Original article

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Effectiveness of the systolic and diastolic shock indices in predicting morbidity and mortality in septic shock patients in the Intensive Care Unit of Wahidin Sudirohusodo Hospital

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Abstract

***Background*: Septic shock remains a leading cause of intensive care unit (ICU) mortality. This study evaluated the effectiveness of systolic shock index (SSI) and diastolic shock index (DSI) in predicting morbidity and mortality in septic shock patients.**

***Methods*: This prospective observational cohort study was conducted at the ICU of Dr. Wahidin Sudirohusodo Hospital, Makassar, Indonesia, from June 2025. Adult patients (≥18 years) with septic shock per Sepsis-3 criteria were enrolled. SSI (heart rate/systolic blood pressure) and DSI (heart rate/diastolic blood pressure) were calculated at admission. Morbidity was assessed using the Acute Physiology and Chronic Health Evaluation II (APACHE II) and Sequential Organ Failure Assessment (SOFA) scores. The primary outcome was mortality, and the secondary one was ICU length of stay (LOS). Receiver operating characteristic (ROC) curve analysis and Kaplan-Meier survival analysis were performed.**

***Results*: Fifty-one patients were enrolled (mean age 53.21±15.88 years, 58.8% male). Overall mortality was 52.9% with a mean ICU stay of 14.88±12.19 days. Mean SSI and DSI were 0.98±0.18 and 1.62±0.32, respectively. Both SSI and DSI showed significant positive correlations with APACHE II (r=0.337, p=0.016 and r=0.360, p=0.009) and SOFA scores (r=0.322, p=0.021 and r=0.358, p=0.010). SSI was significantly higher in deceased patients than in surviving patients (1.035±0.165 vs 0.928±0.189, p=0.037). ROC analysis showed SSI (area under the curve [AUC] 0.644, cut-off >0.843, sensitivity 85.19%, specificity 41.67%) and DSI (AUC 0.659, cut-off >1.574, sensitivity 81.48%, specificity 66.67%) had moderate predictive ability but lacked statistical significance. APACHE II (AUC 0.876) and SOFA (AUC 0.904) demonstrated superior performance (p<0.001). DSI significantly correlated with ICU LOS (r=0.350, p=0.012).**

***Conclusions*: SSI and DSI showed weak correlations with morbidity and moderate predictive ability for mortality in septic shock patients, but performed inferiorly to APACHE II and SOFA scores. These indices may serve as adjunctive tools but should not replace established scoring systems.**

Keywords: Septic shock, systolic shock index, diastolic shock index, mortality, APACHE II, SOFA score.

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Introduction

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection, with septic shock representing its most severe form and associated with markedly increased mortality. According to the Sepsis-3 definitions, sepsis is diagnosed when the Sequential Organ Failure Assessment (SOFA) score is ≥2. At the same time, septic shock is characterized by persistent hypotension requiring vasopressor support to maintain a mean arterial pressure (MAP) ≥65 mmHg and a serum lactate level ≥2 mmol/l despite adequate fluid resuscitation. (1,2)

Early recognition and prompt initiation of resuscitation and appropriate antimicrobial therapy are essential to improve outcomes in septic shock, as emphasized by the Surviving Sepsis Campaign guidelines. (3) However, the timely identification of patients at high risk for progression to septic shock remains challenging. Existing predictive models and early warning scores often depend on complex calculations and laboratory parameters, which may delay clinical decision-making. (3,4)

The systolic shock index (SSI) and diastolic shock index (DSI), defined as the ratio of heart rate to systolic and diastolic blood pressure, respectively, are simple, non-invasive hemodynamic parameters that reflect circulatory instability in sepsis. (5) Previous studies conducted in emergency department settings have demonstrated that both indices are significant predictors of progression to septic shock and outperform conventional early warning scores in discriminative ability. (4) . Furthermore, elevated shock index values have been associated with increased mortality in intensive care unit (ICU) patients with septic shock. (6)

Despite these findings, evidence regarding the applicability of SSI and DSI in ICU populations remains limited, particularly in high-volume referral centers. Further prospective evaluation is therefore warranted to determine the prognostic value of these indices for mortality and morbidity among critically ill patients with septic shock. This study aims to evaluate the effectiveness of the systolic shock index and diastolic shock index in predicting morbidity and mortality among patients with septic shock admitted to the Intensive Care Unit of Wahidin Sudirohusodo Hospital.

Materials and methods

Study design

This study employed an analytical observational design using a prospective cohort approach. The study was conducted in the ICU of Dr. Wahidin Sudirohusodo Hospital, Makassar, Indonesia. Patient enrollment took place from June 2025 until the required sample size was achieved.

