DOI: https://doi.org/10.54393/pjhs.v7i8.3892

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (E): 2790-9352, (P): 2790-9344
Volume 7, Issue 08 (August 2026)

Original Article

OPEN ACCESS

Assessment of Mortality Rate Using qSOFA Score among Patients with Sepsis outside the Intensive Care Unit (ICU) in a Tertiary Care Hospital

Muhammad Fahad Iqbal[1*] and Karim Ullah Makki[1]

[1]Department of General Medicine, Liaqat National Hospital, Karachi, Pakistan

ARTICLE INFO

Keywords:
ICU, Mortality, Prognosis, Quick Sequential Organ Failure Assessment (qSOFA), Sepsis

How to Cite:
Iqbal, M. F., & Makki, K. U. (2026). Assessment of Mortality Rate Using qSOFA Score among Patients with Sepsis outside the Intensive Care Unit (ICU) in a Tertiary Care Hospital: qSOFA and Mortality in Sepsis Outside ICU. Pakistan Journal of Health Sciences, 7(8), 155-160. https://doi.org/10.54393/pjhs.v7i8.3892

***Corresponding Author:**
Muhammad Fahad Iqbal
Department of General Medicine, Liaqat National Hospital, Karachi, Pakistan
ifahad131995@gmail.com

Received Date: 27th January, 2026
1st Revision Received: 24th February, 2026
2nd Revision Received: 5th March, 2026
3rd Revision Received: 30th March, 2026
Acceptance Date: 27th April, 2026
Published Date: 31st August, 2026

ABSTRACT

Sepsis is a severe condition associated with a high risk of death. The Quick Sequential Organ Failure Assessment (qSOFA) score is an easy bedside instrument for mortality prediction. **Objective:** This study aims to assess the mortality rate in patients with sepsis having a qSOFA score of 2 or more. **Methods:** This cross-sectional research was done for 6 months, from July 2025 to December 2025, among 196 patients at Liaquat National Hospital Karachi. The sample comprised patients with sepsis, not admitted to the ICU, and aged between 18 and 75 years, with qSOFA assessed at admission, and followed until discharge or death. A qSOFA score of 2 was determined to be a predictive value of mortality. The statistical analysis was done in SPSS version 25.0; stratification and the Chi-square or Fisher's exact test were. A p-value < 0.05 was considered statistically significant. **Results:** 196 non-ICU sepsis patients were included (mean age 55.9 ± 17.9 years; 55.1% male). The median qSOFA score was 2, with 104 (53.1%) patients having qSOFA ≥2. In-hospital mortality occurred in 97 (49.5%) patients. qSOFA ≥2 was significantly associated with older age, male gender, rural residence, hypertension, diabetes, anemia, hypotension, tachypnea, and GCS <15 (all p<0.05). ROC analysis showed good performance in predicting mortality (AUC = 0.862, 95% CI 0.805–0.907), with sensitivity 60.8% (95% CI 50.1–70.8%) and specificity 100% (95% CI 96.1–100%). **Conclusion:** qSOFA is a handy bedside tool that proves to be effective in mortality prognosis of sepsis when patients are not in the ICU.

INTRODUCTION

The critical aspect in enhancing patient survival and reducing mortality is the early detection of sepsis victims at risk of clinical degradation. Many clinical scoring systems have been created to predict disease severity and mortality among septic patients, and they include the Sequential Organ Failure Assessment (SOFA), Systemic Inflammatory Response Syndrome (SIRS), and quick Sequential Organ Failure Assessment (qSOFA). Comparative research has shown that the SOFA and qSOFA scores are important instruments in the determination of mortality in seriously ill patients with sepsis [1]. The Quick Sequential Organ Failure Assessment (qSOFA) score is a relatively straightforward bedside assessment instrument applied on the premise of three clinical variables, which are altered mental status, systolic blood pressure of 100 mmHg, and respiratory rate of 22 breaths per minute. It has been extensively used as a quick screening device to detect septic patients who are at risk of having dismal outcomes. Research has shown that qSOFA is a convenient prognostic factor in predicting mortality in the short term among infected patients satisfying sepsis criteria [2]. Systematic reviews have assessed the predictive ability of qSOFA as applied to mortality in patients presenting with suspected sepsis to the emergency department and have

