

Predictive Value Modified Sick Neonatal Score (MSNS) On Critically Ill Neonates Outcome Treated in Neonatal Intensive Care Unit (NICU)

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Abstract : Background: Critically ill neonates are newborn babies with high-risk factors that potentially cause disability and/or death. Scoring systems for determining the severity of the disease have been widely developed as well as some designs for use in neonates. The SNAPPE-II method, which has been used as a mortality predictor scoring system in several referral centers, was found to be slow in assessing the outcome of critically ill neonates in the Neonatal Intensive Care Unit (NICU). Objective: To analyze the predictive value of MSNS on the outcome of critically ill neonates at the time of arrival up to 24 hours after being admitted to the NICU. Methods: A longitudinal observational analytic study based on medical record data was conducted from January to August 2022. Each sample was recorded from medical record data, including data on gestational age, mode of delivery, APGAR score at birth, resuscitation measures at birth, duration of resuscitation, post-resuscitation ventilation, physical examination at birth (including vital signs and any congenital abnormalities), the results of routine laboratory examinations, as well as the neonatal outcomes. Results: This study involved 105 critically ill neonates who were admitted to the NICU. The outcome of critically ill neonates was 50 (47.6%) neonates died, and 55 (52.4%) neonates lived. There were more males than females (61% vs. 39%). The mean gestational age of the subjects in this study was 33.8 ± 4.28 weeks, with the mean birth weight of the subjects being 1820.31 ± 33.18 g. The mean MSNS score of neonates with a deadly outcome was lower than that of the lived outcome. ROC curve with a cut point MSNS score <10.5 obtained an AUC of 93.5% (95% CI: 88.3-98.6) with a sensitivity value of 84% (95% CI: 80.5-94.9), specificity 80 % (CI 95%: 88.3-98.6), Positive Predictive Value (PPV) 79.2%, Negative Predictive Value (NPV) 84.6%, Risk Ratio (RR) 5.14 with Hosmer & Lemeshow test results $p>0.05$. Conclusion: The MSNS score has a good predictive value and good calibration of the outcomes of critically ill neonates admitted to the NICU.

Keywords : critically ill neonate, outcome, MSNS, NICU, predictive value

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