Eligibility criteria

The study population consisted of all adult patients admitted to the ICU during the study period. Patients were included if they were aged 18 years or older, diagnosed with septic shock, provided informed consent, and had complete medical records, including blood pressure and heart rate measurements at ICU admission and complete laboratory data. Patients were excluded if they had non-sepsis-related hemodynamic instability, such as major trauma, massive hemorrhage, or cardiogenic shock, or if death occurred before complete data collection.

Definitions and measurements

Septic shock was defined according to the Sepsis-3 criteria as persistent hypotension requiring vasopressor therapy to maintain an MAP≥65 mmHg, accompanied by a serum lactate level >2 mmol/l (18 mg/dl) despite adequate fluid resuscitation. Hemodynamic parameters were recorded at ICU admission. The SSI was calculated as the ratio of heart rate to systolic blood pressure, and the DSI was calculated as the ratio of heart rate to diastolic blood pressure.

Disease severity and organ dysfunction were assessed using the SOFA and Acute Physiology and Chronic Health Evaluation II (APACHE II) scores, calculated from standard clinical and laboratory variables. SOFA scores were categorized as mild (0–7), moderate (8–15), or severe (≥16). APACHE II scores were classified according to established mortality risk categories. Both scores were analyzed as ordinal variables.

Data analysis

Data were entered into Microsoft Excel and analyzed using SPSS Statistics version 27 for Windows. Univariate analysis was performed to describe baseline characteristics using appropriate descriptive statistics. Bivariate analysis was conducted to assess associations between variables using the chi-square or Fisher's exact test for categorical variables and the independent t-test or Mann-Whitney U test for numerical variables, as appropriate. Correlations between numerical variables were evaluated using Pearson or Spearman correlation tests. Data normality was assessed using the Kolmogorov-Smirnov test or the Shapiro-Wilk test, as appropriate.

The predictive performance of the SSI and DSI for septic shock-related morbidity was evaluated using receiver operating characteristic (ROC) curve analysis, with calculation of the area under the curve (AUC), sensitivity, specificity, positive predictive value, negative predictive value, and optimal cut-off values.

Ethical approval
Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Medicine, Hasanuddin University, with ethical number 1026/UN.4.6.4.5.31/PP36/2025. Institutional permission was granted by Dr. Wahidin Sudirohusodo Hospital. Patient data were handled anonymously in accordance with ethical standards.

Result
Study population and baseline characteristics
This prospective observational cohort study evaluated 51 patients with septic shock admitted to the ICU of Wahidin Sudirohusodo Hospital. The baseline characteristics of the study population are presented in **Table 1**. The mean age of participants was 53.21±15.88 years (range: 20–80 years). Male patients predominated, comprising 58.8% (n=30) of the cohort, while female patients constituted 41.2% (n=21).
Hemodynamic parameters revealed a mean systolic blood pressure of 98.23±8.93 mmHg, a mean diastolic blood pressure of 60.03±9.13 mmHg, and a mean heart rate of 95.82±14.55 beats per minute. The mean SSI was 0.98±0.18, and the mean DSI was 1.62±0.32. Blood lactate levels averaged 4.35±2.10 mmol/l.
Morbidity assessment using the APACHE II score yielded a mean value of 17.52±5.74, with the majority of patients (56.9%, n=29) having a predicted mortality of 40%. The distribution of predicted mortality based on APACHE II scores was as follows: 8% mortality risk (13.7%, n=7), 15% mortality risk (15.7%, n=8), 25% mortality risk (11.8%, n=6), 40% mortality risk (56.9%, n=29), and 55% mortality risk (2.0%, n=1). The mean SOFA score was 5.94±2.08, with 68.6% (n=35) of patients classified as having mild severity and 31.4% (n=16) classified as moderate severity. The overall mortality rate was 52.9% (n=27), with 47.1% (n=24) of patients survived. The mean length of ICU stay was 14.88±12.19 days.

Correlation between SSI, DSI, and lactate with morbidity
The correlation analysis between SSI, DSI, and lactate levels with morbidity markers (APACHE II and SOFA scores) is presented in **Table 2**. SSI demonstrated a statistically significant positive correlation with both APACHE II score (r=0.337, p=0.016) and SOFA score (r=0.322, p=0.021). Similarly, DSI showed a statistically significant positive correlation with APACHE II score (r=0.360, p=0.009) and SOFA score (r=0.358, p=0.010). Both correlations were weak (correlation coefficients 0.20–0.40), indicating that higher SSI and DSI values were associated with higher APACHE II and SOFA scores.
In contrast, blood lactate levels showed no significant correlation with either APACHE II score (r=0.097, p=0.498) or SOFA score (r=0.104, p=0.470) in predicting morbidity among septic shock patients.

