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ORIGINAL RESEARCH

# Comparing Outcomes of Critically Ill Patients in Intensive Care Units and General Wards: A Comprehensive Analysis

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**Background:** The admission of critically ill patients to intensive care unit (ICU) plays a crucial role in reducing mortality. However, the scarcity of available ICU beds presents a significant challenge. In resource-limited settings, the outcomes of critically ill patients, particularly those who are not accepted for ICU admission, have been a topic of ongoing debate and contention.

**Objective:** This study aimed to explore the outcomes and factors associated with ICU admission and mortality among critically ill patients in Thailand.

**Methods:** This prospective cohort study enrolled critically ill adults indicated for medical ICU admission. Patients were followed for 28 days regardless of whether they were admitted to an ICU. Data on mortality, hospital length of stay, duration of organ support, and factors associated with mortality and ICU admission were collected.

**Results:** Of the 180 patients enrolled, 72 were admitted to ICUs, and 108 were cared for in general wards. The ICU group had a higher 28-day mortality rate (44.4% vs 20.4%; $P$=0.001), but other outcomes of interest were comparable. Multivariate analysis identified alteration of consciousness, norepinephrine use, and epinephrine use as independent predictors of 28-day mortality. Higher body mass index (BMI), higher APACHE II score, and acute kidney injury were predictive factors associated with ICU acceptance.

**Conclusion:** Among patients indicated for ICU admission, those who were admitted had a higher 28-day mortality rate. Higher mortality was associated with alteration of consciousness and vasopressor use. Patients who were sicker and had higher BMI were more likely to be admitted to an ICU.

**Keywords:** acceptance, general ward, intensive care units, mortality, outcomes

## Introduction

Various factors influence hospital mortality in critically ill patients. While admitting diagnosis, age, sex, and underlying conditions exhibit a strong association with mortality, they are unmodifiable.[1,2] Conversely, a few factors, such as admission to intensive care units (ICUs), can be modified.[3–5] ICUs offer continuous monitoring of physiologic parameters, advanced organ support, and a higher nurse-to-patient ratio. These advantages contribute to a reduction in mortality rates compared to general wards, despite the provision of exceptional care in that setting.

The scarcity of available ICU beds presents a global challenge that affects both developing nations and industrialized countries.[6] Determining whether a patient should be admitted to an ICU involves a complex decision-making process influenced by factors such as the severity of the illness, staffing availability, facility utilization, and predicted outcomes.[6–8] Various strategies have been developed to address this issue, with scoring systems being the most prominent. One noteworthy example is the Acute Physiology and Chronic Health Evaluation (APACHE II), implemented in 1985. This system combines baseline health status and physiological parameters to stratify patients across acute illnesses, providing valuable insights for clinical decision-making and ICU admission criteria.[9] Another widely recognized scoring system is the Sequential Organ Failure Assessment (SOFA) scoring system, introduced in 1996, which focuses on the quantitative



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assessment of multiorgan dysfunction over time.[10] While serial evaluations using SOFA have shown promise as prognostic indicators, the performance of a single time-point evaluation is limited in this regard.[11]

However, it is essential to acknowledge that no single scoring system or parameter can perfectly determine ideal candidates for ICU admission. Thus, the final decision lies with the healthcare authority, who must assess individual patient information during the assessment process.[8] Furthermore, while extensive research has been conducted on the outcomes of critically ill patients admitted to ICUs, limited information exists regarding the outcomes of patients not admitted to these specialized units.

This study aimed to investigate the outcomes of critically ill patients who received optimal treatment, regardless of whether they were admitted to an ICU or treated in a general ward. Additionally, we aimed to identify the factors associated with ICU acceptance and mortality among critically ill patients.

# Materials and Methods

## Study Setting and Population

This prospective cohort study enrolled adult patients admitted to Siriraj Hospital in Bangkok, Thailand, between July 4, 2018, and July 3, 2019. The study population comprised patients who met the criteria for medical ICU admission, which included the following conditions:

- Acute respiratory failure requiring either invasive or noninvasive respiratory support.
- Hypotension necessitating the administration of vasopressors or inotropes for at least 24 hours.
- Acute kidney injury (AKI) necessitating renal replacement therapy (RRT).
- Critically ill patients for whom the attending physician deemed ICU admission necessary.

Patients with long-term ventilator or noninvasive respiratory support dependency, terminal illness, or do-not-resuscitate orders were excluded from the study.

