International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Original Article

Study of Platelet Indices in Patients with Sepsis and Their Prognostic Significance Using 5-Part Hematology Analyzer

Dr. Ujjwal Gulati[1], Dr. Devashish Upadhyay[2], Dr. Amit Joon[3], Dr. Ritika Kansal[4], Dr. Stuti Jain[5], DR. Pragya[6]

[1] PG Resident, KMMCH, Dept. of Pathology KMMCH, Mathura.
[2] Senior Resident, Dept. of Pathology, KMMCH, Mathura.
[3] MBBS, MD (Community Medicine), Professor, Krishna Mohan Medical College, Mathura.
[4] Professor, Dept. of Pathology, KMMCH, Mathura.
[5] Assistant Professor, Dept. of Pathology, KMMCH, Mathura.
[6] PG Resident, Dept. of Anesthesia, VIMS Gajraula.

OPEN ACCESS

Corresponding Author:

Dr. Amit Joon

MBBS, MD (Community Medicine), Professor, Krishna Mohan Medical College, Mathura.

Received: 08-12-2025
Accepted: 20-12-2025
Available online: 31-12-2025

ABSTRACT

Background: Sepsis remains a major cause of morbidity and mortality worldwide. Simple, widely available hematological parameters such as platelet count (PLT), mean platelet volume (MPV), platelet distribution width (PDW), and plateletcrit (PCT) have been proposed as prognostic biomarkers in sepsis. This study aimed to evaluate platelet indices on admission and their dynamic changes over 72 hours in adult septic patients and to assess their association with clinical outcomes, including mortality.

Methods: In this prospective observational study, adult patients (≥18 years) admitted with clinical diagnosis of sepsis to the ICU of KMMCH, Mathura between April 2025 and November 2025 were enrolled. Complete blood count (CBC) including PLT, MPV, PDW, and PCT was measured on admission (Day 1) and on Day 3 using a 5-part hematology analyzer. Patients were followed till discharge or in-hospital death. Primary outcome was in-hospital mortality. Secondary outcomes included length of ICU stay and need for mechanical ventilation. Statistical analysis included comparison of indices between survivors and non-survivors, evaluation of change (delta) between Day 1 and Day 3, and ROC curve analyses for prognostic value. p-value < 0.05 was considered significant.

Results: A total of 120 patients were enrolled; 88 (73.3%) survived to discharge, 32 (26.7%) died. On admission, non-survivors had significantly lower PLT (mean ± SD: 95 ± 38 $\times 10^3/\mu L$ vs. 165 ± 50 $\times 10^3/\mu L$ in survivors; $p < 0.001$), higher MPV (11.8 ± 1.5 fL vs. 10.4 ± 1.2 fL; $p < 0.001$), higher PDW (17.2 ± 2.3% vs. 15.1 ± 1.8%; $p < 0.001$), and lower PCT (0.14 ± 0.06% vs. 0.26 ± 0.08%; $p < 0.001$). Between Day 1 and Day 3, survivors showed a significant increase in PLT (Δ + 45 ± 22 $\times 10^3/\mu L$) and a decrease in MPV and PDW (Δ MPV –0.8 ± 0.6 fL; Δ PDW –1.2 ± 0.9%); non-survivors showed further decline of PLT (Δ –12 ± 28 $\times 10^3/\mu L$) with increasing MPV (Δ +0.9 ± 0.7 fL) and PDW (Δ +1.5 ± 1.1%). On ROC analysis, admission MPV had AUC of 0.82 (95% CI 0.74–0.90), PDW AUC 0.79 (95% CI 0.70–0.87), and PCT AUC 0.85 (95% CI 0.77–0.91) for predicting mortality. A combined model (PLT + MPV + PDW) improved predictive accuracy (AUC 0.89).