Relationship between SSI, DSI, and lactate with SOFA score categories
Table 3 presents the comparison of SSI, DSI, and lactate levels between mild (0–7) and moderate (8–15) SOFA score categories. The mean SSI was 0.95±0.17 in the mild SOFA group compared to 1.04±0.19 in the moderate SOFA group (p=0.102). The mean DSI was 1.58±0.32 in the mild SOFA group compared to 1.72±0.30 in the moderate SOFA group (p=0.162). Mean lactate levels were 4.46±2.44 mmol/l in the mild SOFA group and 4.10±1.05 mmol/l in the moderate SOFA group (p=0.847). Although SSI and DSI values tended to be higher in patients with moderate SOFA scores, these differences did not reach statistical significance.

Relationship between SSI, DSI, and lactate with mortality
Table 4 demonstrates the association between SSI, DSI, and lactate levels with mortality outcomes. Patients who died had significantly higher mean SSI values compared to survivors (1.035±0.165 vs 0.928±0.189, p=0.037). Mean DSI values were also higher in deceased patients compared to survivors (1.707±0.250 vs 1.539±0.375), although this difference did not reach statistical significance (p=0.063). Blood lactate levels did not differ significantly between deceased and surviving patients (4.388±1.869 vs 4.312±2.381 mmol/l, p=0.479). Among the three parameters, only SSI showed a statistically significant association with mortality.

Diagnostic performance of SSI and DSI in predicting mortality
The ROC curves for SSI and DSI in predicting mortality are presented in **Table 5** and **Figure 1**. SSI demonstrated an AUC of 0.644 (95% CI: 0.498–0.773, p=0.071), with an optimal cut-off value of >0.843, yielding a sensitivity of 85.19%, specificity of 41.67%, positive predictive value (PPV) of

62.2%, and negative predictive value (NPV) of 71.4%.
DSI showed an AUC of 0.659 (95% CI: 0.513–0.786, p=0.059), with an optimal cut-off value of >1.574, yielding a sensitivity of 81.48%, specificity of 66.67%, PPV of 73.3%, and NPV of 76.2%. Although both indices demonstrated moderate predictive ability, neither reached statistical significance (p>0.05).

Relationship between APACHE II and SOFA scores with mortality
Table 6 shows that both APACHE II and SOFA scores were significantly higher in deceased patients compared to survivors. The mean APACHE II score was 21.22±1.96 in deceased patients versus 13.37±5.77 in survivors (p<0.001). The mean SOFA score was 7.29±1.48 in deceased patients versus 4.41±1.52 in survivors (p<0.001). Both scoring systems demonstrated statistically significant associations with mortality outcomes.

Diagnostic performance of APACHE II and SOFA scores in predicting mortality
ROC curve analysis for APACHE II and SOFA scores is presented in **Table 7** and **Figure 2**. The APACHE II score demonstrated excellent diagnostic performance with an AUC of 0.876 (95% CI: 0.753–0.951, p<0.001). The optimal cut-off value of >14 yielded a sensitivity of 100%, specificity of 62.50%, PPV of 75.0%, and NPV of 100%.
The SOFA score showed superior performance with an AUC of 0.904 (95% CI: 0.789–0.969, p<0.001). The optimal cut-off value of >5 yielded a sensitivity of 96.30%, specificity of 66.67%, PPV of 76.5%, and NPV of 94.1%. Both scoring systems demonstrated excellent predictive ability with statistically significant results.

Survival analysis based on cut-off values
Kaplan-Meier survival analysis based on the cut-off values of SSI, DSI, lactate, APACHE II score, and SOFA score is presented in **Table 8** and **Figure 3**. Patients with high SSI (>0.843) had a mean survival time of 22.52 days (95% CI: 16.89–28.15) compared to 24.10 days (95% CI: 14.56–33.65) for those with SSI≤0.843 (p=0.681). Patients with high DSI (>1.574) had a mean survival time of 22.25 days (95% CI: 16.39–28.11) compared with 23.73 days (95% CI: 14.79–32.66) for those with DSI≤1.574 (p=0.516). Patients with high lactate levels (>4 mmol/l) had a mean survival time of 20.47 days (95% CI: 14.06–26.87) compared to 25.43 days (95% CI: 17.78–33.08) for those with lactate ≤4 mmol/l (p=0.468). None of these differences reached statistical significance.
In contrast, patients with high APACHE II scores (>14) had a significantly shorter mean survival time of 20.21 days (95% CI: 15.06–25.37) compared with 37.00 days (95% CI: 37.00–37.00) for those with an APACHE II score ≤14 (p=0.011). Similarly, patients with high SOFA scores (>5) had a mean survival time of 19.94 days (95% CI: 14.57–25.30) compared with 33.75 days (95% CI: 28.23–39.26) for those with SOFA scores ≤5 (p=0.014). Both APACHE II and SOFA scores demonstrated statistically significant ability to stratify mortality risk.