DOI: https://doi.org/10.54393/pjhs.v7i8.3892

demonstrated that qSOFA is a good predictor of mortality [3]. Other meta-analyses that compared qSOFA with clinical scoring systems, including SIRS and NEWS, have stated the same capability to predict mortality in the context of infected patients [4]. Recent cohort studies have stated that qSOFA is a relevant predictor of mortality in patients who present with suspected sepsis and that it is useful in early risk stratification and clinical decision-making [5]. Researchers have also found the prognostic value of qSOFA for mortality prediction in patients with septic shock in diverse healthcare settings and income levels [6]. Local investigations have shown that mortality rates in septic patients with a qSOFA score that exceeded two are widely high, proving that it is a useful clinical tool in forecasting adverse outcomes [7]. The predictive validity of qSOFA to mortality in patients with sepsis in Asian populations has also been proven [8]. Sepsis is a fatal dysfunction of the organism as a result of an uncontrolled host reaction to infection and is one of the significant issues in health worldwide. Sepsis has been estimated to impact about 49 million individuals per year, according to recent world data, and nearly 11 million deaths per year, almost a fifth of the world's deaths, are attributed to sepsis. This burden is especially in the countries with low and middle incomes, largely in Asian countries, where untimely recognition, healthcare resource bases, and access to intensive care services lead to higher morbidities and deaths. National epidemiological data on sepsis are sparse, but sepsis is a frequent cause of hospitalization and in-hospital mortality in Pakistan, particularly in tertiary care units [9]. The Quick Sequential Organ Failure Assessment (qSOFA) score has been suggested as a fast bedside tool to determine patients with an increased likelihood of poor outcomes. Past research, such as the one conducted by Khan and Aslam, has made comparisons between qSOFA and SIRS and SOFA scores and has proven it to be a valuable tool in predicting mortality among septic patients [10]. Yet, the majority of the available literature concentrated on the emergency department or in the intensive care unit, and there is not much information on non-ICU hospitalized patients, especially in Pakistan. The prognostic values of qSOFA might not be equal in these groups because of the severity of the disease, the level of monitoring, and management approaches may vary in the ICU and the non-ICU setting [11].

In terms of outcome assessment, this study particularly measured in-hospital mortality as the main outcome measure. Death during the same hospital admission was termed as mortality. Mortality rate was determined as the ratio of deaths to the total number of patients who were enrolled in sepsis within the duration of the study. Although qSOFA is widely used, scanty information exists on its capability in mortality prediction among patients with sepsis admitted to the non-intensive care unit. The majority of the past research has been concentrated on emergency departments or even intensive care units, and there is no evidence on non-intensive hospitalized patients, especially in Pakistan. Unlike previous studies primarily conducted in ICU or emergency settings, this study evaluates the prognostic performance of qSOFA in non-ICU hospitalized patients in a Pakistani tertiary care setting, addressing an important gap in regional and clinical evidence. This study hypothesizes that higher qSOFA scores are associated with increased mortality rate in patients with sepsis admitted outside the intensive care unit. Accordingly, the study aimed to evaluate the predictive accuracy of the qSOFA score for mortality among sepsis patients in non-ICU settings at a tertiary care hospital.

