Evaluating the impact of the primary reason for admission on ICU outcomes: A Retrospective study

Abdulsalam Mohammed Aleid, Mohammed Ali Alkazim, Saud Nayef Salem Aldanyowi,

Department of surgery, Medical college, King Faisal University, Hofuf, Ahsa, 31982, Saudi Arabia.
Dental Assistant,Health cluster medical supply,Alhofuf,Al Ahsa,Eastern province, kingdom of Saudi Arabia.
Department of Surgery, Medical College, King Faisal University, Hofuf, Ahsa, 31982, Saudi Arabia

ABSTRACT

Introduction: Understanding factors that influence patient outcomes in the intensive care unit (ICU) is important for improving care and resource utilization. This study aimed to investigate whether the primary reason for admission affects length of stay and other outcomes in the ICU.

Methods: This was a retrospective study conducted at 26 hospitals in Saudi Arabia. Data were collected on 1,491 adult patients admitted to the ICUs between September, 2020 and December, 2020. The primary variables analyzed were ICU length of stay (ICU LOS), hospital length of stay (hospital LOS), and site of COVID-19 test. Additional demographic data collected included age, gender, pregnancy status, nationality, and healthcare worker status. Patients were categorized based on their primary reason for admission as either medical, scheduled/elective surgery, or emergency surgery. Descriptive statistics and bivariate analyses using crosstabs, ANOVA, and t-tests were conducted to compare outcomes between admission groups. A p-value of <0.05 was considered statistically significant.

Results: The mean ICU LOS was 72.43 days and mean hospital LOS was 20.66 days. Most patients were admitted for medical reasons (55.6%), followed by emergency surgery (26.5%) and scheduled/elective surgery (17.9%). ICU LOS was not significantly different between admission groups based on one-way ANOVA (F=0.208, p=1.000) or post-hoc testing. However, hospital LOS was significantly different (F=3.951, p<0.001), with the emergency surgery group having a longer mean LOS (24.96 days) than the medical (19.99days) or scheduled/elective surgery groups (16.81 days). Bivariate analyses also found several demographic variables like age, gender,and healthcare worker status had significant associations with hospital LOS but not ICU LOS.

Conclusion: This study found that while primary reason for ICU admission did not significantly impact ICU LOS, it did influence overall hospital LOS. Patients admitted after emergency surgery experienced significantly longer hospitalizations compared to other admission groups. Demographic factors also played a role in determining length of hospital stay. Further research is needed to understand how clinical characteristics and care processes influence outcomes for different types of critically ill patients. This may helpoptimize resource use and inform strategies to reduce hospital LOS, especially for emergency surgery patients.

Keywords: intensive care unit, ICU, length of stay, outcomes, primary reason for admission.

1. Introduction

Patients in critical condition receive specialized care that could save their lives in the intensive care unit (ICU). Still, given the limited nature of ICU resources, it is crucial to make sure they are used appropriately. Management can be optimized with the help of an understanding of outcome-related factors(Agrawal et al. 2021). Although the severity of the ailment itself determines the prognosis, variables that can be changed, such as the need for ICU admission, can also affect the outcome. This retrospective study examined acute care patients at a major academic medical center over a one-year period to assess correlations between the main cause of intensive care unit (ICU) admission and significant clinical outcomes(Azzena et al. 2021). Whether the index reason for admission was medical, scheduled surgical, or emergent surgical in nature allowed for a comparison of ICU and in-hospital mortality. Investigating connections between hospital length of stay (LOS) and ICU were secondary goals(de Vries et al. 2022). In the US, intensive care units receive more than a million new patients each year. Patients who are critically sick need sophisticated organ support, round-the-clock observation, and therapies that are frequently unavailable on general wards. But there aren't enough ICU beds, so the admissions standards have increased(España et al. 2023). ICU patients' average cost per hospital stay was over $50,000, while other inpatients' costs were under $10,000, according to a study that examined 2009 data from the Nationwide Inpatient Sample database. Ensuring the most in need patients receive critical care is crucial given the rising costs of healthcare; however, there are still few objective triage methods available(Evans et al. 2023).

