti chikungunyaIgM&IgG, complete blood count, erythrocyte sediment rate (ESR), C-reactive protein (CRP), blood sugar, alanine aminotransferase (ALT), aspartate aminotransferase (AST), serum creatinine were recorded once available during second contact with the patient. Considering the patients' symptoms, severity and duration of joint pain and laboratory parameters, adequate treatment was prescribed by an expert consultant and documented in the case record form. All information were kept confidential and used only in the purpose of research.

The QoL of a patient was assessed using the EQ-5D-3L (European Quality of Life 5 Dimensions 3 Level Version) instrument, which is a 2 part questionnaire. The first part is the EQ-5D descriptive system that assess 5 dimensions of health (mobility, usual activities, self-care, pain/discomfort and anxiety/depression) based on 3 problem levels (no problems, some problems and extreme problems). The patients were explained about the questionnaire. The interviewer read out the questionnaire in full and based on the patients' reply, ticked boxes that indicate problem levels the patients' experienced on each of the 5 dimensions. The second part consists of EQ VAS (EuroQol Visual Analogue Scale), which addresses the patients' overall assessment of their own health in a scale of 0 (worst health imaginable) to 100 (best health imaginable).[18]

All data were input into and analyzed using Statistical Packages for Social Sciences (SPSS) software version 26. Qualitative variables were presented as numbers and percentages while quantitativedata were shown as mean (standard deviation) or median (interquartile range). All the results were expressed in tabular form except EQ VAS score, which was represented in a frequency distribution graph.

Results:

Table I

Sociodemographic and clinical characteristics of patients with chikungunya (n=100)

Characteristics		Number (%)
Age (years)	18 – 64	75 (75%)
	> 64	25 (25%)
	Mean ± SD	50.6 ± 18
Gender	Male	39 (39%)
	Female	61 (61%)
Religion	Muslim	85 (85%)
	Hindu	13 (13%)
	Christian	2 (2%)
Marital status	Married	89 (89%)
	Unmarried	11 (11%)
Occupation	Government service	9 (9%)
	Private service	22 (22%)
	Businessman	7 (7%)
	Student	8 (8%)
	Unemployed	45 (45%)
	Self-employed	4 (4%)
	Others	5 (5)
Residence	Urban	91 (91%)
	Rural	9 (9%)
Comorbidities	Diabetes Mellitus	44 (44%)
	Hypertension	51 (51%)
	Chronic Kidney Disease	6 (6%)
	Chronic Liver Disease	2 (2%)
	Ischaemic Heart Disease	12 (12%)
	Hypothyroidism	12 (12%)
	Past history of dengue or chikungunya	23 (23%)
	Recent travel history	8 (8%)
	Contact with suspected chikungunya patient	27 (27%)
	Mosquito bite	59 (59%)
	Clinical features of dengue	41 (41%)
	Duration to first consultation from symptom onset (days)	7.2 ± 9.1 (mean ± SD)
Patient source	Outpatient	58 (58%)
	Hospital admission	42 (42%)
	Duration of hospital stay if admitted (days)	3.9 ± 2.3 (mean ± SD)
Clinical presentation	Fever	86 (86%)
	Joint pain	96 (96%)
	Joint swelling	42 (42%)
	Joint redness	24 (24%)
	Rash	53 (53%)
	Muscle pain	57 (57%)
	Nausea/vomiting	53 (53%)
	Retro-orbital pain	8 (8%)
	Conjunctivitis	8 (8%)
	Diarrhoea	19 (19%)
Treatment	Paracetamol	78 (78%)
	Nonsteroidal anti-inflammatory drug	57 (57%)
	Steroid	20 (20%)

SD = Standard deviation

Around 100 laboratory confirmed chikungunya cases were included in the study. The mean age (standard deviation) of the study population was 50.6 (18) years with 75 % of the patients belonging between 18 to 64 years of age group. The median (interquartile range) age was 55 (35-64) years with female (61%) preponderance. Less than half (45%) of the chikungunya effected patients were unemployed. Most of the patients (91%) were living in the urban area. The common comorbidities in the study population were hypertension (51%) and diabetes mellitus (44%). Around 23% of the patients had past history of dengue or chikungunya and 27 patients had contact with suspected chikungunya patients. Clinical features similar to dengue were found in almost half of the patients (41%) and 59 patients could recall being exposed to recent mosquito bites. While most of the patient took outpatient service (58%), some patients had to get admitted to hospital (42%) for better management. The duration of hospital stay was around 3.9 ± 2.3 days. The most common presenting feature was joint pain (96%) and fever (86%). Almost half of the patients presented with joint swelling (42%), rash (53%), nausea/vomiting (53%) and myalgia (57%). Interestingly, 19 patients suffered from loose motion. Majority of the patients were treated with paracetamol (78%) followed by nonsteroidal anti-inflammatory drugs (57%) (Table I)

Table II

Pattern of joint involvement of chikungunya patients (n=100)