METHODS

A six-month cross-sectional descriptive study was carried out in the Department of General Medicine at the Liaquat National Hospital, Karachi, between July 2025 and December 2025, with the permission of the Institutional Ethical Review Committee (IRB #: 1216-2025-LNH-ERC; dated 2nd July 2025). A total of 196 patients were recruited through non-probability consecutive sampling. Every participant signed a written informed consent form, and the confidentiality of patient data was ensured during the research. The sample size was recalculated to be in line with the main aim of assessing the predictive power of qSOFA to in-hospital mortality with the use of ROC analysis. It was calculated using the expected area under the curve (AUC), past research, a 95% confidence interval, and a margin of error of 0.05, which is sufficient to reject the null hypothesis [12]. The study included adult patients (18 to 75 years of both genders) diagnosed with sepsis based on the Sepsis-3 criteria (suspected infection + qSOFA score 2 or higher), but not admitted to the intensive care unit. Patients who had a hospital stay of less than 24 hours, were pregnant, or had a history of malignancy. Sepsis was determined based on Sepsis-3 criteria, and qSOFA was measured at the time of admission based on 3 parameters: systolic blood pressure 100 mmHg, respiratory rate 22 bpm, and Glasgow Coma Scale 15. Each of the criteria was rated with one point, and the total qSOFA score was between 0 and 3, where the final point was considered positive, which means that there is a high risk of mortality in the hospital. This was used as a cutoff point in all analyses, including assessment of ROC curves [12]. Demographic and clinical data were taken as baseline (age, sex, residence, comorbid conditions like diabetes mellitus, hypertension, and anemia). Diabetes and hypertension were determined by taking appropriate drugs for at least 3 months, and anemia was determined by taking hemoglobin levels <13.0 g/dL in

DOI: https://doi.org/10.54393/pjhs.v7i8.3892

men and hemoglobin <12.0 g/dL in women. A predesigned pro forma was used to gather data to maintain standardization. The primary outcome was in-hospital mortality, defined as death during the same hospital admission. Mortality rate was calculated as the proportion of deaths among the total enrolled patients. Follow-up was done until discharge or in-hospital death of the patients; this was done at a minimum of 24 hours. The first outcome was the in-hospital mortality, which was recorded as the percentage of patients who died in the hospital. In patients with longer follow-up time-to-event analysis by Kaplan-Meier curves was taken.

The analysis of data was carried out with the use of SPSS version 25.0. Continuous variables were expressed in the form of mean and standard deviation, and frequencies and percentages were used to present categorical variables. The association between qSOFA scores and in-hospital mortality was determined using effect sizes, odds ratios, and confidence intervals. Analysis of ROC curves to determine the predictive performance of qSOFA, reporting the area under the curve, sensitivity, specificity, and 95% confidence intervals, was performed. Chi-square or Fisher's exact test was to be used to assess associations between categorical variables, and a p-value of less than 0.05 was to be regarded as statistically significant. Stratification of the analysis was done with potential confounders, such as age, sex, residence, comorbidities, and length of stay.

RESULTS

The demographic and clinical characteristics of the patients are summarized. This table shows the distribution of age, gender, residence, comorbidities, and key clinical parameters along with the association of qSOFA ≥2 with these variables (Table 1).

Table 1: Association of qSOFA ≥2 with Demographic, Comorbid, and Clinical Variables

Variables	Overall (n=196)	qSOFA <2 (n=92)	qSOFA ≥2 (n=104)	OR (95% CI)	p-value
Gender	–	–	–	–	0.002*
Male	108 (55.1%)	26 (28.0%)	82 (76.0%)	2.5 (1.3–4.7)	–
Female	88 (44.9%)	66 (75.0%)	22 (25.0%)	Ref	–
Age ≥55 years	118 (60.2%)	30 (25.4%)	88 (74.6%)	3.1 (1.7–5.5)	<0.001*
Rural residence	19 (9.7%)	0 (0%)	19 (100%)	–	<0.001*
Hypertension	119 (60.7%)	36 (30.3%)	83 (69.7%)	2.0 (1.1–3.6)	0.019*
Diabetes Mellitus	108 (55.4%)	34 (31.5%)	74 (68.5%)	1.8 (1.0–3.2)	0.037*
Obesity	81 (41.3%)	28 (34.6%)	53 (65.4%)	1.4 (0.8–2.5)	0.220
Anemia	50 (25.5%)	10 (20.0%)	40 (80.0%)	4.1 (1.9–8.7)	<0.001*
Systolic BP ≤100 mmHg	150 (76.5%)	45 (30.0%)	105 (70.0%)	4.7 (2.0–11.0)	<0.001*
Respiratory Rate ≥22 BPM	156 (79.6%)	38 (24.4%)	118 (75.6%)	8.5 (4.3–16.9)	<0.001*
GCS <15	79 (40.3%)	20 (25.3%)	59 (74.7%)	8.1 (4.0–14.3)	<0.001*