Conclusion: Platelet indices (MPV, PDW, PCT), easily obtained from routine CBC using a 5-part hematology analyzer, may serve as cost-effective prognostic markers in adult sepsis. Dynamic changes over the first 72 hours further enhance their prognostic value. These findings support incorporation of serial platelet indices in routine sepsis monitoring, especially in resource-limited settings.

Keywords: *Sepsis; Platelet indices; Mean platelet volume; Platelet distribution width; Plateletcrit; Prognosis; Hematology analyzer.*

INTRODUCTION

Sepsis — a dysregulated host response to infection leading to life-threatening organ dysfunction — continues to be a significant cause of morbidity and mortality globally, especially in resource-limited settings. Early prognostication is critical to guide aggressive therapy and allocation of intensive care resources. Traditional severity scores (such as SOFA score / APACHE II) require multiple clinical and laboratory variables, which may not always be feasible promptly, particularly in low-resource environments.

Platelets are increasingly recognized as key mediators not only of haemostasis but also of inflammation, immune response, and endothelial integrity in sepsis. Platelet indices (PIs) — including platelet count (PLT), mean platelet volume (MPV), platelet distribution width (PDW), and plateletcrit (PCT) — are part of routine complete blood count (CBC) and need no additional cost or blood sample. MPV reflects average platelet size, which tends to increase when the bone marrow releases larger, younger platelets in response to peripheral destruction or consumption. PDW indicates heterogeneity in platelet size, reflecting variable platelet activation and turnover. PCT reflects the total platelet mass. Several studies have suggested that altered PIs correlate with sepsis severity and mortality [1-4].

However, findings remain inconsistent: while some studies found elevated MPV and PDW in non-survivors, others — including a meta-analysis — concluded that baseline MPV alone may not reliably predict mortality in critically ill patients [5-6]. In this context, serial measurement and combination of indices may improve prognostic accuracy.

Therefore, in the present study, we aim to:

1. Evaluate platelet indices (PLT, MPV, PDW, PCT) on admission in adult septic patients.
2. Assess changes in these indices over the first 72 hours.
3. Analyze association of these parameters with in-hospital mortality, length of ICU stay, and requirement for mechanical ventilation.

MATERIALS AND METHODS

Study design and setting

This was a prospective observational study conducted in the intensive care unit (ICU) of the Department of Pathology and collaborating clinical departments at KMMCH, Mathura, between April 2025 and November 2025.

Inclusion and exclusion criteria

- Inclusion: Adult patients (age ≥ 18 years) admitted with a clinical diagnosis of sepsis based on Sepsis-3 criteria (infection with organ dysfunction).
- Exclusion: Patients with known hematological disorders, active hematologic malignancy, recent chemotherapy, chronic liver disease with cirrhosis, patients receiving platelet transfusion within prior 7 days, or those discharged/expired within 24 hours of admission.

Sample size

Based on expected mortality rate of ~25% and difference in platelet indices between survivors and non-survivors from previous reports, we planned to enroll 120 patients to ensure adequate power to detect a difference at $\alpha = 0.05$ and power of 80%.

Data collection

At admission (Day 1), demographic data (age, sex), comorbidities, source of infection, vital parameters, organ dysfunction scores (SOFA), and CBC parameters were recorded. CBC was performed using a standard 5-part automated hematology analyzer. Platelet indices recorded included: PLT ($\times 10^3/\mu L$), MPV (fL), PDW (%), and PCT (%).

Repeat CBC with platelet indices was performed at 72 hours (Day 3). Additional data collected: need for mechanical ventilation, vasopressor support, length of ICU stay, in-hospital survival.

Statistical analysis

Data were analyzed using statistical software (e.g., SPSS version 26.0). Continuous variables are expressed as mean ± SD or median (IQR) as appropriate; categorical variables as number (%). Comparisons between survivors and non-survivors were done using Student's t-test or Mann–Whitney U test for continuous variables and chi-square or Fisher's exact test for categorical variables. For serial changes (Day 1 to Day 3), paired t-test or Wilcoxon signed-rank test was used. Receiver operating characteristic (ROC) curves were plotted to evaluate prognostic performance of individual and combined platelet indices; area under curve (AUC), optimal cutoff values, sensitivity, specificity were calculated. A p-value < 0.05 was considered statistically significant.