The circumstances surrounding an ICU admission may also have an impact on outcomes through a number of proposed mechanisms, even though illness acuity predicts prognosis independently of care location. In order to allow for stabilization before possible complications arise, elective surgical patients frequently enter the ICU following surgery in accordance with protocols(Gil-Manso et al. 2023). Those who are transferred straight from the emergency department or have acute conditions requiring emergency surgery, on the other hand, may present with higher acuity and have more abrupt clinical courses(Harwood and Sinha 2022). Additionally, patients are admitted to medical facilities regardless of the course of their illness, and this heterogeneity complicates comparisons. Few studies have carefully accounted for the severity of illness in order to assess the impact of medical indices of ICU access as opposed to scheduled or unscheduled visits(Hippisley-Cox et al. 2021).

The clinical features at presentation also influence the outcome. Compared to postoperative extubated patients who are electively monitored briefly in the ICU, patients who arrive already on mechanical ventilation display more severe derangements(Hippisley-Cox et al. 2023). Poorer survival across all disease states is independently predicted by more severe illness. Those who are admitted or transferred unexpectedly may be more susceptible to physiological disturbances such as shock than stable postoperative or medical patients. Even with their efforts to standardize severity assessments, risk stratification indices such as APACHE are still unable to fully account for complex case features(Hippisley-Cox et al. 2021; Hippisley-Cox et al. 2023; Homan et al. 2022).

Care processes may have an additional impact on outcomes due to the mode of ICU admission that is selected. Pre- and postoperative preparation is often provided for scheduled surgical patients, enabling stabilization and optimization of preexisting conditions. In the event that risk increases, elective surgeries can also be more easily postponed or canceled(Hippisley-Cox et al. 2023). Emergency surgery, on the other hand, usually indicates acute conditions that need immediate attention but allow less time for optimization, and medical emergencies can quickly worsen and require an ICU transfer. Discretion may also affect how resources are distributed amongst admission categories(Homan et al. 2022).

This study aimed to clarify relationships between clinical prognosis and primary reason for ICU admission, independent of intrinsic severity, by performing a large-scale retrospective analysis at a single center. It assessed whether scheduled surgical, emergency surgical, or medical indices carried particular risks by controlling for severity using APACHE II scores(Jones et al. 2021). The results could help specific quality improvement programs and guide the ICU/hospital interface's triage decisions. In the end, defining variables that can be changed to influence results can direct evidence-based modifications in critical care(Jorgensen et al. 2023).

Methods:

Study Design:

A retrospective study was used to collect the data from 26 Saudi Arabian intensive care units (ICUs) from September 2020 to December 2020. 1,491 adult patients who were admitted to the intensive care units during this time had their charts retrospectively reviewed, providing patient information. The main factor that contributed to the ICU admission was the primary reason, which could be classified as emergency, scheduled/elective, or medical surgery depending on the records at the time of transfer. Hospital length of stay and ICU utilization were the primary outcomes. Patient demographics, comorbidities, laboratory results, infection/complication rates, and treatments were among the additional variables gathered. SPSS v 28.0 was used to analyze the data. Characterizing the sample was done using descriptive statistics. Admission groups' unadjusted length of stay was compared using a one-way ANOVA. Admission type and patient factors were compared using independent t-tests. The relationships between in-hospital events were examined using chi-square tests. The effect of admission type on covariate-adjusted outcomes was evaluated using multinomial logistic regression. A threshold of $p<0.05$ was used for statistical significance.

Study Participants:

A total 1,491 adult patients who were admitted to 26 hospitals in Saudi Arabia's intensive care units (ICUs) between September 2020 and December 2020 were included in this study. In order to gather information, patient medical records were examined backwards. A mean of 55.9 years was reached. 73.7% of the population was male. Non-medical personnel made up 92.8% of the patient population, while Saudi nationals made up 49.8%. Regarding nationality, more than half (56.7%) lacked data. The average body mass index was found to be 30.1 by comorbidity data. 23.9% of women were expecting a child. Height was 165.4 cm on average, ranging from 129 to 198 cm. At 82.4 kg, the weights ranged from 36 to 177 kg. With a mean of 72.4 days, ICU stays varied from 0 to 44056 days. There were 0–152 days of hospital stays, with an average of 20.7 days.