Characteristics	Number (%)
Number of joints	
Single	13 (13%)
Multiple	83 (83%)
Type of joints	
Small joint	6 (6%)
Large joint	29 (29%)
Both	61 (61%)
Site of joints	
Distal interphalangeal joint	54 (54%)
Proximal interphalangeal joint	60 (60%)
Metacarpophalangeal joint	58 (58%)
Wrist joint	47 (47%)
Elbow joint	32 (32%)
Shoulder joint	33 (33%)
Hip joint	2 (2%)
Knee joint	36 (36%)
Ankle joint	71 (71%)
Spine	8 (8%)

Table IIs shows the pattern of joint involvement. Around 83 patients complained of multiple joint pain with involvement of both small and large joints (61%) being the common presentation. The most frequently effected joint was ankle joint (71%), followed by proximal interphalangeal joint (60%), metacarpophalangeal joint (58%), distal interphalangeal joint (54%) and wrist joint (47%).

Table III

Laboratory parameters of chikungunya patients (n=100)

Parameters	Number (%)
Chikungunya serology	
PCR positive	59 (59%)
Antibody positive	41 (41%)
Haemoglobin (g/dl)	12.1 ± 1.3 (mean ± SD)
White blood cell count (/mm^3)	6655.4 ± 2700.7 (mean ± SD)
Leucopenia (white blood cell < 4000/mm^3)	19 (19%)
Platelet count (/mm^3)	209809 ± 86865.2 (mean ± SD)
Thrombocytopenia (platelet < 150,000/mm^3)	24 (24%)
Haematocrit (%)	36.8 ± 5 (mean ± SD)
ALT (U/L)	39.1 ± 30.7 (mean ± SD)
Raised ALT (ALT > 40 U/L)	24 (24%)
AST (U/L)	37.1 ± 22.6 (mean ± SD)
Raised AST (AST > 40 U/L)	15 (15%)

SD = Standard deviation

Table IV

Quality of life assessment according to health dimensions and problem levels (n=100)

	Mobility	Self-care	Usual activities	Pain/Discomfort	Anxiety/Depression
	n (%)	n (%)	n (%)	n (%)	n (%)
No problems	38 (38%)	49 (49%)	29 (29%)	36 (36%)	73 (73%)
Some problems	59 (59%)	49 (49%)	66 (66%)	58 (58%)	26 (26%)
Extreme problems	3 (3%)	2 (2%)	5 (5%)	6 (6%)	1 (1%)
Any problems	62 (62%)	51 (51%)	71 (71%)	64 (64%)	27 (27%)

Around 59 patients were positive for chikungunya PCR and the rest (41%) showed presence of chikungunya antibody in their serum (Table 3). Leucopenia was seen in 19% patients and thrombocytopenia in 24% of the patients. Raised SGPT and SGOT were found in 24% and 15% of the patients respectively.

The QoL assessment according to health dimensions was presented in Table 4. Around 62% patients had problems with mobility, 51% faced issues with self-care, 70% had difficulties with usual activities, 64% suffered from pain/discomfort and 27% complained of anxiety/depression.

The mean (standard deviation) and median (interquatile range) for EQ-VAS (EuroQol Visual Analogue Scale) score was 43.9 (22.2) and 40 (30-63) respectively. The frequency distribution curve shows most of the patients had EQ-VAS score of d”50 (68%), representing poor QoL (Figure 1).

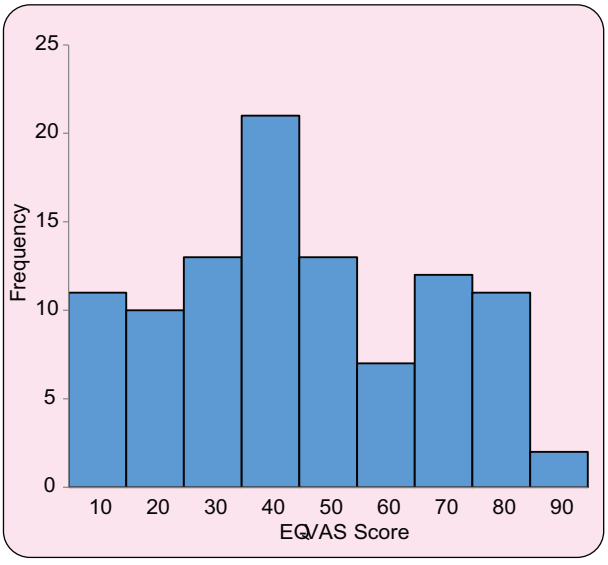

Figure 1. *Frequency distribution of EQ-VAS (EuroQol Visual Analogue Scale) score of the study population (n=100)*

Discussion:

This study aimed to look at the clinical spectrum, laboratory parameters and QoL of 100 chikungunya patients during the 2025 outbreak in Bangladesh. The mean and median age in the current study was found to be higher than the previous outbreak that occurred in Bangladesh back in 2017.[3, 13-15] Additionally, chikungunya effected lower aged patients in India, Pakistan and Philippines as well.[19-21] However, similar mean age to current study was reported in Thailand and Colombia.[17, 22] None of the studies showed any specific predilection to a particular age group. The high incidence of chikungunya between the ages 18-64 years may just represent increased number of population in that particular age group in Bangladesh.[23]