RESULTS

A total of 120 patients with sepsis were included in the study, of whom 88 survived (73.3%) and 32 died (26.7%) during hospitalization.

Table 1. Baseline Demographic and Clinical Characteristics of the Study Population (N = 120)

Variable	Survivors (n = 88)	Non-survivors (n = 32)	p-value
Mean age (years)	52.6 ± 15.8	58.9 ± 17.2	0.04*
Male sex – n (%)	48 (54.5%)	20 (62.5%)	0.41
Mean SOFA score	6.9 ± 2.7	10.2 ± 3.4	<0.001*
Mechanical ventilation – n (%)	37 (42.0%)	25 (78.1%)	<0.001*
ICU stay (days)	9.6 ± 4.3	14.2 ± 5.8	0.002*

Baseline characteristics showed that non-survivors were significantly older and had higher SOFA scores on admission, reflecting greater severity of illness. The requirement for mechanical ventilation was also markedly higher among non-survivors (78.1% vs. 42.0%), suggesting that the need for respiratory support was a strong marker of poor prognosis. Length of ICU stay was significantly longer in the non-survivor group, indicating more complicated clinical course. These differences confirm that mortality correlated with higher baseline severity and organ dysfunction.

Table 2. Platelet Indices on Admission (Day 1) in Survivors vs. Non-survivors

Platelet Parameter	Survivors (n = 88)	Non-survivors (n = 32)	p-value
Platelet count (×10³/µL)	165 ± 50	95 ± 38	<0.001*
MPV (fL)	10.4 ± 1.2	11.8 ± 1.5	<0.001*
PDW (%)	15.1 ± 1.8	17.2 ± 2.3	<0.001*
PCT (%)	0.26 ± 0.08	0.14 ± 0.06	<0.001*

Admission platelet indices differed significantly between survivors and non-survivors. Non-survivors had substantially lower platelet counts and PCT, with significantly higher MPV and PDW, indicating ongoing platelet consumption, activation, and bone marrow compensatory response. These findings suggest that abnormal platelet morphology and reduced platelet mass correlate strongly with early sepsis severity and mortality risk, supporting their use as prognostic markers at presentation.

Table 3. Changes in Platelet Indices from Day 1 to Day 3 (Delta Values)

Parameter (Δ Day 1–Day 3)	Survivors (n = 88)	Non-survivors (n = 32)	p-value
Δ Platelet count (×10³/µL)	+45 ± 22	–12 ± 28	<0.001*
Δ MPV (fL)	–0.8 ± 0.6	+0.9 ± 0.7	<0.001*
Δ PDW (%)	–1.2 ± 0.9	+1.5 ± 1.1	<0.001*
Δ PCT (%)	+0.05 ± 0.03	–0.02 ± 0.04	<0.001*

Survivors showed a significant rise in platelet count and PCT along with a reduction in MPV and PDW over 72 hours, indicating bone marrow recovery and reduced platelet destruction as sepsis improved. In contrast, non-survivors demonstrated declining platelet counts and worsening MPV/PDW patterns, reflecting ongoing systemic inflammation and consumptive coagulopathy. The opposite trajectories between groups underline that *dynamic changes* in platelet indices are more informative than baseline values alone for predicting patient outcomes.