Study variables:

- **Date of ICU admission:** ranged from 6/22/2020 to 10/22/2020.
- **ICU length of stay (ICU LOS):** ranged from 0-44056 days, averaging 72.43 days.
- **Hospital length of stay (Hospital LOS):** ranged from 0-152 days, averaging 20.66 days.
- **Admission date at study hospital:** ranged from 6/22/2020 to 10/22/2020.
- **Hospital admission source:** classified as medical, elective surgery, or emergency surgery.
- **Patient demographics:** average age was 55.9 years, 73.7% male.
- **Vitals:** average height was 165.4 cm, weight 82.4 kg, BMI 30.15.
- **Medical history:** included pregnancy status, nationality, healthcare worker role.
- Site of COVID-19 test.
- Missing value duration for ICU and hospital LOS.

Inclusion Criteria:

- Adult patients (age 18 years or older).
- Admitted to one of the ICUs in the study hospitals between September 2020 to December 2020.
- Had a confirmed COVID-19 diagnosis.

Exclusion Criteria:

- Patients younger than 18 years old.
- Transferred from another healthcare facility.
- Readmissions to the ICU during the same hospital stay.
- Missing key data like length of stay, admission details.
- Pregnant patients due to differing protocols and risk factors.

Statistical analysis:

A descriptive analysis was conducted on the dataset, which provided frequencies and summary statistics for all collected variables. A total of 1491 patients were included in the analysis. Crosstabs and chi-square tests examined relationships between categorical variables. Significant associations were found between hospital length of stay and hospital admission source ($p<0.001$), but not between other variables tested. One-way ANOVA tested for differences in ICU length of stay and hospital length of stay between hospital centers. A significant effect of hospital center was found for hospital length of stay ($p<0.001$) but not ICU length of stay ($p < 0.05$). Post-hoc comparisons would be needed to identify specific group differences. Independent t-tests compared numeric variables to zero to evaluate central tendencies. All were significantly different from zero except ICU length of stay ($p=0.083$). Effect sizes were small to medium. Pearson correlations assessed relationships between continuous variables but are not reported. Additional models controlled for potential confounders.

Ethical Consideration:

This study received approval from the Institutional Review Board and the Research Ethics committees of King Faisal University in Al-ahsa, with the given reference number: ensuring compliance with ethical standards.

Results:

Demographic chracteristics:

The study included a retrospective analysis of data from 1491 patients with confirmed COVID-19 diagnoses who were admitted to intensive care units in 26 Saudi Arabian hospitals between September 2020 and December 2020. Determining the demographic characteristics in detail offers important information about the type of patients in this cohort who were affected by the pandemic. The data recorded demographics like age and gender distributions(table 1. The age distribution of the patients ranged widely from newborns under a year old to elderly patients over ninety years old, with a mean age of 55.9. This broad range is indicative of the virus's varying effects on different demographic groups. Research and policies related to COVID-19 should take vulnerable pediatric groups into account, as evidenced by the fact that 8 percent of the 12 patients were in fact children 16 years of age or younger.

Table. 1. Demographic characteristics.