Discussion
This prospective observational study demonstrated that SSI and DSI were associated with disease severity and adverse outcomes in patients with septic shock admitted to the intensive care unit. Both indices showed significant correlations with SOFA and APACHE II scores, supporting their role as simple hemodynamic markers reflecting the extent of circulatory failure and organ dysfunction.
Elevated shock index values likely represent early hemodynamic derangements that precede or parallel multiorgan failure. This finding was consistent with previous studies reporting significant associations between shock indices and established severity scores, vasopressor requirements, and mortality in sepsis and septic shock. (4,7,8) In particular, DSI, which incorporates diastolic blood pressure, may better reflect loss of vascular tone, a hallmark of septic shock, and has been shown to independently predict mortality, even after adjustment for conventional severity scores. (9)
In the present study, DSI demonstrated a significant association with mortality, whereas SSI and serum lactate showed nonsignificant trends. These findings suggested that shock indices and lactate captured different pathophysiological dimensions of septic shock. Lactate elevation reflects metabolic stress and impaired clearance in addition to hypoperfusion, which may limit its early discriminatory power when measured as a single value. (10) Prior studies have similarly reported that pre-vasopressor DSI performed comparably or better than traditional shock indices in predicting early mortality. (7)
Consistent with previous reports, APACHE II and SOFA scores were strongly associated with mortality and demonstrated excellent discriminatory performance on ROC analysis, confirming their prognostic value in septic shock. (11) However, unlike these composite scores, SSI and DSI can be calculated rapidly at the bedside without laboratory data, highlighting their potential utility as early screening

tools to identify high-risk patients and prompt timely intervention.

ROC curve analysis in our cohort revealed excellent discrimination by both APACHE II and SOFA scores for mortality prediction, with AUC values exceeding 0.87. Optimal cut-off values (>14 for APACHE II and >5 for SOFA) demonstrated high sensitivity and moderate specificity, further supporting their role as robust prognostic tools. Previous studies have shown that serial SOFA assessments provide superior prognostic value compared with single measurements, and that higher SOFA thresholds are associated with increased ICU and hospital mortality. (12,13)

Kaplan-Meier survival analysis showed that patients with elevated lactate levels (>4 mmol/l) had shorter survival, although the difference was not statistically significant. This finding aligns with previous studies suggesting that serial lactate measurements and lactate clearance provide superior prognostic information compared with single lactate values. Yu et al. demonstrated that lactate area scores derived from serial measurements were independently associated with 28-day mortality. (14) Similarly, Park et al. proposed a lactate-based scoring system that showed a consistent association between increasing lactate levels and mortality, reinforcing the role of lactate as an indicator of disease severity. (15)

Several limitations should be acknowledged. The single-center observational design limited generalizability, and hemodynamic measurements obtained after initial resuscitation and vasopressor initiation may have influenced shock index values. Additionally, potential confounding from sedation, mechanical ventilation, and vasoactive medications could not be excluded. Larger, multicenter prospective studies are needed to validate optimal cut-off values and further clarify the role of shock indices in guiding septic shock management.

Conclusion

In conclusion, this study demonstrates that SSI and DSI are significantly and positively correlated with APACHE II and SOFA scores, indicating that higher shock index values reflect greater disease severity and organ dysfunction in patients with septic shock. Both SSI and DSI were higher among non-survivors, while serum lactate levels also tended to be higher in patients who died, although this difference did not reach statistical significance. Survival analysis revealed that elevated SSI (>0.843) and DSI (>1.574) were associated with shorter mean survival times compared with lower values, highlighting their prognostic relevance. Similarly, patients with elevated lactate levels (>4 mmol/l) had shorter survival. These findings support the potential utility of SSI and DSI as simple, bedside hemodynamic markers for early risk stratification and prognosis assessment in septic shock.

Conflict of interest

The authors declare no conflict of interest.

Funding

No funding.

Table 1. Characteristics of the research sample

Variables	n (%) or mean±SD
Age (years)	53.21±15.88
Gender - Man - Female	 30 (58.8%) 21 (41.2%)
Hemodynamic parameters - Systolic blood pressure (mmHg) - Diastolic blood pressure (mmHg) - Heart rate (beats/min) - SSI - DSI	 98.23±8.93 60.03±9.13 95.82±14.55 0.98±0.18 1.62±0.32
Lactate (mmol/l)	4.35±2.10
Morbidity - APACHE II score 8% 15% 25% 40% 55% - SOFA score Mild Moderate	 17.52±5.74 7 (13.7%) 8 (15.7%) 6 (11.8%) 29 (56.9%) 1 (2.0%) 5.94±2.08 35 (68.6%) 16 (31.4%)
Mortality - Deceased - Survive	 27 (52.9%) 24 (47.1%)
LOS (days)	14.88±12.19

Legend: SD=standard deviation; SSI=systolic shock index; DSI=diastolic shock index; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment; LOS=length of stay.

