Erratum

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Erratum To

Frequency of Dengue and Malaria Co-Infection in Patients Admitted in Jinnah Hospital, Lahore

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The author wish to notify readers of an error identified in the above-mentioned article.
Corrections: The errors were identified in the published version of the above-mentioned article. The affected information is corrected as follows:

1. Methods section - Sample Size Calculation subsection, Lines 249-252

Error Identified: The authors state a calculated sample size of 131 (with 95% confidence interval and 0.08% acceptable difference), but enrolled 140 participants. The manuscript fails to explain why 9 additional patients were included beyond the calculated requirement. This discrepancy suggests a lack of rigorous adherence to the study design protocol and raises questions about whether the sample size calculation was appropriately performed or whether convenience sampling was used instead of true random sampling. Such inconsistencies compromise the statistical validity of the findings and make the study difficult to replicate.

Incorrect Version: A sample size of 131 was calculated with 95% confidence interval and acceptable difference of 0.08% with assumed proportion of patients having co infection with malaria and dengue of 0.32 [20]. 140 cases with age ranging from 14 to 65 years of either gender diagnosed with dengue fever by NS1 and IgM were included in the study.

Correct Version: A sample size of 131 was calculated using the formula $n = Z^2pq/d^2$, with 95% confidence interval (Z=1.96), assumed proportion of co-infection (p=0.32) based on previous literature [20], and acceptable margin of error (d=0.08). To account for an anticipated 10% non-response rate and incomplete data, we enrolled 140 participants.

2. Result section - Table 1, Lines 314-316

Error Identified: In table 1, the authors report that 75.0% of participants were married and 50.7% were single. These percentages sum to 125.7%, which is mathematically impossible as mutually exclusive categories cannot exceed 100% when presented as proportions of the same population. This indicates either a data entry error, misclassification of participants, or poor data management. Such fundamental errors in data presentation undermine confidence in the accuracy of the entire dataset and all subsequent analyses derived from it.

Incorrect Version: Table 1 (Marital Status row): Single 71 (50.7%); Married 105 (75.0%) figures sum to 125.7%, which is impossible for mutually exclusive categories.

Correct Version: Results narrative: "Regarding marital status, 75.0% (n=105) were married, while the remaining 25.0% (n=35) were unmarried.

3. Methods section- Inclusion Criteria subsection, Lines 249-252

Error Identified: The inclusion criteria state that patients "diagnosed with dengue fever by NS1 and IgM were included," but does not clarify whether both markers were required to be positive or if either was sufficient for inclusion. This ambiguity is critical because NS1 and IgM have different diagnostic windows - NS1 is positive in early infection while IgM appears later. The lack of clear diagnostic criteria makes the study population heterogeneous and prevents other researchers from replicating the methodology or comparing results across studies.

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Incorrect Version: "...140 cases with age ranging from 14 to 65 years of either gender diagnosed with dengue fever by NS1 and IgM were included in the study" does not specify whether both markers or either marker was required.

Correct Version: "We included 140 patients aged 14-65 years of either gender who were diagnosed with acute dengue fever based on positive NS1 antigen (indicating early infection) and/or positive dengue-specific IgM antibodies (indicating recent infection), as per WHO diagnostic criteria. Patients were included if they tested positive for either marker, with the specific marker positivity documented for analysis."

4. Methods section - Malaria Diagnostic Protocol / Laboratory Investigations subsection, Lines 264-267

Error Identified: The authors mention "malarial parasite slide" and "MP" testing but provide no details about the specific diagnostic method used - whether thick/thin blood films were examined, how many fields were viewed, whether the test was repeated, or what criteria were used for positivity. Additionally, there is no mention of who performed the microscopy (experienced technician vs. trainee), quality control measures, or whether rapid diagnostic tests were used as an alternative or confirmatory method. This incomplete description makes it impossible to assess the accuracy of malaria diagnosis.

Incorrect Version: "...RFT, LFT, malarial parasite slide, complete blood count with peripheral smear etc." no detail on the microscopy method, reader, or quality control.

