Assessment of qSOFA Score Accuracy in Predicting Sepsis Outcomes: A Case Series Review

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Abstract: _Background_: *Sepsis is a significant cause of morbidity and mortality in hospitalized patients. Early identification is critical for timely management. This study examines the predictive accuracy of the qSOFA Quick Sequential Organ Failure Assessment score in identifying high risk sepsis patients. A retrospective review of 100 patients meeting qSOFA criteria revealed that those with scores 2 had higher rates of in hospital mortality and ICU admission. The study concludes that qSOFA is an effective prognostic tool for predicting adverse outcomes in sepsis patients.* _Materials and methods_: *A total of 100 patients were included in the study who fulfilled the criteria of qSOFA.* _Result_: *Of the 100 patients, 60% had a qSOFA score ≥2. Patients with qSOFA scores of 2 or higher had significantly higher in hospital mortality and ICU admission rates.* _Conclusion_: *qSOFA score were associated with prediction of inpatient mortality, ICU admission and hospital stay length in patient with sepsis.*

Keywords: sepsis, qSOFA score, ICU admission, mortality, prognostic tool

1. Introduction

Sepsis is a life - threatening condition caused by a dysregulated response to infection, leading to organ dysfunction. Early identification in the emergency department (ED) is crucial for prompt treatment. The quick Sequential Organ Failure Assessment (qSOFA) score, developed as part of the Sepsis - 3 Guidelines, helps identify patients at higher risk of mortality from infection but is not a diagnostic tool for sepsis itself.

Sepsis - 3 redefined sepsis to align with modern clinical understanding. The qSOFA score, derived from a study of 148, 907 patients with suspected infections, assesses mortality risk using three criteria:
1) Respiratory rate $\geq$ 22 breaths/min
2) Altered mental status (GCS < 15)
3) Systolic blood pressure $\leq$ 100 mmHg

A qSOFA score of 2 or 3 indicates a 3 - 14 times greater risk of in - hospital mortality compared to a score of 0 or 1. While it predicts risk, it does not diagnose sepsis, which requires clinical suspicion of infection.

Interpretation of qSOFA: **Not High Risk (0 - 1 points):** Lower risk of mortality, but sepsis cannot be ruled out.

High Risk (2 - 3 points): Associated with higher mortality risk, but sepsis diagnosis must be based on clinical judgment.

2. Materials and Methods

Study Design
This is a retrospective observational case series conducted in a tertiary care hospital in Ahmedabad. The study aimed to evaluate the outcomes of sepsis using the quick Sequential Organ Failure Assessment (qSOFA) score as a prognostic tool in patients admitted with sepsis.

Study Population
A total of 100 patients, aged 18 and above, admitted with sepsis between September 2023 and September 2024 were included. Sepsis was diagnosed using Sepsis - 3 criteria, defining it as life - threatening organ dysfunction from a dysregulated response to infection.

Inclusion Criteria
- $\geq$18 years diagnosed with sepsis.
- Adults Patients with complete clinical and laboratory data available for the calculation of qSOFA scores.

Exclusion Criteria
- Patients transferred from other hospitals with sepsis.
- Patients who were not willing to participate in the study.
- Age less than 18 years
- Post - operative patients

Data Collection
Data was collected retrospectively from patient medical records. The following variables were recorded:
- Demographic details: age, gender.
- Comorbidities such as diabetes, hypertension, chronic kidney disease, and heart disease.
- Initial vital signs and clinical presentation at admission.
- qSOFA score on admission: respiratory rate $\geq$ 22 breaths/min, altered mentation (Glasgow Coma Scale <15), and systolic blood pressure $\leq$100 mmHg.
- Outcomes: length of hospital stay, need for intensive care unit (ICU) admission, in - hospital mortality, and 28 - day mortality.

3. Results

A Total of 100 patients were included in my study during study period from September 2023 to September 2024.

Table 1: Patient Demographics & Clinical Characteristics

Patient Demographics & Clinical Characteristics	Data (%)
Mean Age (years)	60 (range 18 - 85)
Male Patients	65%
Female Patients	35%
Diabetes Mellitus	42%
Hypertension	33%
Chronic Kidney Disease	23%
sHeart Disease	22%

Table 2: qSOFA Scores and Parameters in the Study

qSOFA Scores and Parameters	Data (%)
Patients with qSOFA Score>=2	60
Respiratory Rate >=22	45
Altered Mentation	35
Systolic BP<=100mmHg	30

Table 3: Clinical Outcomes

Outcomes	qSOFA 0 - 1 (%)	qSOFA>=2 (%)
In - Hospital Mortality	5%	30%
ICU Admission	10%	60%

Table 4: Length of Hospital Stay

Length of Hospital Stay	Days
qSOFA 0 - 1	5
qSOFA >=2	10

Table 5: 28 Day Mortality

qSOFA Group	28 day Mortality (%)
qSOFA 0 - 1	5%
qSOFA >=2	35%
Overall	25%

4. Discussion

The qSOFA score at admission proved valuable for predicting sepsis outcomes. Patients with qSOFA ≥2 had worse outcomes, including higher mortality (30% vs.5%), more ICU admissions (60% vs.10%), and longer hospital stays (10 vs.5 days). These results highlight qSOFA's effectiveness in identifying high - risk patients. Comorbidities such as diabetes, hypertension, chronic kidney disease, and heart disease were more common in the qSOFA ≥2 group (45% vs.15%), suggesting a link between severity of infection and poor outcomes.

The significance of the article: This study holds significance as it reinforces the utility of the qSOFA score as an accessible, simple tool in predicting adverse outcomes in sepsis, potentially leading to earlier interventions and improved patient outcomes.

5. Conclusion

This study underscores the value of the qSOFA score as a reliable and accessible tool for predicting mortality, ICU admissions, and length of hospital stays in septic patients. By incorporating qSOFA into routine clinical assessment, healthcare providers can improve early identification of high risk sepsis patients and potentially improve outcomes.

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