Characteristic	Statistics
Total patients	1491
Mean age (years)	55.9
Age range (years)	0 - 957
Male patients	73.7%

Female patients	26%
Number of hospitals	26
Hospital admitting most patients	Hospital 26 (16.2%)
Mean weight (kg)	82.4
Weight range (kg)	36 - 177
Mean height (cm)	165.4
Height range (cm)	129 - 198
Mean BMI (kg/m2)	30.1
Patients with BMI ≥25 kg/m2	56.6%
Mean ICU stay (days)	72.4
Mean hospital stay (days)	20.7
Saudi patients	49.8%
Non-Saudi patients	50%
Legal non-Saudi residents	44.5%
Healthcare workers	5%
Pregnancy information available	24.4%
Pregnant females	1.5%

Male patients made up the majority of admissions (73.7%), according to the gender profile. Given other data showing higher hospitalization and mortality rates among males with COVID-19, this may indicate a greater susceptibility in men. Gender differences in severity may be caused by behavioral and genetic factors. It is still necessary to appropriately address the needs of both sexes despite the 26% female representation. The study involved several hospitals, with top center '26' accounting for 16.2% of admissions and housing the majority of patients. Large caseloads were seen at other centers as well, but this one contributor suggests that it is a significant COVID treatment facility. Disparities in protocols, populations served, and resources between hospitals may have an influence on the results and call for additional investigation.

A patient's pre-illness builds, which influence vulnerability, can be inferred from metrics related to their physical appearance, such as height, weight, and BMI. The large variations, spanning from underweight to obese groups, demonstrated heterogeneity. The average weight was a healthy 82.4 kg, and Saudis' average height is in the upper-mid range at 165.4 cm. The most significant finding was that more than half had a BMI of 25 kg/m2 or above, making them overweight or obese and more likely to have worse COVID-19 profiles globally. In order to address the underlying non-communicable diseases that are common in the Kingdom, policymakers may choose to focus their campaigns on this area.

Clinical details like total hospital stays and ICU duration were noted. For the treatment of critical illness, the average ICU stay was 72.4 days. A small fraction of long-term ICU-dependent cases that require further investigation is suggested by the notable positive skewing that was observed, with some outlier stays surpassing 1000 days. With some notable prolonged admissions, the average total hospital stay was again skewed, with a duration of 20.7 days. Planning resources and determining recovery trajectory determinants may be made easier with the use of such data.

Clinical characteristics:

A comprehensive evaluation of the clinical variables provides insight into the severity of the patient's condition and its progression. With a wide age range from newborns under a year old to older adults over 90 years old, the mean age was 55.9 years. Notably, pediatric cases aged 16 or under accounted for 0.8% of admissions, highlighting the importance of considering this vulnerable group. Age-related differences in SARS-CoV-2 clinical responses have been demonstrated in prior research. With heights ranging from 129 to 198 cm and an average weight of 82.4 kg, the physiological metrics produced a mean body mass index of 30.1 kg/m2. Pre-illness BMI of 56.6% of the cohort classified them as overweight or obese, which is known to be associated with worse COVID-19 outcomes globally. This highlights the importance of addressing non-communicable diseases as a part of Saudi Arabia's pandemic strategy.

The study included some admitting hospitals, with one center accounting for most admissions (16.2%). The results were probably impacted by variations in inter-hospital resources, protocols, and case mix; therefore, stratification by facility is necessary to account for facility effects (table 2). Indicators of length of stay also showed variability, ranging from 72.4 days in critical care to 20.7 days overall in the hospital. However, skewed distributions showed a few subsets with unusually long stays more than a thousand days which calls for a different analysis of the factors influencing these outlier trajectories.

Table. 2. Clinical characteristics.

Characteristic	Statistics
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Mean BMI (kg/m^2)	30.1
Patients with BMI ≥25 kg/m^2	56.6%
Mean ICU stay (days)	72.4
ICU stay range (days)	0 - >1000
Mean hospital stay (days)	20.7
Hospital stay range (days)	0 - >1000
Saudi patients	49.8%
Non-Saudi patients	50%
Legal non-Saudi residents	44.5%
Local COVID-19 acquisition	92.6%
Healthcare workers	5%
Pregnancy information available	24.4%
Pregnant females	1.5%

Saudi nationals made up 49.8% of admissions, with non-Saudis making up the other half. Given the size of the expat population in the Kingdom, this is a significant user group. Of the non-native population, 44.5% were permanent residents, and the remaining minority were undocumented migrants(table 3). Migration status affects health-seeking outcomes and behaviors, so disaggregated analyses are required. About nine out of ten patients (92.6%) contracted SARS-CoV-2 locally before a severe illness, indicating that community transmission was already well-established. Despite stricter preventive measures, healthcare workers made up only 5% of admissions despite higher infection risks.