Table 2. Relationship between SSI, DSI, and lactate to morbidity in septic shock patients

Variables	Morbidity of septic shock			
	APACHE II score		SOFA score	
	R	*p-value	R	*p-value
SSI	0.337	0.016	0.322	0.021
DSI	0.360	0.009	0.358	0.010
Lactate	0.097	0.498	0.104	0.470

Legend: SSI=systolic shock index; DSI=diastolic shock index; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment.
*Spearman's correlation test.

Table 3. Relationship between SSI, DSI, and lactate to SOFA score in septic shock patients

Variables	SOFA (mean±SD)		p-value
	Mild (0–7)	Moderate (8–15)	
SSI	0.95±0.17	1.04±0.19	*0.102
DSI	1.58±0.32	1.72±0.30	*0.162
Lactate (mmol/l)	4.46±2.44	4.10±1.05	#0.847

Legend: SSI=systolic shock index; DSI=diastolic shock index; SOFA=Sequential Organ Failure Assessment.
*Independent-t test; #Mann-Whitney test.

Table 4. Relationship between SSI, DSI, and lactate to mortality in septic shock patients

Variables	Mortality (mean±SD)		p-value
	Deceased	Survive	
SSI	1.035±0.165	0.928±0.189	*0.037
DSI	1.707±0.250	1.539±0.375	*0.063
Lactate (mmol/l)	4.388±1.869	4.312±2.381	#0.479

Legend: SSI=systolic shock index; DSI=diastolic shock index.
*Independent-t test; #Mann-Whitney test.

Table 5. ROC characteristics of SSI and DSI in assessing clinical outcomes of septic shock patients

Parameter	SSI	DSI
AUC	0.644	0.659
95% CI	0.498–0.773	0.513–0.786
p-value	0.071	0.059
Cut-off	>0.843	>1.574
Sensitivity (%)	85.19	81.48
Specificity (%)	41.67	66.67
PPV (%)	62.2	73.3
NPV (%)	71.4	76.2

Legend: ROC=receiver operating characteristic; SSI=systolic shock index; DSI=diastolic shock index; AUC=area under the curve; CI=confidence interval; PPV=positive predictive value; NPV=negative predictive value.

Table 6. Relationship between APACHE II score and SOFA score to mortality in septic shock patients

Variables	Mortality (mean±SD)		*p-value
	Deceased	Survive	
APACHE II score	21.22±1.96	13.37±5.77	0.000
SOFA score	7.29±1.48	4.41±1.52	0.000

Legend: APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment; SD=standard deviation.
*Mann-Whitney test.

Table 7. ROC characteristics of the APACHE II score and SOFA score in assessing clinical outcomes of septic shock patients

Parameter	APACHE II score	SOFA score
AUC	0.876	0.904
95% CI	0.753–0.951	0.789–0.969
p-value	<0.001	<0.001
Cut-off	>14	>5
Sensitivity (%)	100.00	96.30
Specificity (%)	62.50	66.67
PPV (%)	75.0	76.5
NPV (%)	100.0	94.1

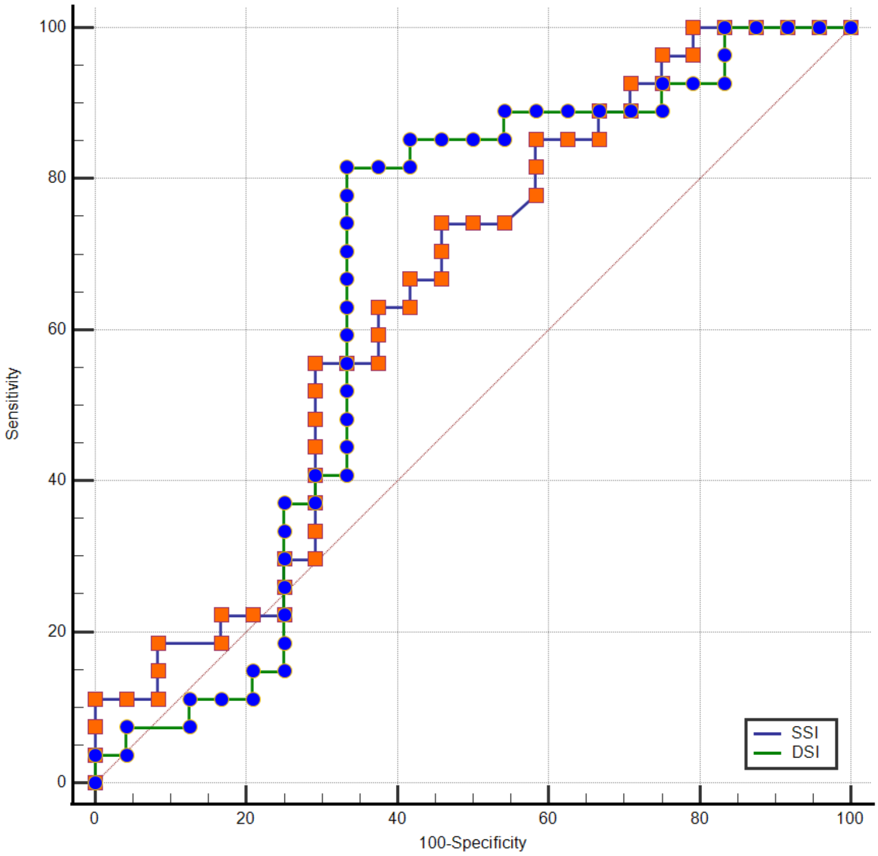
Legend: ROC=receiver operating characteristic; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment; AUC=area under the curve; CI=confidence interval; PPV=positive predictive value; NPV=negative predictive value.