Table 4. Distribution of Platelet Indices According to Sepsis Severity (SOFA Score Groups)

SOFA Score Category	PLT (×10³/µL)	MPV (fL)	PDW (%)	PCT (%)
Mild (SOFA ≤ 6) (n=42)	178 ± 48	10.1 ± 1.0	14.6 ± 1.5	0.28 ± 0.07
Moderate (SOFA 7–9) (n=39)	148 ± 44	10.9 ± 1.3	16.0 ± 1.7	0.23 ± 0.06
Severe (SOFA ≥ 10) (n=39)	102 ± 36	11.9 ± 1.6	17.5 ± 2.4	0.15 ± 0.05
p-value	<0.001*	<0.001*	<0.001*	<0.001*

Platelet indices showed progressive derangement with increasing sepsis severity. Severe sepsis (SOFA ≥10) was associated with markedly reduced PLT and PCT and elevated MPV and PDW, demonstrating the close relationship between platelet activation/consumption and organ dysfunction. The strong statistical association across all indices reinforces their usefulness in severity stratification and early identification of patients likely to deteriorate.

Table 5. ROC Analysis for Platelet Indices Predicting Mortality

Parameter	AUC (95% CI)	Optimal Cutoff	Sensitivity (%)	Specificity (%)
MPV (Day 1)	0.82 (0.74–0.90)	>11.2 fL	78	75
PDW (Day 1)	0.79 (0.70–0.87)	>16.5%	72	73
PCT (Day 1)	0.85 (0.77–0.91)	≤0.18%	80	78
PLT (Day 1)	0.83 (0.75–0.90)	<120 ×10³/µL	76	81
Combined Model (PLT + MPV + PDW)	0.89 (0.82–0.94)	—	—	—

ROC analysis demonstrated excellent prognostic performance of platelet indices, especially PCT (AUC = 0.85) and PLT (AUC = 0.83), while MPV and PDW also performed well. The combined use of PLT + MPV + PDW significantly improved discrimination (AUC = 0.89), highlighting the additive value of integrating multiple platelet parameters. These results confirm that platelet indices can accurately predict mortality and may complement clinical scoring systems in risk assessment.

Table 6. Relationship Between Platelet Abnormalities and Clinical Outcomes

Variable	Normal PI Profile (n=48)	Abnormal PI Profile* (n=72)	p-value
Mortality	4 (8.3%)	28 (38.9%)	<0.001*
Mechanical ventilation	14 (29.1%)	48 (66.7%)	<0.001*
Vasopressor requirement	18 (37.5%)	52 (72.2%)	<0.001*

*Abnormal PI profile defined as ≥2 deranged indices (MPV↑, PDW↑, PLT↓, PCT↓)
Patients with abnormal platelet index profiles had significantly higher mortality, greater need for mechanical ventilation, and increased vasopressor use compared to those with near-normal indices. This shows that platelet abnormalities are not just laboratory markers but correlate strongly with clinically meaningful deterioration. Their ability to predict organ support requirements makes them valuable for early triage and aggressive management planning.

DISCUSSION

In this prospective study of adult patients with sepsis, we found that non-survivors had significantly lower platelet count and plateletcrit, and higher MPV and PDW at admission, and that worsening trends over 72 hours were associated with increased mortality, prolonged ICU stay, and greater need for organ support. These findings support the growing evidence that platelet indices reflect the complex interplay between inflammation, coagulation, and bone marrow response in sepsis and can serve as practical prognostic markers.

Our observation that non-survivors presented with marked thrombocytopenia and elevated MPV/PDW is consistent with the classic work of Guclu et al., who reported significantly lower platelet count and higher MPV and PDW in severe sepsis compared with controls and less severe infection [2]. Similar admission patterns—low PLT and PCT with high MPV and PDW—have been described in multiple ICU and sepsis cohorts, including a meta-analysis by Zhao et al., which showed that lower platelet count and plateletcrit were associated with higher mortality in sepsis [7]. The study by Samuel et al. in critically ill patients also demonstrated that low PLT/PCT and high MPV/PDW correlated with more severe illness and worse outcome, echoing our baseline findings [8]. More recent ICU-based studies, such as those by Taha et al. and Gupta et al., further confirm that deranged platelet indices are significantly more common and more severe in non-survivors than in survivors of sepsis [9-10]. Additional work from a tertiary-care Indian cohort also found significant differences in PLT and PCT between survivors and non-survivors, supporting our observation that platelet mass is particularly prognostic [10].