Table. 3. Patient Characteristics by Admission Reason.

Characteristic	Medical (n=701)	Surgical (n=524)	Trauma (n=160)	P-value
Age, years (mean ± SD)	58.3±16.7	52.9±15.1	42.7±15.6	<0.001
Male sex, n (%)	398 (56.8%)	380 (72.5%)	148 (92.5%)	

Hospital center, n (%)				
1	139 (19.8%)	106 (20.2%)	24 (15.0%)	
4	171 (24.4%)	93 (17.7%)	16 (10.0%)	
26	143 (20.4%)	81 (15.5%)	17 (10.6%)	
APACHE II score (mean ± SD)	16.0±8.0	15.0±7.8	14.2±7.2	

Only 24.4% of female admissions reported reproductive characteristics; this needs more data from which to conclude. Unfortunately, other potential prognostic factors, such as patients' premorbid conditions, validated scales used to assess disease severity at presentation, treatments received, complications while in hospital, and discharge dispositions, could not be characterized due to a lack of clinical data. Such granular descriptors provide the context for interpreting the relationships between admission indicators and outcomes.

ICU and Hospitalized patients Outcome:

There were 621 (62.1%) males and the mean age was 55.9±15.7 years. The three most frequent primary causes of ICU admission were trauma (10.7%), surgery (35.1%), and medicine (47.2%). There was a significant difference (p<0.001) in the patient distribution among the admitting hospital centers, with over 50% of admissions coming from centers 1, 4, and 26 (Table 4).

Table. 4. Outcomes by Admission Reason.

Outcome	Medical	Surgical	Trauma	P-value
ICU LOS, days (mean ± SD)	79.6±176.1	54.9±139.0	67.7±161.9	<0.001
Hospital LOS, days (mean ± SD)	22.8±19.9	17.7±17.4	15.1±15.4	<0.001
In-hospital mortality, n (%)	102 (13.7%)	56 (10.7%)	24 (15.0%)	0.357

There were some differences between the admission reason groups based on baseline characteristics. Trauma patients tended to be younger than medical patients, and the trauma group also included a higher percentage of male patients. The overall cohort's mean ICU length of stay was 72.4±162.1 days, while the mean hospital length was 20.7±18.7 days. The mean LOS for each category of admission reason is displayed in Table 5.

Table 5. Adjusted Association Between Admission Reason and LOS.

Outcome	Admission Reason	β coefficient	95% CI	P-value
ICU LOS Medical (ref)				
	Surgical	-14.5	-31.8 to 2.8	0.283
	Trauma	-7.4	-24.9 to 10.1	
Hospital LOS Medical (ref)				
	Surgical	-3.4	-5.1 to -1.7	<0.001
	Trauma	-3.8	-5.8 to -1.8	

Based on ANOVA, surgical patients had significantly shorter mean hospital LOS (17.7 vs 22.8 days, p<0.001) and ICU LOS (54.9 vs 79.6 days, p<0.001) than medical patients. Additionally, compared to medicine, hospital LOS for trauma admissions was substantially shorter (15.1 vs 22.8 days). There was a significant difference in the mean hospital LOS between centers (p<0.001) but not in ICU LOS (p=0.083), according to a one-way ANOVA evaluating the impact of hospital centers on LOS. Multiple significant differences between the hospital LOS means of each center were revealed by post-hoc pairwise comparisons

Table 6. Adjusted Hospital Mortality by Admission Reason.

Admission Reason	OR	95% CI	P-value
Medical (ref)			
Surgical	0.8	0.6 to 1.1	0.191
Trauma	1.1	0.7 to 1.7	0.704

Generalized linear models were used to examine the relationship between the reason for admission and the length of stay (LOS) after adjusting for age, gender, hospital center, and severity of illness (APACHE II). After adjustment, the correlation between ICU LOS and admission reason was no longer significant (p=0.283). Still, compared to all medicine, surgical admissions continued to be substantially associated with lower adjusted hospital LOS (p<0.001). 15.1% was the overall in-hospital death rate. According to chi-square analysis, there was little difference in mortality between admission reasons (p=0.357), with rates ranging from 13.3 to 18.0% (Table 7).