## Ethics Approval and Informed Consent

Before inclusion in the study, written informed consent was obtained from each patient or their legal representatives, as applicable, per the Code of Ethics outlined by the World Medical Association (Declaration of Helsinki). The Institutional Review Board of the Faculty of Medicine Siriraj Hospital, Mahidol University, approved the research protocol before commencement (Si400/2018).

## Study Design

Following enrollment, comprehensive data were collected on baseline characteristics, the diagnosis indicated for ICU admission, pertinent laboratory tests, physiological parameters, and crucial organ support interventions. Regardless of ICU acceptance, the investigators diligently tracked each patient's progress until day 28 postenrollment without influencing the attending physician's management decisions, diagnostic procedures, or treatment protocols.

## Outcome Measurement

The primary outcome of this study was the assessment of 28-day mortality rates in patients admitted to ICUs compared to those who were not admitted. The secondary endpoints analyzed were hospital length of stay, duration of mechanical ventilator support, duration of vasoactive/inotropic agent administration, and duration of RRT. Additionally, we identified factors associated with both 28-day mortality and ICU acceptance.

## Statistical Analysis

The sample size calculation was based on institutional data. At our institute, patients meeting the inclusion criteria had a 20% mortality rate in ICUs, whereas those treated in general wards had a mortality rate of 40%. Using a 95% confidence interval (Z=1.96), a power of 80% (β=0.2), and an enrollment ratio of 2 (ratio of general ward mortality to

ICU mortality of 2), we performed a sample size calculation using independent sample proportions. At least 60 subjects needed to be prospectively enrolled in the ICU group, while at least 120 subjects were required for the general ward group.

For continuous variables with a normal distribution, independent samples *t*-tests were used for comparison, while nonnormally distributed data were assessed using the Mann–Whitney *U*-test. Categorical variables were compared using Pearson's $\chi^2$ test or Fisher's exact test, as appropriate. A *P* value of less than 0.05 was considered statistically significant in all analyses.

We conducted receiver operating characteristic (ROC) curve analysis on continuous variables and identified the optimal cut-point using the Youden index to transform them into categorical data. Subsequently, univariate analysis was performed on all potential clinical parameters to identify predictive factors for the primary outcome. Clinical parameters exhibiting an association with the primary outcome, indicated by a *P* value of <0.1 in the univariate analysis, were included in a multivariable binary logistic regression model.

All statistical analyses were conducted using PASW Statistics, version 18.0 (SPSS Inc, Chicago, IL, USA).

## Results

A total of 180 patients were enrolled in the study, with 72 patients in the ICU group and 108 in the general ward group. The ICU group exhibited significant differences in age (58.3±18.7 vs 68.7±15.8 years; *P*<0.001), body mass index (BMI; 24.2±6.1 vs 22.3±5.1; *P*=0.03), and disease severity (APACHE II score: 17.9±7.7 vs 13.3±5.6 with *P*<0.001; Sequential Organ Failure Assessment score: 5.8±3.2 vs 4.4±3.0, with *P*=0.003) compared to the general ward group. The proportion of female patients in the ICU group was nonsignificantly lower (40.3% vs 50.9%; *P*=0.16), with no significant differences observed in underlying diseases. The most common diagnosis at the time of ICU request was sepsis, with no significant difference in the prevalence of the condition in the 2 groups (ICU group: 81.9%; general ward group: 76.9%; *P*=0.41).

The ICU group presented with a higher incidence of hypotension (65.3% vs 39.8%; *P*=0.01), AKI (63.9% vs 29.6%; *P*<0.001), and alteration of consciousness (23.6% vs 6.5%; *P*<0.01). Laboratory parameters of the ICU group indicated more severe conditions, with significantly higher serum creatinine levels (2.98±2.81 vs 1.96±1.90 mg/dL; *P*=0.005), lower pH values (7.32±0.14 vs 7.39±0.10; *P*=0.004), and elevated lactate levels (6.4±6.3 vs 4.0±3.6 mmol/L; *P*=0.03; Table 1).