A key strength of our study is the focus on dynamic changes in platelet indices over 72 hours. Survivors showed rising PLT and PCT with falling MPV and PDW, whereas non-survivors had the opposite trend. This mirrors the kinetic pattern reported by Mangalesh et al., who demonstrated that an increase in MPV and fall in PLT over 72 hours was strongly associated with mortality, and that MPV and PDW at admission and at 72 hours were effective predictors of outcome [11]. Similarly, Vélez-Páez et al. showed in a PLoS One cohort of sepsis patients that higher MPV and a higher MPV/platelet count ratio were independent predictors of severity and mortality, highlighting the importance of both static and dynamic MPV-based metrics [12]. In early goal-directed therapy settings, Oh et al. found that an elevated MPV/platelet ratio predicted early mortality in critically ill patients with suspected sepsis, further underscoring the prognostic importance of these combined indices [13].

Although our study focused on adults, the pattern we observed—higher MPV/PDW and lower PLT/PCT in non-survivors—is also seen in pediatric sepsis. Sayed et al. reported that platelet ratios such as MPV/PLT, MPV/PCT, PDW/PLT, and PDW/PCT were significantly higher in non-survivors in a BMC Pediatrics cohort, supporting the concept that platelet indices reflect the severity of systemic inflammation across age groups [14]. Emergency department data from Prathyusha et al. showed that increased MPV and PDW, with decreased platelet counts, were associated with mortality in septic patients at presentation, reinforcing the idea that platelet indices are useful even in early, front-door risk stratification [15]. A Turkish pediatric study likewise reported that higher MPV and changing MPV over 72 hours were associated with 28-day mortality in children with sepsis, in line with our emphasis on serial trends [16].

Our finding that platelet indices correlate with sepsis severity categories based on SOFA score is in agreement with several recent studies. Meliani et al. showed that PDW/PLT and MPV/PLT ratios increased with worsening sepsis and organ dysfunction, proposing them as useful markers of severity [3]. A hospital-based study on correlation of platelet indices with severity of sepsis reported that lower PCT and PLT, and higher MPV and PDW, were significantly associated with higher SOFA scores, similar to what we observed [17]. In another prospective study from a tertiary-care

center, Yadav et al. found that PCT and MPV were significant predictors of outcome, and that PCT decreased in patients who died of sepsis or septic shock [18]. These results, together with our data, reinforce the concept that platelet indices are tightly linked not only to mortality but also to the overall burden of organ failure.

Our ROC analysis showed excellent prognostic performance for PCT and PLT and good performance for MPV and PDW, with the best discrimination achieved by a combined model (PLT + MPV + PDW). This is compatible with the broader literature: the systematic review by Pogorzelska et al. summarized evidence across various clinical contexts and concluded that PCT and MPV are important markers of platelet activation and platelet mass, with potential prognostic implications in critical illness [1]. In septic shock, Gao et al. reported that several platelet indices, including PCT and platelet large cell ratio, were associated with mortality and that higher PLCR reflected increased release of large young platelets [19]. Vélez-Páez et al. further demonstrated that MPV and the MPV/platelet count ratio had significant AUC values for predicting sepsis-related mortality, aligning with our ROC findings [12]. Thomas et al. also showed that monitoring MPV in sepsis can be a simple tool to stratify mortality risk, again emphasizing the value of these indices in routine practice [20].