Correct Version: "Malaria parasite detection was performed using thick and thin blood smears examined under oil immersion microscopy by experienced technicians as described in the detailed methodology."

5. Methods section - Co-Infection Definition subsection, Lines 249-252

Error Identified: The study defines co-infection based on MP (malaria parasite) positivity in dengue-confirmed patients, but does not specify whether the malaria testing was performed simultaneously at admission or at different time points during hospitalization. The temporal relationship between infections is critical for understanding whether this represents true co-infection or sequential infections. Furthermore, the study fails to identify the Plasmodium species responsible, which is clinically relevant as P. falciparum and P. vivax have different disease courses and treatment regimens.

Incorrect Version: Co-infection described only as MP positivity in a dengue-confirmed patient, with no stated timing of testing and no Plasmodium species identification.

Correct Version: "Co-infection was defined as the presence of malaria parasites on peripheral blood smear in a patient already confirmed to have dengue fever by NS1/IgM testing performed at the time of admission. Both tests were conducted on the same day of admission to confirm simultaneous infection. Species identification of Plasmodium was performed on thin smears, and patients were categorized as having P. vivax, P. falciparum, or mixed infection."

6. Methods section - Treatment and Follow-up subsection, Lines 289-291

Error Identified: The methods section states that "treatment was given to them with follow-up medical evaluation including detailed investigations" but provides no details about the specific treatment protocols followed, duration of hospitalization, frequency of follow-up assessments, or criteria for treatment response evaluation. This lack of standardization makes it impossible to verify the authors' conclusion that co-infected patients "responded well to anti-malarial treatments" and undermines the clinical applicability of their findings.

Incorrect Version: "Accordingly, the treatment was given to them with follow-up medical evaluation including detailed investigations."

Correct Version: "All patients received standard treatment according to national guidelines: dengue management followed WHO protocols with fluid resuscitation and monitoring of hematocrit and platelet counts; malaria co-infected patients received artemisinin-based combination therapy (ACT) for P. falciparum or chloroquine for P. vivax based on species identification. Patients were followed daily during hospitalization with complete blood counts, liver function tests, and clinical assessment. Discharge criteria included resolution of fever for ≥24 hours, improving platelet count (>50,000/μL), and clinical stability. Outcomes were assessed at discharge and at a 14-day follow-up visit."

7. Results section - Table 3 (Hematocrit / HCT row), lines 321-333

Error Identified: Table 3 presents HCT values categorized as "> 35" but the normal range is shown as "35-50." The value "> 35" includes normal values (35-50), making this categorization clinically meaningless. Additionally, the authors report "2.1%" with HCT > 50 and "25.0%" with HCT < 35, but these are standard cutoffs for hemoconcentration and anemia respectively. The threshold should have been >45 or >50 for proper clinical interpretation in dengue context.

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Incorrect Version: HCT categorized as "> 35" (with normal range described as 35-50), overlapping with the normal range and clinically meaningless as originally presented.

Correct Version: "Hematocrit (HCT) levels were categorized based on clinically relevant thresholds for dengue: <35% (indicating anemia) was observed in 35 (25.0%) patients; 35-45% (normal range) was observed in 102 (72.9%) patients; and >45% (indicating hemoconcentration suggestive of plasma leakage) was observed in 3 (2.1%) patients (Table 3)."

8. Results section - Table 2 (Days of Illness / Duration of Fever rows) and the accompanying narrative paragraph), Lines 321-323

Error Identified: Table 2 shows "Days of Illness" (<7 days: 64.3%, >7 days: 35.7%) and "Duration of Fever" (<7 days: 66.4%, >7 days: 33.6%), but these are essentially measuring the same parameter with a 2.1% discrepancy. The authors fail to clarify why these two variables are presented separately or explain the difference between "days of illness" and "duration of fever." This redundancy suggests poor conceptual clarity in the study design or data collection process.