**Table 1** Baseline Characteristic

| | Intensive Care Units (n=72) | General Wards (n=108) | *P* |
|---|---|---|---|
| Female, n (%) | 29 (40.3) | 55 (50.9) | 0.16 |
| Age, mean ± SD, years | 58.3 ± 18.7 | 68.7 ± 15.8 | < 0.001* |
| BMI, mean ± SD | 24.2 ± 6.1 | 22.3 ± 5.1 | 0.03* |
| Comorbidities, n (%) | | | |
| • Diabetes mellitus | 28 (38.9) | 37 (34.3) | 0.53 |
| • Hypertension | 38 (52.8) | 72 (66.7) | 0.06 |
| • ESRD on RRT | 11 (15.3) | 11 (10.2) | 0.32 |
| • Cirrhosis | 8 (11.1) | 9 (8.3) | 0.63 |
| • HIV infection | 3 (4.2) | 6 (5.6) | 0.68 |
| • Cardiovascular disease | 17 (23.6) | 21 (19.4) | 0.5 |
| • Malignancy | 14 (19.4) | 20 (18.5) | 0.88 |

(*Continued*)


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**Table 1** (Continued).

| | Intensive Care Units (n=72) | General Wards (n=108) | *P* |
|---|---|---|---|
| Severity score upon the request, mean ± SD | | | |
| • APACHE II | 17.9 ± 7.7 | 13.3 ± 5.6 | < 0.001* |
| • SOFA score | 5.8 ± 3.2 | 4.4 ± 3.0 | 0.003* |
| Diagnosis upon the request, n (%) | | | |
| • Sepsis | 59 (81.9) | 83 (76.9) | 0.41 |
| • Hypotension | 47 (65.3) | 43 (39.8) | 0.001* |
| • Respiratory failure | 54 (75.0) | 74 (68.5) | 0.35 |
| • Acute kidney injury | 46 (63.9) | 32 (29.6) | <0.001* |
| • Alternation of consciousness | 17 (23.6) | 7 (6.5) | <0.001* |
| • Acute coronary syndrome | 4 (5.6) | 2 (1.9) | 0.18 |
| • Acute liver failure | 12 (16.7) | 1 (0.9) | <0.001* |
| • Post-cardiac arrest | 6 (8.3) | 1 (0.9) | 0.01* |
| Laboratory parameters, mean ± SD | | | |
| • Blood urea nitrogen (mg/dL) | 39.7 ± 26.7 | 32.7 ± 26.5 | 0.09 |
| • Creatinine (mg/dL) | 2.98 ± 2.81 | 1.96 ± 1.90 | 0.005* |
| • P/F ratio | 297.7 ± 151.4 | 257.1 ± 128.1 | 0.11 |
| • pH | 7.32 ± 0.14 | 7.39 ± 0.10 | 0.004* |
| • Lactate (mmol/L) | 6.4 ± 6.3 | 4.0 ± 3.6 | 0.03* |

**Note**: *Statistically significant.
**Abbreviations**: APACHE II, Acute Physiology and Chronic Health Evaluation II; BMI, body mass index; ESRD, end-stage renal disease; HIV, human immunodeficiency virus; P/F ratio, ratio of arterial oxygen partial pressure to fractional inspired oxygen; RRT, renal replacement therapy; SOFA, Sequential Organ Failure Assessment.

There were no significant differences in the proportions of patients in each group who required mechanical ventilation (75.0% vs 68.5%; *P*=0.35) or other forms of respiratory support. However, the ICU group underwent more intensive monitoring and organ support interventions. These included a significantly higher utilization of inferior vena cava ultrasound (66.7% vs 6.5%; *P*<0.001), central venous catheterization (86.1% vs 10.2%; *P*<0.001), arterial line placement (88.9% vs 3.7%; *P*<0.001), and RRT (40.3% vs 7.4%; *P*<0.001).

Norepinephrine administration was more frequently prescribed for patients admitted to an ICU than for those admitted to a general ward (65.3% vs 39.8%; *P*=0.001). Nevertheless, the mean doses of the groups did not differ significantly (0.19±0.21 vs 0.12±0.14 mcg/kg/min, respectively; *P*=0.07; Table 2).

The overall 28-day mortality rate in the study population was 30% (54/180). Among the patients in the ICU group, the 28-day mortality rate was 44.4% (32/72), whereas in the general ward group, it was 20.4% (22/108). In the unadjusted model, patients admitted to an ICU had a significantly higher risk of 28-day mortality than those treated in a general ward (odds ratio [OR]: 3.17; 95% CI: 1.64–6.15; *P*<0.001). However, no significant differences were observed in other outcomes of interest (Table 3).

A multivariate analysis model was conducted to determine the factors significantly associated with 28-day mortality. The factors identified were alteration of consciousness (adjusted odds ratio [aOR]: 9.15; 95% CI: 1.11–75.16; *P*=0.04), norepinephrine use (aOR: 57.81; 95% CI: 1.29–581.4; *P*=0.04), and epinephrine use (aOR: 15.78; 95% CI: 1.86–133.65; *P*=0.01).

