International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(REVIEW ARTICLE)

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Validation of the crib ii score for predicting very low birth weight infants' mortality

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International Journal of Science and Research Archive, 2024, 12(02), 1191–1193

Publication history: Received on 10 June 2024; revised on 16 July 2024; accepted on 19 July 2024

Article DOI: https://doi.org/10.30574/ijsra.2024.12.2.1314

Abstract

Objective- To validate Clinical Risk Index for Babies (CRIB II) score in predicting the mortality of preterm, VLBW babies and to study the correlation of risk factors with Clinical Risk Index for Babies(CRIB II)

Methods- A Prospective observational study was done in Preterm, VLBW neonates admitted in our neonatal intensive care unit (NICU)over a period of 1 year from November 2021 to December 2022 in 50 subjects.

Result Out of 50 VLBW neonates, 32 (64%) were level 1 score, 12 (24.00%) were level 2 score, 5 (10.00%) were level 3, 1 (2%) were level 4 score. Out of 50 VLBW babies, 32 (64%) were survived and 18(36%) were expired. There is a strong, negative correlation between CRIB II score and birth weight of infants with p 0.001 and r=-0.79

Conclusion-. The present study concludes that CRIB II a score is effective in predicting the mortality in VLBW babies. Survival is more among babies in level 1 score. The more the CRIB II score, the less is the chance of survival.

Keywords: CRIB II; VLBW; Hypoglycemia; Infection; respiratory distress

1. Introduction

The neonatal period is counted from birth up-to four weeks of life. Early neonatal period accounts to first 7 days or 168 hours of life, whereas late neonatal period extends from 7 days to the first four weeks of life. It is the time during which new born is exposed to high risk owing their transition from intrauterine to extrauterine life. Accordingly, this period of life has a high mortality rate. Prematurity is the major cause of morbidity in neonates especially very low birth weight (VLBW) neonates.

According to World Health Organization, the neonatal mortality rate is 28/1,000 live births in the world[1]. The WHO estimates that globally about 25 million LBW babies are born each year, consisting of 17% of all live births, nearly 95% of them in developing countries. Nearly 46% of all maternal deaths and 40% of all neonatal deaths occur during the first 24 hours after birth. Prematurity (35%), neonatal sepsis (33%), perinatal asphyxia (20%) and congenital malformations (9%) are the major causes of neonatal deaths.

India has NMR of 22/1000 live births[2]. The millennium development goal 4 (reducing under- 5 mortality by two- thirds) could not be achieved without significant reduction in neonatal deaths.

In India, VLBW babies constitute 4% to 7% of live births and approximately 30% of neonatal deaths. VLBW infants account for more than 50% of neonatal deaths globally. VLBW mortality is the major contributor of infant mortality rate.

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The main reason for increasing mortality and morbidity in VLBW neonates is due to their physiologic and metabolic immaturity. VLBW babies are susceptible to hypoglycemia, jaundice, infection, respiratory distress, apnea of prematurity (AOP), perinatal asphyxia, re- hospitalisation during their neonatal period[3-5]. VLBW is one of the most serious challenges in Maternal and Child Health in developing countries.

Nearly half of neonates who survive to hospital discharge have complications later which will affect the quality of their life. Despite improvement in the neonatal care and facilities, neonatal mortality remains high particularly in the developing countries.[6]

The probability of death or survival in the Newborn Care Unit depends on perinatal factors and physiological conditions at the time of admission, which can be evaluated through scoring systems. Scoring systems include CRIB, CRIB II, SNAP, SNAPPE II etc.Scores are given for birth weight,gestational age,maximum and minimum fraction of inspired oxygen and presence of congenital malformation.

CRIB II (Clinical Risk Index for Babies) is used in several countries to identify high-risk neonates and found to be more accurate. No such studies have been done previously in our setting, hence present study is done to apply CRIB II score to preterm, VLBW babies and identify the at-risk babies as early as possible and take necessary interventions to reduce the mortality. CRIB II score is validated in predicting mortality of preterm and VLBW babies.[7,8]

Objective

- To validate Clinical Risk Index for Babies (CRIB II) score in predicting the mortality of preterm, VLBW babies admitted to NICU,AIMS&RC
- To study the correlation of risk factors with Clinical Risk Index for Babies (CRIB II) score.

2. Methods

- Study design: Prospective observational study
- Study Place: NICU, AIMS & RC, Devanahalli
- Study sample: Preterm, VLBW neonates admitted in NICU, AIMS & RC, Devanahalli.
- Study duration: November 2022 to December 2023
- Sample Size: 50

3. Results

Table 1 CRIB II score of VLBW neonates

Level	No. of infants	%
Level I	32	64%
Level II	12	24%
Level III	05	10%
Level IV	01	02%

32 (64%) babies come under level 1 CRIB II score, 12(24.00%) to level 2, 5 (10.00%) to level 3, 1 (2%) to level 4 CRIB II score.

Table 2 Distribution of VLBW neonates according to outcome

	No. of Infants	%
Survived	32	64%
Expired	18	36%
Total	50	100%

Out of 50 VLBW neonates, 32 (64%) were survived and 18 (36%) were expired

Table 3 Correlation between mean CRIB II score and birth weight of VLBW Neonates

Correlation between	Mean ± SD	Kearl pearson correlation coefficients	Interpretation
CRIB II score and birth weight	5.85± 3.26 1135.97± 125.15	r= -0.79 P=0.001	There is a significant (p≤0.001),negative,strong correlation between CRIB II score and birth weight of infants.It means CRIB II score increases as birth weight decreases.

4. Conclusion

The current study concludes that CRIB II score is effective in predicting the mortality in VLBW babies. Survival is more among babies in level 1 score. There is a strong negative correlation between CRIB II, birth weight, temperature at admission, base excess, gestational age. The more the CRIB II score, the less is the chance of survival.

The babies with higher CRIB II score have to be intervened early in order to decrease the mortality.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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