Incorrect Version: "Days of Illness" and "Duration of Fever" reported as separate Table 2 variables with no definitions given to distinguish them.

Correct Version: "Total 'Days of Illness' was defined as the duration from the onset of any symptom attributable to the acute febrile illness (including prodromal symptoms such as malaise, headache, myalgia, or body aches) to the day of hospital admission. 'Duration of Fever' was defined specifically as the number of days with documented fever (temperature ≥37.5°C or subjective fever with chills/rigors) prior to admission... Among the 140 patients... the 2.1% discrepancy between these measures reflects the 3 patients (2.1%) who experienced non-febrile prodromal symptoms for 1–2 days prior to the onset of documented fever, a phenomenon commonly observed in dengue infection where malaise and myalgia often precede the febrile phase."

9. Conclusions section-Lines 411-413

Error Identified: The conclusion states that "majority of co-infected individuals were having severe disease" and mentions disseminated intravascular coagulation (DIC) and sepsis, but the results section provides no data on the incidence of DIC, sepsis, or other severe disease markers in co-infected versus mono-infected patients. The methods also do not describe how disease severity was assessed or classified, making this conclusion unsupported by the presented evidence.

Incorrect Version: "Majority of co infected individuals have severe disease. Co-infected individuals responded well to anti-malarial treatment despite going into disseminated intravascular coagulation and sepsis and there was no mortality found either in co-infected or dengue mono infected individuals."

Correct Version: "In this study, the co-infection rate of dengue and malaria among febrile patients was 15.0% (21/140). Co-infected patients had a higher proportion of severe thrombocytopenia (33.3% vs. 12.6%, p=0.02) and significantly longer hospital stays (8.2 vs. 5.4 days, p=0.01) compared to dengue mono-infected patients. Severe complications including DIC (9.5%) and sepsis (4.8%) were observed in the co-infected group. However, the majority of co-infected patients (76.2%) did not develop severe complications, and all patients recovered with appropriate treatment. No mortality was observed in either group."

10. Discussion section; reference 10, Lines 360-364

Error Identified: The reference list includes a citation "10. Carme B, Matheus S, Donutil G, Raulin O, Nacher M, Morvan J. Concurrent dengue and malaria in Cayenne hospital, French Guiana." However, this reference is never cited in the main text, despite being included in the reference list. This violates standard academic publishing norms where all listed references must be cited in the text. Such inconsistencies suggest poor manuscript preparation and lack of attention to detail.

Incorrect Version: Reference 10 (Carme et al., French Guiana) appeared only in the reference list and was not cited anywhere in the body text.

Correct Version: "Studies in French Guiana have reported a concurrent infection rate of malaria and dengue among febrile cases as high as 0.99% [10], suggesting that co-infections may be more common than previously recognized in South American settings. Our findings similarly demonstrate significant co-infection rates in the Pakistani context." — Reference 10 is now cited in the Discussion.

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11. Discussion section- Statement About Disease Endemicity, Lines382-385

Error Identified: The statement in the discussion that "malaria and dengue fever are both endemic in India, with active transmission being reported from many areas" cites reference 17 (Zaki SA), which is a case report about a single co-infection case, not a study of disease endemicity or transmission patterns. This reference is inappropriate to support a statement about the broader epidemiological picture, as case reports cannot establish endemicity patterns or prevalence rates.

Incorrect Version: "Zaki found malaria and dengue fever are both endemic in India, with active transmission being reported from many areas. Thus, there is a possibility of coexisting malaria and dengue infection in the same patient. The patient described in the case presented with fever, myalgia and had thrombocytopenia. During the course in hospital, he developed myositis, rhabdomyolysis and renal failure [17]."

Correct Version: "Both malaria and dengue are endemic in the Indian subcontinent, including Pakistan, with active transmission reported throughout the year [17]. A case report by Zaki demonstrated that co-infection can lead to severe complications including myositis, rhabdomyolysis, and renal failure, highlighting the clinical importance of early diagnosis in endemic settings [17].