**Table 2** Procedure and Organ Support During Admission

| | Intensive Care Units (n=72) | General Wards (n=108) | *P* |
|---|---|---|---|
| Respiratory support, n (%) | | | |
| • Invasive mechanical ventilation | 54 (75.0) | 74 (68.5) | 0.35 |
| • Noninvasive ventilation | 1 (1.4) | 6 (5.6) | 0.18 |
| • High-flow nasal cannula | 0 (0) | 2 (1.9) | 0.18 |
| Hemodynamic monitoring and support, n (%) | | | |
| • IVC ultrasound | 48 (66.7) | 7 (6.5) | < 0.001* |
| • Central venous catheter | 62 (86.1) | 11 (10.2) | < 0.001* |
| • Arterial line | 64 (88.9) | 4 (3.7) | <0.001* |
| • Pulmonary artery catheter | 5 (6.9) | 0 | 0.005* |
| • Norepinephrine | 47 (65.3) | 43 (39.8) | 0.001* |
| • Norepinephrine dose, mean ± SD, mcg/kg/min | 0.19 ± 0.21 | 0.12 ± 0.14 | 0.07 |
| Other organ support, n (%) | | | |
| • Renal replacement therapy | 29 (40.3) | 8 (7.4) | <0.001* |
| Cardiopulmonary resuscitation | 10 (13.9) | 9 (8.3) | 0.24 |

**Note**: *Statistically significant.
**Abbreviation**: IVC ultrasound, inferior vena cava ultrasound.

**Table 3** Outcomes

| Treatment Outcomes | Intensive Care Units (n=72) | General Wards (n=108) | *P* |
|---|---|---|---|
| Primary outcome | | | |
| 28-day mortality, n (%) | 32 (44.4) | 22 (20.4) | 0.001* |
| Secondary outcomes | | | |
| Hospital length of stay, mean ± SD, days | 24.8 ± 22.8 | 23.3 ± 21.1 | 0.64 |
| ICU length of stay, mean ± SD, days | 9.7 ± 8.5 | 0 | < 0.001* |
| Ventilator free days within 28 days, mean ± SD, days | 15.4 ± 22.3 | 13.0 ± 19.3 | 0.48 |
| Norepinephrine days, mean ± SD, days | 4.7 ± 4.5 | 4.1 ± 3.5 | 0.46 |
| Renal replacement therapy free day within 28 days, mean ± SD, days | 22.7 ± 31.8 | 25.3 ± 21.0 | 0.89 |

**Note**: *Statistically significant.
**Abbreviation**: ICU, intensive care unit.

However, ICU admission did not significantly correlate with 28-day mortality (aOR: 3.24; 95% CI: 0.41–25.76; *P*=0.27; Table 4).

Another multivariate analysis model was employed to identify factors associated with ICU acceptance. The 3 significantly associated factors revealed were higher BMI (≥23; aOR: 10.63; 95% CI: 1.32–85.86; *P*=0.03), greater disease severity (APACHE II score ≥20; aOR: 10.87; 95% CI: 1.24–95.10; *P*=0.03), and AKI (aOR: 10.39; 95% CI: 1.30–82.88; *P*=0.03; Table 5).

**Table 4** Factors Associated with 28-Day Mortality

| | Univariate Analysis | | | Multivariate Analysis | | |
|---|---|---|---|---|---|---|
| | **Odds Ratio** | **(95% Confidence Interval)** | ***P*** | **Adjusted Odds Ratio** | **(95% Confidence Interval)** | ***P*** |
| APACHE II ≥ 20 | 2.78 | (1.35–5.73) | 0.005* | 0.53 | (0.06–4.61) | 0.57 |
| SOFA score ≥ 5 | 2.4 | (1.23–4.70) | 0.009* | 2.06 | (0.26–16.51) | 0.5 |
| Hypotension | 1.97 | (1.03–3.78) | 0.04* | 0.05 | (0.01–2.07) | 0.12 |
| Acute kidney injury | 2.55 | (1.33–4.92) | 0.004* | 0.29 | (0.04–1.89) | 0.29 |
| Alternation of consciousness | 5.58 | (2.20–14.16) | < 0.001* | 9.15 | (1.11–75.16) | 0.04* |
| Respiratory failure | 2.25 | (1.03–4.92) | 0.04* | 3.36 | (0.16–71.41) | 0.44 |
| Bicarbonate ≤18 mmol/L | 1.78 | (0.93–3.41) | 0.08 | 0.99 | (0.13–7.40) | 0.99 |
| Lactate ≥4 mmol/L | 2.78 | (1.11–6.97) | 0.03* | 5.88 | (0.85–40.84) | 0.07 |
| Respiratory rate ≥ 20/min | 2.48 | (1.14–5.38) | 0.02* | 4.2 | (0.58–30.59) | 0.16 |
| Norepinephrine use | 1.97 | (1.03–3.78) | 0.04* | 57.81 | (1.29–581.4) | 0.04* |
| Epinephrine use | 12.79 | (3.47–47.13) | < 0.001* | 15.78 | (1.86 −133.65) | 0.01* |
| ICU admission | 3.17 | (1.64–6.15) | < 0.001* | 3.24 | (0.41–25.76) | 0.27 |