*Significant at 0.05

The relationship between qSOFA ≥2 and in-hospital mortality is presented. This table demonstrates that qSOFA ≥2 has a high association with mortality, with corresponding odds ratios and confidence intervals (Table 2).

Table 2: Association of Mortality with qSOFA ≥2

qSOFA Category	Deaths, n (%)	Survivors, n (%)	OR (95% CI)	p-value
<2	0 (0%)	92 (100%)	Ref	–
≥2	97 (93.3%)	7 (6.7%)	26.3 (14.8–46.7)	<0.001*

The predictive performance of qSOFA ≥2 for in-hospital mortality, including ROC analysis with sensitivity, specificity, and 95% confidence intervals (Table 3).

Table 3: ROC Analysis of qSOFA ≥2 for Predicting Mortality

AUC	Std. Error	95% CI	Cutoff	Sensitivity (95% CI)	Specificity (95% CI)	Youden Index
0.862	0.0198	0.805–0.907	≥2	60.8% (50.1–70.8%)	100% (96.1–100%)	0.608

Time-to-event analysis for patients with follow-up >24 hours. Patients with qSOFA ≥2 had significantly lower survival compared to those with qSOFA <2 (log-rank test, p<0.001). Stratified analyses by age, sex, residence, and comorbidities confirmed that higher qSOFA consistently predicted higher in-hospital mortality (Figure 1).

DOI: https://doi.org/10.54393/pjhs.v7i8.3892

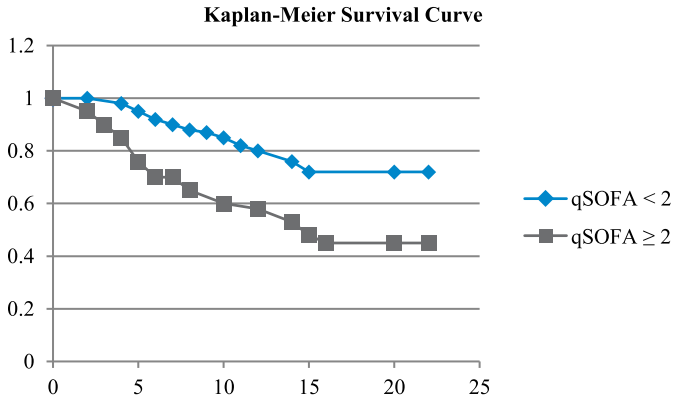

Figure 1: Observed Hygiene Status and Recent Illness Among Inmates(n=91)