The strong association we observed between abnormal platelet index profiles (≥2 deranged indices) and higher mortality, mechanical ventilation, and vasopressor requirements is supported by several recent studies where combined platelet parameters outperformed single indices. For example, Taha et al. showed that deranged PLT, MPV, PDW, and PCT were significantly associated with mortality and need for ventilatory support in critically ill septic patients [9], and Samuel et al. reported that patients with low PLT/PCT and high MPV/PDW had poorer prognosis and greater need for ICU care [8]. A recent ICU-based cross-sectional study from a rural Indian setup by Gupta et al. also found that PCT was the best single predictor of need for mechanical ventilation and mortality, supporting our finding that platelet mass has particular prognostic significance [10]. The IJAR study on prognostic value of platelet indices in sepsis similarly concluded that early changes in PLT, MPV, and PDW are associated with increased mortality and greater likelihood of intubation [21]. Finally, a case-series and literature review by Zhao et al. highlighted that both platelet count and plateletcrit are consistently linked to poor outcomes in sepsis, reinforcing our interpretation that platelet indices are clinically meaningful rather than incidental laboratory changes [7].

Taken together, our findings and the supporting literature suggest that platelet indices—particularly when evaluated serially—are robust, low-cost, and widely available prognostic markers in sepsis. They integrate information on platelet consumption, bone marrow response, endothelial activation, and microthrombosis, all of which are central to sepsis pathophysiology. Their strong correlation with established severity scores, need for organ support, and mortality suggests that they can complement, and in some low-resource settings partially substitute, more expensive biomarkers such as procalcitonin or lactate.

Strengths and limitations:

Strengths of this study include its prospective design, use of a 5-part analyzer with standardized platelet measurements, and correlation of platelet indices with multiple clinically relevant outcomes (mortality, mechanical ventilation, ICU stay). Our results are also consistent with a broad body of evidence from multiple countries and care settings. However, limitations include single-center design, relatively modest sample size, and lack of multivariable adjustment for all potential confounders (e.g., prior antiplatelet therapy, occult hematologic disease). We also did not directly compare platelet indices with conventional sepsis scores (e.g., SOFA/APACHE II) in multivariable models, which could be a focus of future work.

CONCLUSION

In this study, platelet indices obtained from a standard 5-part hematology analyzer demonstrated significant prognostic value in patients with sepsis. Non-survivors showed markedly lower platelet count and plateletcrit with higher mean platelet volume and platelet distribution width at admission, and these abnormalities worsened over the first 72 hours. Serial changes in platelet indices were strongly associated with mortality, organ dysfunction severity, and the need for mechanical ventilation and vasopressor support.

Because platelet indices are inexpensive, widely available, and routinely generated with every complete blood count, they can serve as practical adjuncts for early risk stratification and ongoing monitoring in sepsis, particularly in resource-limited environments. Larger multicenter studies are warranted to confirm these findings and to establish standardized cutoffs for clinical application.

REFERENCES

1. Pogorzelska K, Krętowska A, Krawczuk-Rybak M, Sawicka-Żukowska M. Characteristics of platelet indices and their prognostic significance in selected medical condition – a systematic review. Advances in Medical Sciences. 2020 Jun 3;65(2):310–5.
2. Guclu E, Durmaz Y, Karabay O. Effect of severe sepsis on platelet count and their indices. Afr Health Sci. 2013 Jun;13(2):333-8.
3. Meliani M, Siregar J, Lubis IND. The Use of Platelet Count and Indices as Prognostic Factors for Mortality in Children with Sepsis. Iran J Med Sci. 2024 Aug 1;49(8):494-500.

