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Li, A.[a] , Ling, L.[b] , Qin, H.[c] , Arabi, Y.M.[d] , Myatra, S.N.[e] , Egi, M.[f] , Kim, J.H.[g] , Nor, M.B.M.[h] , Son, D.N.[i] , Fang, W.-F.[j k] , Wahyuprajitno, B.[l] , Hashmi, M.[m] , Faruq, M.O.[n] , Patjanasoontorn, B.[o] , Al Bahrani, M.J.[p] , Shrestha, B.R.[q] , Shrestha, U.[q] , Nafees, K.M.K.[r] , Sann, K.K.[s] , Palo, J.E.M.[t] , Mendsaikhan, N.[u] , Konkayev, A.[v w] , Detleuxay, K.[x] , Chan, Y.H.[y] , Du, B.[c] , Divatia, J.V.[e] , Koh, Y.[z] , Phua, J.[a aa]

Prognostic evaluation of quick sequential organ failure assessment score in ICU patients with sepsis across different income settings

(2024) *Critical Care*, 28 (1), art. no. 30, .

DOI: 10.1186/s13054-024-04804-7

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Abstract

Background: There is conflicting evidence on association between quick sequential organ failure assessment (qSOFA) and sepsis mortality in ICU patients. The primary aim of this study was to determine the association between qSOFA and 28-day mortality in ICU patients admitted for sepsis. Association of qSOFA with early (3-day), medium (28-day), late (90-day) mortality was assessed in low and lower middle income (LLMIC), upper middle income (UMIC) and high income (HIC) countries/regions. Methods: This was a secondary analysis of the MOSAICS II study, an international prospective observational study on sepsis epidemiology in Asian ICUs. Associations between qSOFA at ICU admission and mortality were separately assessed in LLMIC, UMIC and HIC countries/regions. Modified Poisson regression was used to determine

the adjusted relative risk (RR) of qSOFA score on mortality at 28 days with adjustments for confounders identified in the MOSAICS II study. Results: Among the MOSAICS II study cohort of 4980 patients, 4826 patients from 343 ICUs and 22 countries were included in this secondary analysis. Higher qSOFA was associated with increasing 28-day mortality, but this was only observed in LLMIC ($p < 0.001$) and UMIC ($p < 0.001$) and not HIC ($p = 0.220$) countries/regions. Similarly, higher 90-day mortality was associated with increased qSOFA in LLMIC ($p < 0.001$) and UMIC ($p < 0.001$) only. In contrast, higher 3-day mortality with increasing qSOFA score was observed across all income countries/regions ($p < 0.001$). Multivariate analysis showed that qSOFA remained associated with 28-day mortality (adjusted RR 1.09 (1.00–1.18), $p = 0.038$) even after adjustments for covariates including APACHE II, SOFA, income country/region and administration of antibiotics within 3 h. Conclusions: qSOFA was independently associated with 28-day mortality in ICU patients admitted for sepsis. In LLMIC and UMIC countries/regions, qSOFA was associated with early to late mortality but only early mortality in HIC countries/regions. Graphical Abstract: [Figure not available: see fulltext.] © 2024, The Author(s).

Author Keywords
APACHE; Critical care; Infection; Mortality; Prediction; qSOFA

Index Keywords
antibiotic agent; adult, aged, APACHE, Article, cohort analysis, controlled study, early diagnosis, female, financial statement, high income country, hospital admission, human, intensive care unit, low income country, major clinical study, male, middle income country, mortality, mortality rate, multivariate analysis, observational study, phenotype, prognosis, prospective study, quick Sequential Organ Failure Assessment Score, receiver operating characteristic, risk factor, secondary analysis, sensitivity and specificity, sepsis, systemic inflammatory response syndrome

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Publisher: BioMed Central Ltd

ISSN: 13648535
CODEN: CRCAF
Language of Original Document: English
Abbreviated Source Title: Crit. Care
2-s2.0-85182819147
Document Type: Article
Publication Stage: Final
Source: Scopus