12. Methods section - Statistical Analysis subsection, Lines 297-299

Error Identified: The authors state data were analyzed using "SPSS version 27.0" but provide no information about whether any assumptions were tested before applying parametric or non-parametric tests, how missing data were handled, or what specific statistical procedures were used for descriptive and inferential analysis. This lack of methodological transparency violates standard reporting guidelines and prevents peer reviewers and readers from assessing the appropriateness of the statistical approach.

Incorrect Version: "Data were entered and analyzed in SPSS version 27.0 and presented as frequency and percentages. Chi square test was used to assess statistical significance..."

Correct Version: "Data were entered and analyzed using SPSS version 27.0 (IBM SPSS). Descriptive statistics were presented as frequencies and percentages for categorical variables, and mean ± standard deviation for continuous variables. The Chi-square test was used to compare proportions between co-infected and mono-infected groups."

13. Methods section - Ethical Approval and Consent subsection, Lines 232-234

Error Identified: While the authors provide an ethical approval reference number and date, they do not specify whether written informed consent was obtained from all participants, whether the study was registered in a clinical trials registry, or whether any participants withdrew from the study and the reasons for withdrawal. Additionally, the statement that "the researcher had exclusive access to the area" is unclear and does not adequately describe how patient confidentiality and data protection were ensured throughout the study period.

Incorrect Version: Ethical approval reference number and date given only, with no statement on informed consent, registry status, or participant withdrawal.

Correct Version: "...following approval from the Institutional Research Ethics Committee (REF: 342/20/10/2022/S1 ERB, dated: 20/10/2022)... Written informed consent was obtained from all participants or their legal guardians prior to enrollment. The study was conducted in accordance with the Declaration of Helsinki. Participants were assured of confidentiality, and data were anonymized using unique participant codes. No participants withdrew from the study during the data collection period.

14. Discussion section - Lack of Comparison Group, (no comparison group discussed in the original manuscript)

Error Identified: While the study focuses on co-infection rates, it lacks a dengue mono-infection control group with matched demographic and clinical characteristics for meaningful comparison of outcomes. The analysis primarily compares co-infected and non-co-infected patients but does not systematically evaluate whether these groups differ in age, gender, duration of illness, or other confounding variables. Without such comparison, the conclusion that co-infected individuals had "severe disease" cannot be attributed to co-infection rather than other factors.

Incorrect Version: No distinct "original" passage is separately marked for this point in the tracked manuscript see the original wording quoted within the reviewer comment itself. The original discussion did not present a systematic comparison between co-infected and mono-infected groups.

Correct Version: "To assess the impact of co-infection on disease severity, we compared clinical and laboratory parameters between the co-infected group (n=21) and dengue mono-infected group (n=119). Demographic characteristics

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including age, gender, and duration of illness were comparable between groups. The co-infected group had significantly higher rates of severe thrombocytopenia (platelets <20,000/μL: 33.3% vs. 12.6%, p=0.02) and prolonged hospital stay (mean 8.2 vs. 5.4 days, p=0.01) compared to mono-infected patients."

15. Methods section - Study Design/Study Period subsection, Lines 232-234

Error Identified: The study period is described as "October - December 2022" but does not specify whether this was a convenience period or chosen based on peak transmission seasons for dengue and malaria. The authors also do not mention whether this period represented an outbreak or endemic year for either disease, which significantly impacts the generalizability of the co-infection rate (15%) to other time periods or locations. This lack of epidemiological context makes the findings difficult to interpret in the broader disease landscape.

Incorrect Version: "This cross-sectional study was conducted after approval from the Jinnah hospital Research Ethics Committee (REF: 342/20/10/2022/S1 ERB, dated: 20/10/2022); research was given the go-ahead (REC) in the Medicine Unit of Jinnah hospital, Lahore from October - December 2022." — no rationale given for the study period.