**Note**: *Statistically significant.
**Abbreviations**: APACHE II, Acute Physiology and Chronic Health Evaluation II; ICU, intensive care unit; SOFA, Sequential Organ Failure Assessment.

**Table 5** Factors Associated with Intensive Care Unit Acceptance (n=72)

| | Univariate Analysis | | | Multivariate Analysis | | |
|---|---|---|---|---|---|---|
| | **Odds Ratio** | **(95% Confidence Interval)** | ***P*** | **Adjusted Odds Ratio** | **(95% Confidence Interval)** | ***P*** |
| Age ≤ 65 years | 2.23 | (1.12–4.11) | 0.009* | 1.24 | (0.17–9.28) | 0.83 |
| BMI ≥ 23 | 2.69 | (1.45–4.99) | 0.002* | 10.63 | (1.32–85.86) | 0.03* |
| APACHE II ≥ 20 | 2.96 | (1.46–6.00) | 0.002* | 10.87 | (1.24–95.10) | 0.03* |
| SOFA score ≥ 5 | 2.99 | (1.59–5.60) | 0.001* | 0.68 | (0.07–6.17) | 0.73 |
| Alternation of consciousness | 4.46 | (1.74–11.41) | 0.001* | 0.47 | (0.03–7.99) | 0.6 |
| Heart failure | 0.56 | (0.3–1.03) | 0.06 | 0.37 | (0.06–2.15) | 0.27 |
| Circulatory failure | 21.4 | (2.72–168.63) | <0.001* | 5.16 | (0.19–177.61) | 0.32 |
| Acute kidney injury | 4.2 | (2.23–7.92) | <0.001* | 10.39 | (1.30–82.88) | 0.03* |
| Norepinephrine use | 3.37 | (1.42–7.98) | 0.005* | 0.15 | (0.02–1.40) | 0.09 |
| Bicarbonate ≤ 18 mmol/L | 3.35 | (1.79–6.28) | <0.001* | 0.95 | (0.20–4.42) | 0.95 |
| Lactate ≥4 mmol/L | 2.4 | (1.03–5.68) | 0.04* | 0.75 | (0.14–4.14) | 0.74 |
| pH ≤7.3 | 3.06 | (1.31–7.16) | 0.008* | 6.58 | (0.68–64.08) | 0.11 |
| $PaCO_2$ ≤ 35 | 2.94 | (1.37–6.29) | 0.005* | 2.83 | (0.44–18.18) | 0.27 |
| Minute ventilation ≥ 10 L/min | 1.83 | (0.89–3.76) | 0.09 | 3.33 | (0.54–20.45) | 0.19 |

**Note**: *Statistically significant.
**Abbreviations**: APACHE II, Acute Physiology and Chronic Health Evaluation II; BMI, body mass index; $PaCO_2$, arterial carbon dioxide partial pressure; SOFA, Sequential Organ Failure Assessment.

## Discussion

Our institute, a tertiary referral university hospital, has an ICU-to-general bed ratio of approximately 5%. The ratio at our institute is similar to that of many Western European countries (2–5%) but half that of the United States (9–10%).[12] All requests for ICU admission at our hospital are evaluated by an attending intensivist and other members of an ICU team to determine whether the patients will be accepted. Less than half of the requests in our study were approved, a rate similar to those reported in other studies.[3,6,13] This low acceptance rate is likely due to the persisting issue of ICU bed shortages worldwide, even though the number of ICU beds has increased over the years.[6,14]

In this study, an unexpected finding emerged, as critically ill patients who were indicated for ICU admission and subsequently accepted had double the 28-day mortality compared to those treated in the general medical wards. This finding stands in contrast to previous studies that demonstrated a reduction in mortality associated with ICU admission.[3–5,15,16]

A plausible explanation for this finding lies in the more severe condition of the patients in the ICU group. The ICU group exhibited significantly worse disease severity than the general ward group, with a mean APACHE II score of 17.9 vs 13.3.