Table 8. Probability of patient death based on the cut-off point values of SSI, DSI, lactate, APACHE II score, and SOFA score in patients with septic shock

Variables	Mean survival time (days)	95% CI	p-value*
SSI - >0.843 - ≤0.843	 22.52 24.10	 16.89–28.15 14.56–33.65	 0.681
DSI - >1.574 - ≤1.574	 22.25 23.73	 16.39–28.11 14.79–32.66	 0.516
Lactate (mmol/l) - >4 - ≤4	 20.47 25.43	 14.06–26.87 17.78–33.08	 0.468
APACHE II - >14 - ≤14	 20.21 37.00	 15.06–25.37 37.00–37.00	 0.011
SOFA - >5 - ≤5	 19.94 33.75	 14.57–25.30 28.23–39.26	 0.014

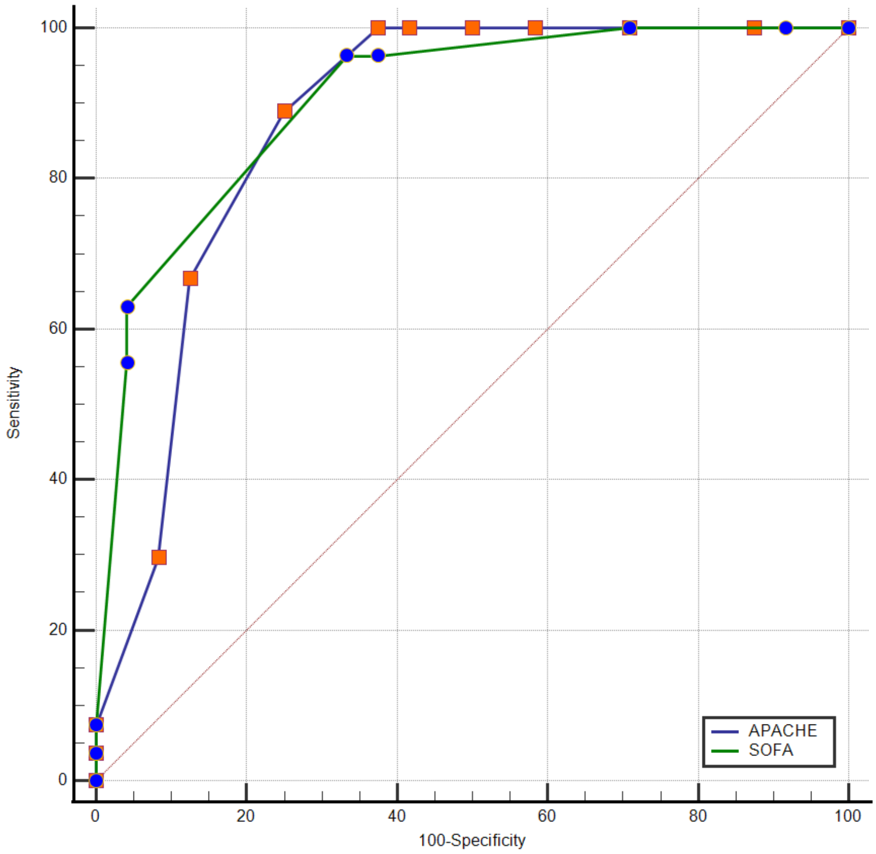
Legend: SSI=systolic shock index; DSI=diastolic shock index; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment; CI=confidence interval.
*Log-rank (Mantel-Cox).