DISCUSSION

The quick Sequential Organ Failure Assessment (qSOFA) score with a standardized cutoff of 2 or higher had a significant correlation with in-hospital mortality in this group of non-intensive care unit (non-ICU) adult sepsis patients. The discriminative ability (AUC=0.862) of the qSOFA to predict mortality was generally in line with current literature that indicates the use of qSOFA as an effective prognostic measure in the non-intensive care setting[11, 12]. Some studies have also compared the utility of qSOFA and other clinical scoring systems. Sreekanth *et al.* analyzed an emergency surgical population with possible sepsis and found that both qSOFA and SIRS (Systemic Inflammatory Response Syndrome) were equally accurate and that standard clinical scoring needed to be contextualized according to setting and outcome measures [12]. Similarly, Shahsavarinia *et al.* found that qSOFA outperformed in predicting patients in the emergency department but had poor sensitivity, as we have found moderate sensitivity with high specificity [13]. Studies that have incorporated qSOFA and biomarkers such as procalcitonin have demonstrated that high-risk patients can be better detected early on with the help of qSOFA, which may suggest that the indicator can be improved when combined with laboratory parameters [14]. Fernandes and Wyawahare found that qSOFA proves useful in suspected non-ICU patients with infections, and this finding supports the use of this tool in rapid bedside assessment [15]. Multiple scoring systems, such as SOFA (Sequential Organ Failure Assessment), SIRS, and qSOFA, have been assessed comparatively, and their individual performances have been found to have variations based on population and illness severity. Djikic *et al.* established that qSOFA is a valuable source of prognostic information, but its comparatively low performance could be found when compared with more complex scoring systems [16]. In their meta-analysis, Lan *et al.* showed that such criteria as SOFA and MEWS (Modified Early Warning Score) are occasionally more discriminative of mortality than qSOFA alone, and that this effect is present in heterogeneous samples of patients [17]. The research into the methods of combination has also contributed to the further development of the knowledge about the scoring tools in sepsis. Ling *et al.* demonstrated that the addition of inflammatory mediator data can enhance the diagnostic performance of qSOFA, which supports the idea that qSOFA is not a standalone prediction tool but a part of a more comprehensive assessment [18]. A study by Oduncu *et al.* in which qSOFA, SIRS, and NEWS (National Early Warning Score) are compared, highlighted that qSOFA should not be considered a complete element of patient risk stratification, but it is easier and more specific, making it a viable initial tool in the risk stratification process [19]. Later, richer datasets have been used in more current studies to evaluate and optimize sepsis prediction models. According to Resok *et al.* the performance of qSOFA can be different across different places of infection and patient groups, which is why individual strategies of assessment are required [20]. Wang *et al.* compared qSOFA with SIRS and NEWS in predicting sepsis and high-risk mortality and were able to conclude that, when combined with other dynamic scoring systems, qSOFA can be used to enhance the aggregate predictive accuracy [21]. Combined with the existing literature, the current results are consistent with the overall findings: qSOFA ≥2 is linked to a substantially increased mortality rate among patients with suspected sepsis. Its high specificity contributes towards its use to identify patients prone to adverse events, whereas its moderate sensitivity warns against its use as an isolation tool when aiming to perform early screening. Clinicians must use qSOFA with other proven instruments, e.g., NEWS or MEWS, and, where feasible, supplement clinical scoring with biomarkers to improve early risk stratification based on these results and comparative evidence. In multifaceted presentation and comorbidity settings, a multimodal approach can be more effective in capturing high-risk patients.

The work has some limitations that are worth mentioning. Its single-center nature might restrict the applicability to other environments. This is because there was no multivariate regression; the adjusted effect estimates of independent predictors of mortality were not given, and future analysis should incorporate logistic regression to control confounding variables like age, sex, and burden of comorbidities. Also, its performance metrics in specificity are high, whereas the moderate sensitivity of qSOFA means that the tool requires additional screening tactics, in particular, in the context of the earlier detection of sepsis.

DOI: https://doi.org/10.54393/pjhs.v7i8.3892

CONCLUSIONS

The qSOFA score is a useful bedside tool that can be employed in the mortality prediction of non-ICU sepsis patients. A value of 2 and above was always predictive of high-risk patients who were at risk of death, and survival with lesser values. Both increased qSOFA scores and mortality were closely associated with older age, comorbidities, hypotension, systolic blood pressure below 100 mmHg, respiratory rate exceeding 22 breaths/min, and a Glasgow Coma Scale score that was less than 15. High predictive power was demonstrated in the analysis, whereas the specificity was good at the threshold of ≥ 2.