Majority of the women were effected in this study. Similar result was also seen in a study of 148 patients during the 2017 outbreak in Bangladesh and other studies as well.[14, 17, 20, 22] This may be explained by the fact that most Bangladeshi women like to spend time inside the house and Aedes mosquitoes are more prevalent indoors.[14, 24] In contrast, there are studies in Bangladeshand abroad with male preponderance.[3, 25-27] Meanwhile, some research findings show unremarkable gender distribution.[15, 16, 19]

The common comorbidities in the present case series were diabetes mellitus and hypertension, which was also similar in previous studies.[3, 13, 16]Only 23% of patients with past history of dengue or chikungunya were effected, suggesting possible immunological protection due to previous infection. However, further research is required on this issue. Fever and joint pain were the most prevalent presenting features with almost 50% of patients having myalgia, rash and nausea/vomiting in this study. The trend has not changed with similar clinical features seen in other research works.[3, 13-15, 19, 20]Interestingly, 19% patients had diarrhea. This finding was much lower compared to another study, showing 52.4% patients with dysentery-like symptoms.[14]

Multiple small and large joint pain, particularly in the ankle (71%) and small joints of the hand (>50%) were observed in the present study. Two other Bangladeshi studies during the previous outbreak showed similar joint pattern involvement but they also showed higher involvement of knee joint compared to current study.[13, 14] Similarly, hand and ankle joints were commonly involved in Colombia.[17, 28] Another large study of 685 patients in Bangladesh during the previous outbreak found wrist and small joints of the hand as the most effected joint with approximately 35% of patients having ankle and knee joint pain.[3] An old Thailand study described frequent involvement of small joints of the hand along with knee joint.[22] A study in India during 2019-2020 reported maximum involvement in the knee joint (46%).[16] Ankle joint seem to be frequently effected in this outbreak compared to the previous one in 2017.

There are no specific biochemical tests that can diagnose chikungunya infection. Results obtained can give a suggestive interpretation of the viral infection. Leucopenia was seen in 19% patients and almost one-fourth of the study population had thrombocytopenia. Previous Bangladeshi study found lower incidences leucopenia (10.4%) and thrombocytopenia (5.9%).[3] Thus, showing a changing pattern from previous outbreak. Similar results were also seen in Thailand with 11.1% leucopenia and 13.3% thrombocytopenia but a study in Kerala reported almost 70% patients had leucopenia and 18% had thrombocytopenia.[16] Another study in Thailand reported 11.1% of patients with leucopenia, 13.3% thrombocytopenia and 30% had elevated liver enzymes.[22] Fewer patients had raised liver enzymes in the current study. However, the study conducted in Pakistan found normal levels of AST and ALT.[21]

While assessing QoL, most of the patients had difficulties with usual activities (71%) followed by pain/discomfort (64%) and mobility problems (62%). Almost half of the patients had troubles with self-care. The poor QoL was also representative in the EQ-VAS score, where most of the patients gave a low scoring. Similar results of poor QoL were seen in another study, which used QoL questionnaire endorsed by world health organization (WHO).[13] Two other studies used visual analogue scale (VAS), where high score indicates more pain, to measure pain levels in patients with acute chikungunya infection. Most of the patients reported a high score.[29, 30]

The changes in pattern of clinical presentation and laboratory parameters in different outbreaks may be difficult to explain. Different strains of chikungunya virus maybe the culprit. During the 2017 outbreak in Bangladesh, the East/Central/South African (ECSA) genotype was isolated.[31]A recent phylogenetic analysis of the virus in 2024 revealed a new-sublineage within this ECSA genotype.[25]

This study is not without its limitation. ELISA was used to detect antibody in the serum for some patients. In a country like Bangladesh, which is endemic to dengue infection, cross reactivity with ELISA may be a possibility, leading to false positive results. However, it is important to recall that tests were done during an outbreak with clinical features suggestive of chikungunya infection. EQ-5D-3L instrument used for

measuring QoL may have a high ceiling effect (most people report no problems in all the dimensions, reducing sensitivity to mild heath issues) and have limited capability to detect moderate changes in health.[32] Nevertheless, this tool is easy to use and recommended by professional organizations.[33] Since there was no follow-up, outcome could not be measured. While this report is an initial presentation of 100 patients, the study will continue and follow up will be done to detect outcome and long term sequalae.

Conclusion:

Despite limitations, the study provided an early knowledge regarding the 2025 chigungunya outbreak in Bangladesh. Most of the patients presented with fever and multiple join pain, involving frequently the ankle joints and small joints of the hands. Patients may have leucopenia, thrombocytopenia with elevated liver enzymes, but the frequency of these findings is low. Majority of patients suffered from poor QoL.

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Conflict of Interest:

No author has any conflict of interest to disclose for this manuscript. The authors themselves are responsible for their ideas and views expressed in this article, which do not necessarily represent the views, decisions or policies of the institutions with which they are affiliated.

Ethical Approval:

The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This study was approved by the Institutional Review Board of the Popular Medical College Written informed consent was taken from all the patients before taking part of the study.

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