Figure 1. ROC curve on SSI and DSI in assessing clinical outcomes of septic shock patients



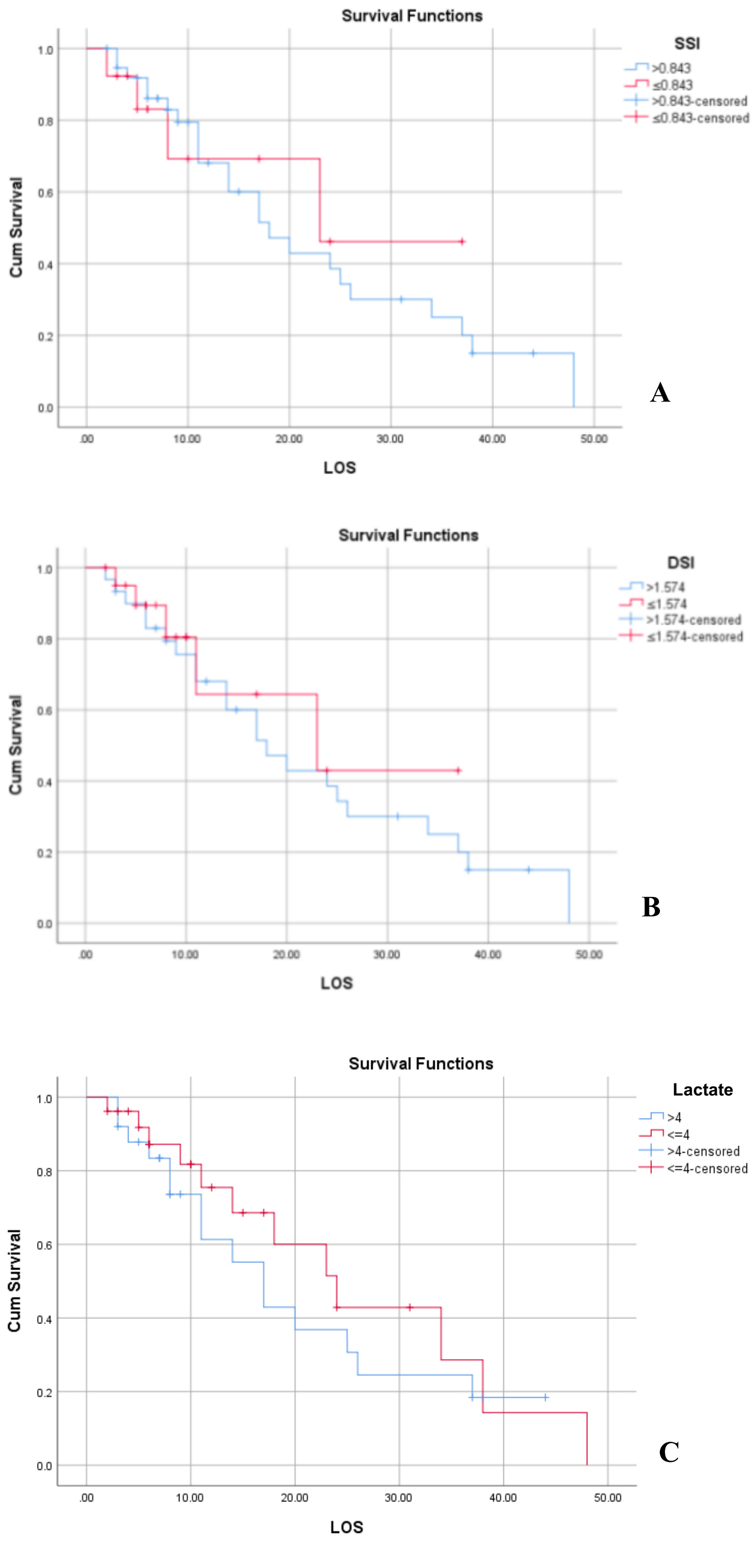
Legend: ROC=receiver operating characteristic; SSI=systolic shock index; DSI=diastolic shock index.

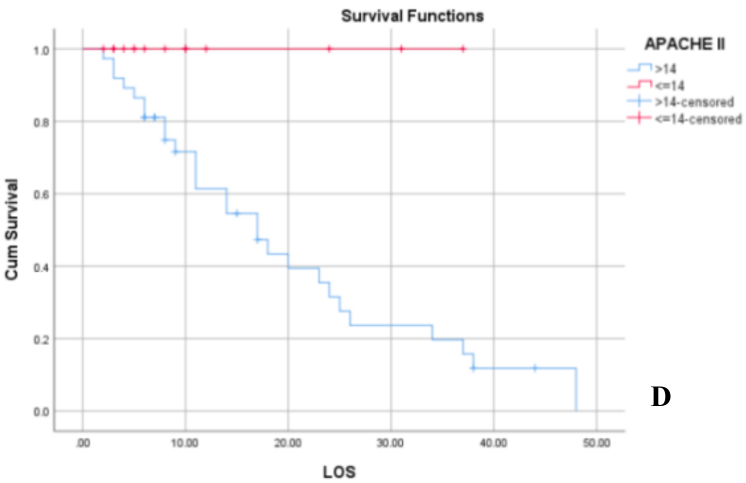
Figure 2. ROC curve of APACHE II score and SOFA score in assessing clinical outcomes of septic shock patients



Legend: ROC=receiver operating characteristic; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment.