Authors' Contribution

Conceptualization: MFI
Methodology: MFI
Formal analysis: MFI, KUM
Writing and Drafting: MFI
Review and Editing: MFI, KUM

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

REFERENCES

[1] Premkumar K, Naik RR, Indurekha P, Shankar GP, Sab MR, Dara C. Battle of the Scores: SOFA v/sq SOFA in forecasting Critical Care Mortality. European Journal of Cardiovascular Medicine. 2025 May; 15: 767-769.

[2] Abdullah SO, Grand J, Sijapati A, Puri PR, Nielsen FE. qSOFA is a Useful Prognostic Factor for 30-Day Mortality in Infected Patients Fulfilling the SIRS Criteria for Sepsis. The American Journal of Emergency Medicine. 2020 Mar; 38(3): 512-516. doi: 10.1016/j.ajem.2019.05.037.

[3] Ruan H, Ke D, Liao D. Prognostic Accuracy of qSOFA and SIRS for Mortality in the Emergency Department: A Meta-Analysis and Systematic Review of Prospective Studies. Emergency Medicine International. 2022; 2022(1): 1802707. doi: 10.1155/2022/1802707.

[4] Wang C, Xu R, Zeng Y, Zhao Y, Hu X. A comparison of qSOFA, SIRS, and NEWS in Predicting the Accuracy of Mortality in Patients with Suspected Sepsis: A Meta-Analysis. PLoS One. 2022 Apr; 17(4): 266755. doi: 10.1371/journal.pone.0266755.

[5] Bidart JP, Rosa RG, Bessel M, Pedrotti LG, Goldani LZ. Mortality Predictors in Patients with Suspected Sepsis in the Emergency Department of a Tertiary Care Hospital: A Retrospective Cohort Study. International Journal of Emergency Medicine. 2024 Jun; 17(1): 74. doi: 10.1186/s12245-024-00655-9..

[6] Li A, Ling L, Qin H, Arabi YM, Myatra SN, Egi M, Prognostic Evaluation of Quick Sequential Organ Failure Assessment Score in ICU Patients with Sepsis Across Different Income Settings. Critical Care. 2024 Jan; 28(1): 30.

[7] Khan RM, Mahmood A, Qayyum M, Younas Z. Increase Mortality Rate in Sepsis Patients with qSOFA Score Greater than Two. Pakistan Armed Forces Medical Journal. 2022 Dec; 72(6): 2174. doi: 10.51253/pafmj.v72i6.9072.

[8] Do SN, Luong CQ, Nguyen MH, Pham DT, Nguyen NT, Huynh DQ *et al.* Predictive Validity of the Quick Sequential Organ Failure Assessment (Qsofa) Score for the Mortality in Patients with Sepsis in Vietnamese Intensive Care Units. PloS one. 2022 Oct; 17(10): 275739. doi: 10.1371/journal.pone.0275739.

[9] Mearelli F, Barbati G, Casarsa C, Giansante C, Breglia A, Spica A *et al.* The Integration of QSOFA with Clinical Variables and Serum Biomarkers Improves the Prognostic Value of Qsofa Alone in Patients with Suspected or Confirmed Sepsis at ED Admission. Journal of Clinical Medicine. 2020 Apr; 9(4): 1205. doi: 10.3390/jcm9041205.

[10] Khan AM, Aslam SM. Comparison of qSOFA Score, SIRS Criteria, and SOFA Score as Predictors of Mortality in Patients with Sepsis. Ghana Medical Journal. 2022 Sep; 56(3): 191. doi: 10.4314/gmj.v56i3.9.