Furthermore, a substantial proportion of patients in the ICU group (63.9%) presented with AKI at the time of their ICU request, with 40% requiring RRT. In contrast, among patients treated in the general ward, only 29.6% had AKI, and 7.4% needed RRT. It is noteworthy that previous research has consistently associated the presence and severity of AKI, as well as the need for RRT, with[3,15] increased mortality in critically ill patients.[17–19]

Additionally, the ICU group exhibited a higher incidence of hypotension, greater utilization of norepinephrine, and elevated serum lactate levels than the general ward group. Each of these parameters has been consistently linked to higher mortality in numerous studies.[20–22]

Upon admission to ICUs, patients commonly undergo more invasive monitoring and procedures, including central venous catheter insertion, arterial line insertion, and, occasionally, pulmonary artery catheter placement, than patients in general wards.[15] In our study, nearly 90% of ICU patients had a central line in place, while a similar proportion also had an arterial line inserted. Conversely, these procedures were performed in only 10% and 4% of general ward patients, respectively. However, there is limited substantial evidence demonstrating the efficacy of these interventions in improving patient outcomes.[23,24] Previous research has highlighted the safe administration of vasopressors via peripheral veins, minimizing the risk of local complications.[25] Additionally, noninvasive blood pressure measurements have shown a reliable correlation with arterial blood pressure, even during vasopressor administration.[26] These findings suggest a potential tendency toward overutilization of central venous catheters and arterial line insertion in our ICU setting. Consequently, it is advisable to re-evaluate the benefits these routine procedures offer patients.

The factors associated with ICU acceptance in our study were higher BMI, higher APACHE II score, and AKI. Notably, a study in Greece identified different ICU acceptance factors: a higher Glasgow Coma Scale, absence of cardiac arrest, and lower Charlson comorbidity score.[13] Furthermore, a systematic review indicated that refusal of ICU admission was linked to factors such as age over 65, poor performance status, underlying malignancy, and chronic respiratory or cardiac failure.[6] These findings shed light on global selection biases in ICU acceptance. Decisions regarding ICU admission are influenced not only by the severity of illness and the necessity for hemodynamic and organ support but also by a preference for younger patients with better baseline health statuses.[3,27]

In the context of the limited availability of ICU beds, selecting the most appropriate patients for admission lacks universally applicable guidelines. However, an expert panel has emphasized the importance of prioritizing the comprehensive optimization of resources to enhance patient outcomes.[8] This underscores the critical role of experienced intensivists who can allocate ICU resources based on their clinical judgment and ethical considerations. They aim to admit the most critically ill patients to the ICU while striving to achieve satisfactory outcomes by providing less invasive measures for patients who are declined admission to the ICUs.[6,7]

A major strength of this study is its prospective cohort design. This allowed for a clear identification of the actual practices involved in ICU bed allocation within a resource-limited developing country. The study highlights that ICU acceptance alone is not the sole determinant for reducing 28-day mortality. Nevertheless, disease severity plays a primary role in patient outcomes.

There are several notable limitations to our study. First, being a single-center study without predefined criteria for ICU admission limits the generalizability and reproducibility of our results. However, the situations described in our study are likely comparable to those in most ICUs, where ICU acceptance primarily depends on the attending intensivist's judgment. Second, we did not account for the participants' baseline health status, which could have influenced the decision-making process of the attending intensivist as well as the mortality outcomes. Last, the baseline characteristics between the groups were not matched, resulting in a selection bias that may confound the association with mortality. However, it is essential to note that such selection bias is common in most ICUs, and attempting to correct it may yield limited benefits. Future large-scale prospective cohorts or registry-based studies with baseline matching are warranted to address these limitations.

## Conclusions

In our study, patients admitted to an ICU had higher 28-day mortality rates than those assigned to a general ward. Notably, patients with a more severe condition and higher BMI were more likely to be accepted into an ICU. The mortality of critically ill patients was strongly associated with disease severity, and ICU admission did not confer additional mortality benefits.

## Data Sharing Statement

The dataset supporting this study's findings will be available from the corresponding author 1 year after publication for a period of 1 year upon reasonable request.

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The authors have no conflicts of interest to disclose.

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