Figure 3. Kaplan-Meier curve on the probability of patient death based on the cut-off point value of A) SSI, B) DSI, C) Lactate, D) APACHE II score, and E) SOFA score in patients with septic shock





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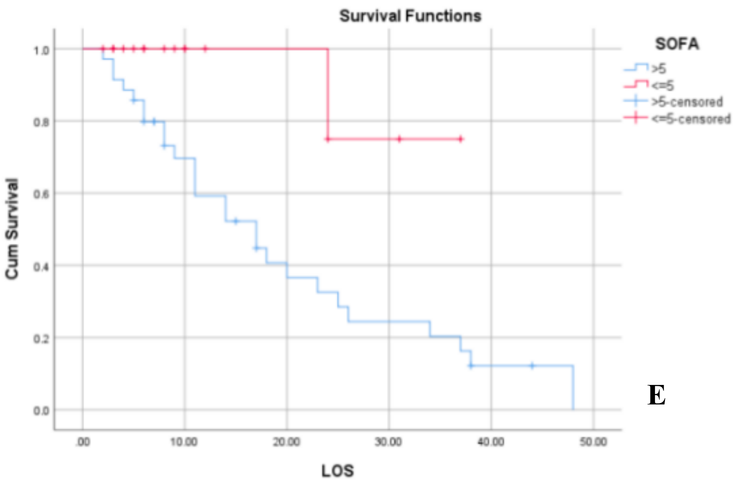

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Legend: SSI=systolic shock index; DSI=diastolic shock index; APACHE II=Acute Physiology and Chronic Health Evaluation II; SOFA=Sequential Organ Failure Assessment.

References

1. Dellinger RP, Levy MM, Rhodes A, Annane D, Gerlach H, Opal SM, et al. Surviving Sepsis Campaign: international guidelines for management of severe sepsis and septic shock: 2012. Crit Care Med 2013;41:580–637.
2. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, et al. The third international consensus definitions for sepsis and septic shock (Sepsis-3). JAMA 2016;315:801–10.
3. Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, French C, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. Crit Care Med 2021;49:e1063–143.
4. Jeon Y, Kim S, Ahn S, Park J-H, Cho H, Moon S, et al. Predicting septic shock in patients with sepsis at emergency department triage using systolic and diastolic shock index. Am J Emerg Med 2024;78:196–201.
5. Avci M, Doganay F. Prognostic performance of shock index, diastolic shock index, age shock index, and modified shock index in COVID-19 pneumonia. Disaster Med Public Health Prep 2022;17:e189.
6. Lee KJ, Kim YK, Jeon K, Ko R-E, Suh GY, Oh DK, et al. Shock indices are associated with in-hospital mortality among patients with septic shock and normal left ventricular ejection fraction. PLoS One 2024;19:e0298617.
7. Zhang T-N, Hao P-H, Gao S-Y, Liu C-F, Yang N. Evaluation of SI, MSI and DSI for very early (3-day) mortality in patients with septic shock. Eur J Med Res 2022;27:227.
8. Kenzaka T, Okayama M, Kuroki S, Fukui M, Yahata S, Hayashi H, et al. Importance of vital signs to the early diagnosis and severity of sepsis: association between vital signs and sequential organ failure assessment score in patients with sepsis. Intern Med 2012;51:871–6.
9. Ospina-Tascón GA, Teboul J-L, Hernandez G, Alvarez I, Sánchez-Ortiz AI, Calderón-Tapia LE, et al. Diastolic shock index and clinical outcomes in patients with septic shock. Ann Intensive Care 2020;10:41.
10. Mahashabde ML, Bhimani YR, Bhavsar HM. The correlation between the lactate/albumin ratio and Sequential Organ Failure Assessment (SOFA) score in patients with sepsis and septic shock. Cureus 2024;16:e65616.
11. Thakur R, Rohith VN, Arora JK. Mean SOFA score in comparison with APACHE II score in predicting mortality in surgical patients with sepsis. Cureus 2023;15:e36653.
12. Toker AK, Kose S, Turken M. Comparison of SOFA score, SIRS, qSOFA, and qSOFA + L criteria in the diagnosis and prognosis of sepsis. Eurasian J Med 2021;53:40–7.
13. Do SN, Dao CX, Nguyen TA, Nguyen MH, Pham DT, Nguyen NT, et al. Sequential Organ Failure Assessment (SOFA) score for predicting mortality in patients with sepsis in Vietnamese intensive care units: a multicentre, cross-sectional study. BMJ Open 2023;13:e064870.
14. Yu G, Yoo SJ, Lee S-H, Kim JS, Jung S, Kim Y-J, et al. Utility of the early lactate area score as a prognostic marker for septic shock patients in the emergency department. Acute Crit Care 2019;34:126–32.
15. Park H, Lee J, Oh DK, Park MH, Lim C-M, Lee S-M, et al. Serial evaluation of the serum lactate level with the SOFA score to predict mortality in patients with sepsis. Sci Rep 2023;13:6351.