[11] Sreekanth A, Jain A, Dutta S, Shankar G, Kumar NR. Accuracy of Quick Sequential Organ Failure Assessment Score and Systemic Inflammatory Response Syndrome Criteria in Predicting Adverse Outcomes in Emergency Surgical Patients with Suspected Sepsis: A Prospective Observational Study. Cureus. 2022 Jul; 14(7). doi: 10.7759/cureus.26560.

[12] Negida A, Fahim NK, Negida Y. Sample Size Calculation Guide-Part 4: How to Calculate the Sample Size for a Diagnostic Test Accuracy Study Based on Sensitivity, Specificity, and the Area Under the ROC Curve. Advanced Journal of Emergency Medicine. 2019 May; 3(3): 33.

[13] Shahsavarinia K, Moharramzadeh P, Arvanagi RJ, Mahmoodpoor A. qSOFA Score for Prediction of Sepsis Outcome in Emergency Department. Pakistan Journal of Medical Sciences. 2020 May; 36(4): 668. doi: 10.12669/pjms.36.4.2031.

DOI: https://doi.org/10.54393/pjhs.v7i8.3892

[14] Memon TA, Butt S, Khalid I, Dehrab N, Afsheen N, Jamil M *et al.* Combined Accuracy of Procalcitonin and Quick Sequential Organ Failure Assessment (Qsofa) in Predicting 3-Day in-Hospital Mortality in Suspected Sepsis. International Journal of Endorsing Health Science Research. 2022; 10(1): 24-30. doi: 10.29052/IJEHSR.v10.i1.2022.24-30.

[15] Fernandes S and Wyawahare M. Utility of Quick Sepsis-Related Organ Failure Assessment (Qsofa) Score to Predict Outcomes in Out-Of-ICU Patients with Suspected Infections. Journal of Family Medicine and Primary Care. 2020 Jul; 9(7): 3251-3255. doi: 10.4103/jfmpc.jfmpc_150_20.

[16] Djikic M, Milenkovic M, Stojadinovic M, Miladinovic T, Gujanicic D, Milicevic-Nesic I *et al.* The Six Scoring Systems' Prognostic Value in Predicting 24-Hour Mortality in Septic Patients. European Review for Medical and Pharmacological Sciences. 2024 Jul; 28(13): 1-11.

[17] Lan L, Zhou M, Chen X, Dai M, Wang L, Li H. Prognostic Accuracy of SOFA, MEWS, and SIRS Criteria in Predicting the Mortality Rate of Patients with Sepsis: A Meta-Analysis. Nursing in Critical Care. 2024 Nov; 29(6): 1623-1635. doi: 10.1111/nicc.13016.

[18] Ling H, Chen M, Dai J, Zhong H, Chen R, Shi F. Evaluation of Qsofa Combined with Inflammatory Mediators for Diagnosing Sepsis and Predicting Mortality Among Emergency Department. Clinica Chimica Acta. 2023 Apr; 544: 117352. doi: 10.1016/j.cca.2023.117352.

[19] Oduncu AF, Kıyan GS, Yalçınlı S. Comparison of qSOFA, SIRS, and NEWS Scoring Systems for Diagnosis, Mortality, and Morbidity of Sepsis in Emergency Department. The American Journal of Emergency Medicine. 2021 Oct; 48: 54-59. doi: 10.1016/j.ajem.2021.04.006.

[20] Resok YC, Olie SE, Jellema K, Van De Beek D, Brouwer MC. Utility of SIRS Criteria and QSOFA Score in Identifying Patients with Central Nervous System Infections at Risk for Poor Outcome. Scientific Reports. 2025 Oct; 15(1): 37447. doi: 10.1038/s41598-025-21163-7.

[21] Wang W, Wang K, Wang Y, Liu Q, Sun J, Shi R *et al.* Comparison and Enhancement of Sepsis Prediction Models in Emergency Care: Insights from CETAT and MIMIC-IV Databases. Biomolecules and Biomedicine. 2025 Jan; 25(7): 1470-1478. doi: 10.17305/bb.2024.11134.