

SYNOPSIS FOR DISSERTATION



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

**Master of Business Administration (MBA) in
Hospital and Health Management by**

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Synopsis

Title: Evaluating APACHE II for Predicting ICU Deaths and Measuring Quality with SMR

Introduction

Patients admitted to the Intensive Care Unit (ICU) are generally in serious condition and need to be attended to by medical staff all the time. One way of supporting clinical staff in judging how severe an illness is and forecasting a patient's outcome is to apply APACHE II (Acute Physiology and Chronic Health Evaluation II) scoring. It uses information on vital signs, test results and a patient's case history to predict the risk of death. It helps inform decisions about treatment and the use of resources, enabling efficient and specific care for patients in critical units.

Need for the Study

Eternal Hospital will be undergoing NABH inspection, and the inclusion of the Standardized Mortality Ratio (SMR) as a quality indicator for ICU care is a new addition in the 6th edition of NABH standards. In light of this, the present study aims to evaluate how well the APACHE II scoring system correlates with actual patient outcomes in the ICU. While APACHE II is widely recognized for predicting ICU mortality, its effectiveness should be periodically validated within individual hospital settings. By comparing predicted deaths (based on APACHE II) with actual outcomes, the SMR serves as a key benchmark to identify areas needing improvement.

Research Question

How effectively does the APACHE II scoring system predict patient outcomes in the ICU at Eternal Hospital, and can it be reliably used to calculate the SMR as a measure of care quality??

Objectives

1. To Calculate APACHE II scores for ICU patients at Eternal Hospital, Jaipur from January to April 2025.
2. To Investigate the association between APACHE II score ranges and patient outcomes (survival or mortality) to confirm the scoring system's predictive accuracy.
3. To Assess the effectiveness of the APACHE II scoring system in predicting ICU mortality.
4. To Calculate the Standardized Mortality Ratio (SMR) using APACHE II-based mortality predictions.

Hypothesis

1. Null Hypothesis (H_0): There is no statistically significant correlation between APACHE II scores and ICU outcomes at Eternal Hospital.
2. Alternative Hypothesis (H_1): APACHE II scores are statistically connected to ICU outcomes at Eternal Hospital.

Methodology

1. Category of Study: Prospective observational study
2. Current place: ICU, Eternal Hospital in Jaipur
3. Duration from January to May 2025.
4. The study subjects were all adults admitted to the ICU from the start of the study.
5. Those who qualify are adults, 18 years old and up, with complete medical documentation.

6. We excluded paediatric patients and cases in which records were unavailable or incomplete.
7. Each patient's APACHE II score will be personally calculated by the researcher using the patient's first 24 hours of ICU information.
8. The scoring tool used for this case is APACHE II.
9. We may use either Microsoft Excel or SPSS for your analysis.
10. SMR Calculation: First, the number of real deaths among patients is compared to the number predicted by APACHE II.

Expected Outcome

This research will likely prove that APACHE II scores can predict ICU patient outcomes at Eternal Hospital. The outcomes of this research will be useful when guiding clinical actions, managing resources and supporting improvements in care quality. Importantly, the SMR obtained from APACHE II will support us in controlling and enhancing ICU performance by meeting NABH quality standards.