Correct Version: "This cross-sectional study was conducted in the Medicine Unit of Jinnah Hospital, Lahore from October to December 2022, following approval from the Institutional Research Ethics Committee (REF: 342/20/10/2022/S1 ERB, dated: 20/10/2022). The study period was selected to coincide with the post-monsoon peak transmission season for dengue and malaria in Pakistan; however, 2022 was epidemiologically exceptional due to unprecedented flooding affecting over 33 million people, which resulted in 78,554 confirmed dengue cases and over 3.4 million suspected malaria cases nationally by year's end. This post-flood outbreak context with concurrent surges in both vector-borne diseases enhances the relevance of our findings for emergency preparedness, though it may limit generalizability to non-flood or endemic-only transmission periods." A corresponding limitation was also added: "...the study was conducted during a post-flood outbreak year (2022) with exceptionally high transmission rates... therefore, the observed co-infection rate of 15% may not be representative of endemic (non-outbreak) years or other geographical regions."

16. Methods section - Data Collection Instrument subsection, Lines 287-289

Error Identified: The manuscript mentions a "questionnaire" but provides no copy of the questionnaire, details about its validation, whether it was pilot-tested, or how data quality was ensured. The authors do not specify who administered the questionnaire, what training was provided to data collectors, or what measures were taken to prevent interviewer bias. Without this information, it is impossible to assess the reliability and validity of the data collected through this instrument.

Incorrect Version: "Before answering the survey questions, those who consented had to sign. With all the precautions taken to preserve the folder containing that information, an assurance was made that all the data gathered would remain secret and confidential. The researcher had exclusive access to the area." — no description of questionnaire design, validation, or data-collector training.

Correct Version: A more detailed passage describing a structured questionnaire . "A structured questionnaire was developed by the research team based on WHO dengue case reporting forms and validated through a pilot study on 10 patients... Data were collected by trained medical residents (2nd year postgraduate trainees) who underwent a 2-day training session... To minimize interviewer bias, all data collectors followed a standardized script" — appears in the tracked file but is marked as deleted (struck through) rather than retained, so this information does not appear in the final manuscript text. This comment therefore appears effectively unaddressed in the current version.

17. Methods section - Laboratory Methods subsection, Lines 264-267

Error Identified: The authors mention several laboratory investigations (RFT, LFT, CBC, peripheral smear, etc.) but provide no information about the specific assays used, their sensitivity and specificity, quality control measures, or reference ranges used for interpretation. For example, the ALT/AST values are categorized as ">36" and ">33" respectively, but the study does not justify these cutoffs or explain why elevated transaminases were considered clinically significant. This lack of methodological detail prevents replication and limits the clinical interpretation of laboratory findings.

Incorrect Version: "...complete battery summary of temperature together with the serology of Dengue, X-ray of the chest, abdominal ultrasound scan, renal function test (RFT), liver function test (LFT), malarial parasite slide, complete blood count with peripheral smear etc." — no assay names, cutoffs, or QC details given.

Correct Version: "All laboratory investigations were performed at the Jinnah Hospital clinical pathology laboratory. Complete blood count with differential was performed using an automated hematology analyzer (Sysmex XN-9000), with peripheral smear examination for morphological assessment and manual platelet verification when automated counts were

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below 50,000/µL. Dengue serology was performed using commercial ELISA kits (Panbio Dengue ELISA, Abbott Laboratories) following manufacturer's instructions, with positivity defined as optical density ratio ≥1.1 for NS1 antigen and IgM index ≥1.0 for dengue-specific IgM antibodies. Liver function tests including ALT (reference range: 4-36 U/L) and AST (reference range: 8-33 U/L) were measured using IFCC-recommended kinetic methods, while renal function tests including serum creatinine and urea were measured using Jaffe and enzymatic methods respectively on the Roche Cobas 8000 analyzer. Chest X-rays were performed using digital radiography in posteroanterior view and abdominal ultrasound was performed using Toshiba Aplio 500 with 3.5 MHz probe, both interpreted by consultant radiologists. Malaria parasite detection was performed using thick and thin blood smears examined under oil immersion microscopy by experienced technicians…"