

## Abstract

**Background and aims:** APACHEII, SOFA and MPM II scales are one of the most common and reliable universal scoring systems in the world, With the help of them, the recovery and mortality rate for patients in the intensive care unit can be predicted. Therefore; the present study was conducted to compare the accuracy of these tools in predicting the mortality rate of patients in intensive care unit of hospitals affiliated to Ardabil university of medical sciences.

**Methods:** This cross-sectional descriptive study was carried out with 150 patients hospitalized in the intensive care units of hospitals affiliated to Ardabil university of medical sciences in 2017. The entrance criterias in our study include hospitalized admission to the intensive care unit at least 24 hours, patients older than 18 years, had not heart surgery and burn, and had satisfaction. The data collection tools were a demographic form, questionnaire of SOFA, APACHEII and MPMII. The data collection lasted for three months. Data entered to SPSS software version 23. They analyzed by using descriptive statistics (mean and standard deviation) and analytical (logistic regression, Pearson correlation, sensitivity and specificity).

**Results:** The results showed that 85 patients (55.2%) were male. The mean age of patients was  $19.62 \pm 60.74$  years. The duration of hospitalization was  $10.17 \pm 10.34$  days. 52 (34.7%) patients of 150 patients died. To investigate the effective factors of estimate mortality, Logistic regression model used. The results showed that none of the factors such as type of hospital, gender, age, duration of hospitalization, duration of intubation, diagnosis and GCS were not effective on mortality. In the study of the accuracy of three instruments, the mean percent predicted mortality by APACHEII was 32.21%, SOFA was 32.50% and MPMII was 64.01%. The sensitivity and specificity of APACHEII were 83% and 48%, SOFA 79% and 46%, and MPMII 73% and 50% respectively.

**Conclusion:** The variety of predictive tools for patients' mortality, and the confusion and differences between the members of the treatment team in selecting and applying them, necessitate the selection of an appropriate high-accuracy instrument based on scientific data. Therefore; considering that Apache 2 scoring system in our research compared with other two instruments showed higher accuracy in predicting mortality, it is recommended to use it as a priority.

**Keywords:** APACHE II; SOFA; MPM II; Mortality; Intensive care unit.