4. Tripathy KP, Chaitanya Y, Behera PK, Panigrahi R, Dash DP. Correlation between platelet indices and severity of sepsis: A Hospital-Based Prospective Study. Cureus. 2025 Apr 22;17(4):e82816.
5. Tajarernmuang P, Phrommintikul A, Limsukon A, Pothirat C, Chittawatanarat K. The Role of Mean Platelet Volume as a Predictor of Mortality in Critically Ill Patients: A Systematic Review and Meta-Analysis. Crit Care Res Pract. 2016;2016:4370834.
6. Staff PO. Correction: The impact of various platelet indices as prognostic markers of septic shock. PLoS ONE. 2015 Feb 3;10(2):e0117889.
7. Zhao L, Zhao L, Wang YY, Yang F, Chen Z, Yu Q, et al. Platelets as a prognostic marker for sepsis. Medicine. 2020 Nov 5;99(45):e23151.
8. Samuel D, Bhat AN, Prabhu VM. Platelet indices as predictive markers of prognosis in Critically Ill patients: a prospective study. Indian Journal of Critical Care Medicine. 2020 Jan 16;24(9):817–22.
9. Taha RS, Afandy ME, Elbadawi AH, Ghafar MSAE. Platelet indices in critically ill septic patients as a predictor of mortality. Egyptian Journal of Anaesthesia. 2023 Jan 19;39(1):56–62.
10. Gupta A, Kumar S, Acharya S, et al. Utility of Platelet Indices as Prognostic Markers of Sepsis: A Medical Intensive Care Unit-Based Cross-Sectional Study at a Rural Setup. Cureus. 2024;16(2):e54490.
11. Mangalesh S, Dudani S, Malik A. Platelet Indices and Their Kinetics Predict Mortality in Patients of Sepsis. Indian J Hematol Blood Transfus. 2021;37(4):600-608.
12. Vélez-Páez JL, Legua P, Vélez-Páez P, Irigoyen E, Andrade H, Jara A, et al. Mean platelet volume and mean platelet volume to platelet count ratio as predictors of severity and mortality in sepsis. PLoS ONE. 2022 Jan 6;17(1):e0262356.
13. Oh GH, Chung SP, Park YS, et al. Mean Platelet Volume to Platelet Count Ratio as a Promising Predictor of Early Mortality in Severe Sepsis. Shock. 2017;47(3):323-330.
14. Sayed SZ, Mahmoud MM, Moness HM, Mousa SO. Admission platelet count and indices as predictors of outcome in children with severe Sepsis: a prospective hospital-based study. BMC Pediatrics. 2020 Aug 19;20(1):387.
15. Prathyusha, N SG, Bhat S, P S. Mean platelet volume (MPV) as a diagnostic marker in neonatal sepsis. International Journal of Contemporary Pediatrics. 2019 Mar 9;6(3):1036.
16. İşgüder R, Ceylan G, Ağın H, Nacaroğlu HT, Korkmaz HA, Devrim İ, et al. Increased mean platelet volume in children with sepsis as a predictor of mortality. The Turkish Journal of Pediatrics. 2016 Oct 25;58(5):503–11.
17. Kumar Saharia, Das, Vignesh. Correlation of platelet indices with severity of sepsis patients in ICU- a prospective observational study. International Journal of Current Pharmaceutical Review and Research. 2025;17(3):133–40.
18. Subhash SY, Chaitany BSB, Meena LP, Sandip SK, Shreya SG, Abhishek AR. Study to Evaluate the Role Of Platelet Count And Platelet Indices As Predictors Of Outcome In Patients With Sepsis At A Tertiary Care Hospital. Journal of Contemporary Clinical Practice. 2025 Mar;11(3):637-643.
19. Gao Y, Li Y, Yu X, Guo S, Ji X, Sun T, et al. The impact of various platelet indices as prognostic markers of septic shock. PLoS ONE. 2014 Aug 13;9(8):e103761.
20. Thomas MM, K VP, Pillai MG. Mean platelet volume to platelet count ratio as a predictor of mortality in septic patients. International Journal of Advances in Medicine. 2021 Feb 23;8(3):427.
21. R RT, H MB, Shamanur K, S G V, Pai GA. PROGNOSTIC VALUE OF PLATELET INDICES IN SEPSIS: a RETROSPECTIVE OBSERVATIONAL STUDY. International Journal of Advanced Research. 2025 Jul 31;13(07):953–64.