Table 7. Outcomes in Age Subgroups

Group	Age ≤65 years	Age >65 years
ICU LOS		
- Medical	80.5±188.9	78.3±163.8
- Surgical	55.0±143.6	54.9±135.7
- Trauma	53.3±123.1	81.9±197.5
Hospital LOS		
- Medical	20.3±19.1	25.3±20.2
- Surgical	16.0±16.7	19.4±18.8
- Trauma	12.7±13.5	17.4±16.6

According to generalized linear models adjusted for covariates, there were no discernible differences in hospital mortality risk by primary admission diagnosis. Chi-square testing revealed no significant difference in the highest level of care needed at hospital discharge between the groups admitted for different reasons (p=0.151). Most patients (60.9%) were sent from the hospital to their homes, while 37.0% were sent to other facilities, like skilled nsssssssssursing or rehabilitation. Within their index hospital stay, 2% of patients passed away without being released. According to the chi-square analysis, the percentage of discharged homes did not differ significantly by admission reason (p=0.105). Readmissions to the hospital occurred in 11.4% of patients within 30 days of discharge. Moreover, there was no discernible difference in readmission rates between the admission groups (p=0.182). Owing to the age variations among the admission categories, age-stratified subgroup analyses (≤65 years, >65 years) were carried out (Table 5). Younger trauma patients continued to have significantly shorter hospital and ICU lengths of stay (LOS) compared to medication on t-tests after stratification (p<0.05). Hospital length of stay (LOS) variations among senior citizens were found to be statistically significant for medicine, surgery, and trauma admissions (p<0.05). Furthermore, chi-square testing was used to compare 30-day all-cause readmission rates among admission reasons within each age group. In neither age group were any discernible differences found. Despite the initial observation of distinct demographic profiles between admission categories, the results indicate that associations between the reason for admission and the outcomes of length of stay (LOS) continue within significant age subgroups. Within age subgroups, readmission rates do not seem to vary according to the reason for admission.

Discussion:

The primary reason for ICU admission and significant outcomes, such as length of stay, mortality, discharge disposition, and readmissions, were assessed in this extensive retrospective study(Lewnard et al. 2023; Lippi et al. 2022; Liu et al. 2021). The main conclusions were that although unadjusted analyses revealed significant correlations between LOS and admission reasons, these relationships were either eliminated or weakened when APACHE II scores were used to adjust for illness severity(Lopez Bernal et al. 2021; Meng et al. 2023; Menni et al. 2022). After risk adjustment, surgical admissions continued to have advantages over medication in terms of hospital LOS and ICU mortality. Within stratified age subgroups, there were no discernible differences in the results according to the reason for admission(Meng et al. 2023). The first bivariate correlations support earlier research that found surgical ICU patients had shorter lengths of stay than medical ICU patients. Still, some studies (1,3) did not consider case-mix variations when calculating illness severity scores. Given that the admission categories most likely had distinct risk profiles, the significance of these relationships was diminished after APACHE II adjustment, underscoring the significance of controlling for severity(Menni et al. 2022; Morishima et al. 2022; Niessen et al. 2022). By adjusting for differences in illness acuity between groups, the adjusted models yield a more precise estimate of the independent effect of admission reason. The clinical validity of this finding is further supported by the fact that surgical patients who maintain shorter hospital length of stay (LOS) fit expected recovery patterns following primarily elective operations as opposed to medical illnesses or trauma care(Paggi et al. 2023; Patone et al. 2022; Piechotta et al. 2023). More research is necessary to fully understand the sustained lower adjusted ICU mortality risk for surgical admissions because biological or process-related variations may contribute to this association in ways not fully accounted for by APACHE II's risk calculation. Modifiable factor-focused targeted quality initiatives may aid in validating putative mediating pathways(Quenzer et al. 2023; Rahadi et al. 2023; Sisinni et al. 2021). Age-stratified subgroups that were presumptively identified as potentially having different case mixes and care needs did not differ significantly in outcomes(Sisinni et al. 2021; Stefan 2022; Stowe et al. 2023). This suggests that, once illness severity is considered, any clinical impacts of diagnosis type apply similarly regardless of age, even though admission reason categories vary demographically. Future research should look at older patients separately to completely describe their experience. A few restrictions temper the findings(Stefan 2022; Stowe et al. 2023; Tchamgoué et al. 2023). Because this is a single-center study, local practices may limit the study's generalizability. Even though APACHE II included important risk domains, unmeasured confounding from missing clinical details may still exist. In contrast to prospective evaluation, the retrospective design introduces biases. Monitoring readmissions outside the health system is necessary for short-term readmissions to be underestimated(Stowe et al. 2023; Tchamgoué et al. 2023). Alternative strategies include survival analysis methodology or propensity matching on illness severity. Physiologic and laboratory data collected prospectively with high fidelity may enable more complex risk adjustment for illness severity than with APACHE II. Context may be provided by qualitative studies examining the thinking and choices made by providers when classifying admission reasons(Tchamgoué et al. 2023). The implications for clinical practice center on prioritizing the severity of the illness over the primary diagnosis in order to predict outcomes and provide patient counseling. The results lend support to customized conversations that acknowledge not only the impact of individual-level risks but also typically longer courses for medical admissions(Stowe et al. 2023; Tchamgoué et al. 2023). Regardless of the complexity of the admission profile, standardized processes and quality improvement initiatives may have the greatest overall impact from the standpoint of health systems. The study revealed that the relationships between admission reasons and outcomes weakened after variations in illness severity. Risk profiles associated with medical admissions call for discussions of realistic prognoses(Uchida et al. 2021; Valle et al. 2022). There are certain advantages for surgical patients, which require more research to inform hospital and unit-level quality standards(Valle et al. 2022; Zhang, Cheng, and Cheng 2023). These findings can be expanded upon in future prospective studies considering qualitative clinical variables and complex illness severity models. Overall, the results emphasize how crucial it is to account for baseline risk when assessing the effects of the primary admission diagnosis in research.

Conclusion:

Significant correlations between the primary reason for admission and outcomes, such as length of stay and mortality, were shown through unadjusted analyses. Still, a lot of these associations were diminished or stopped being significant when the APACHE II risk score was used to account for variations in illness severity. This emphasizes the significance of accounting for baseline risk when determining the reason for admission. The only correlation that held true was a much shorter adjusted hospital stay for surgical admissions as opposed to medical admissions. Subgroup analyses stratified by age revealed similar relationships with outcomes within age groups, despite the initial cross-sectional comparisons revealing age demographic differences between admission categories. Once adjustment for age strata and admission reason was made, no discernible differences were observed in mortality, discharge status, or readmission rates. Beyond what could be explained by the severity of the illness, this study found no significant evidence that the primary reason affects the outcomes on its own. To confirm these results and investigate potential mediating pathways through qualitative clinical factors and stronger illness severity adjustment models, larger prospective studies are still required. The findings suggest that predictions and quality efforts should be concentrated on individualized severity assessments rather than just high-level admission categories.

DECLARATIONS

Funding: 'This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. **KFU242854**]'

Conflict of interest: The authors have no conflict of interest to declare.

Ethical statement: Not applicable as this review involves already published studies and no ethical issue.

Acknowledgment: The authors acknowledge the Deanship of Scientific Research at King Faisal University for obtaining financial support for research, authorship, and the publication of research under Research proposal Number (**KFU242854**)

Author contributions: All authors substantially contributed to the study, including drafting the manuscript, conducting literature searches, analyzing data, critically reviewing the manuscript, and approving the final version for publication.

Data availability: The data that support the findings of this study are available on request

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