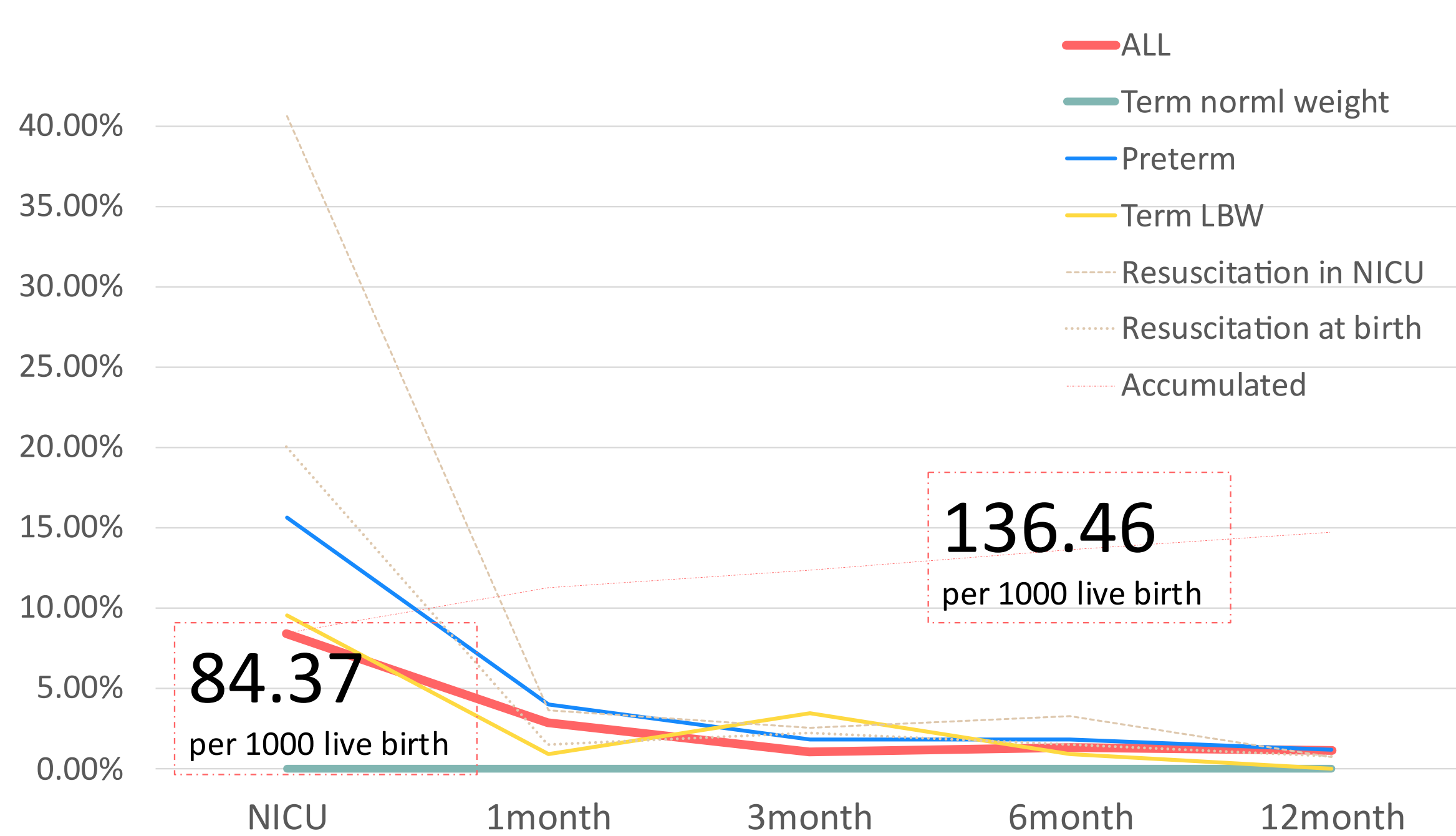


Death & poor growth still threaten NICU graduates in rural South Sudan

MORTALITY, GROWTH AND NEURODEVELOPMENTAL OUTCOMES OF NEWBORNS TREATED IN AWEIL CIVIL HOSPITAL FOLLOWED FOR 24 MONTHS AFTER BIRTH - A PILOT ANALYSIS

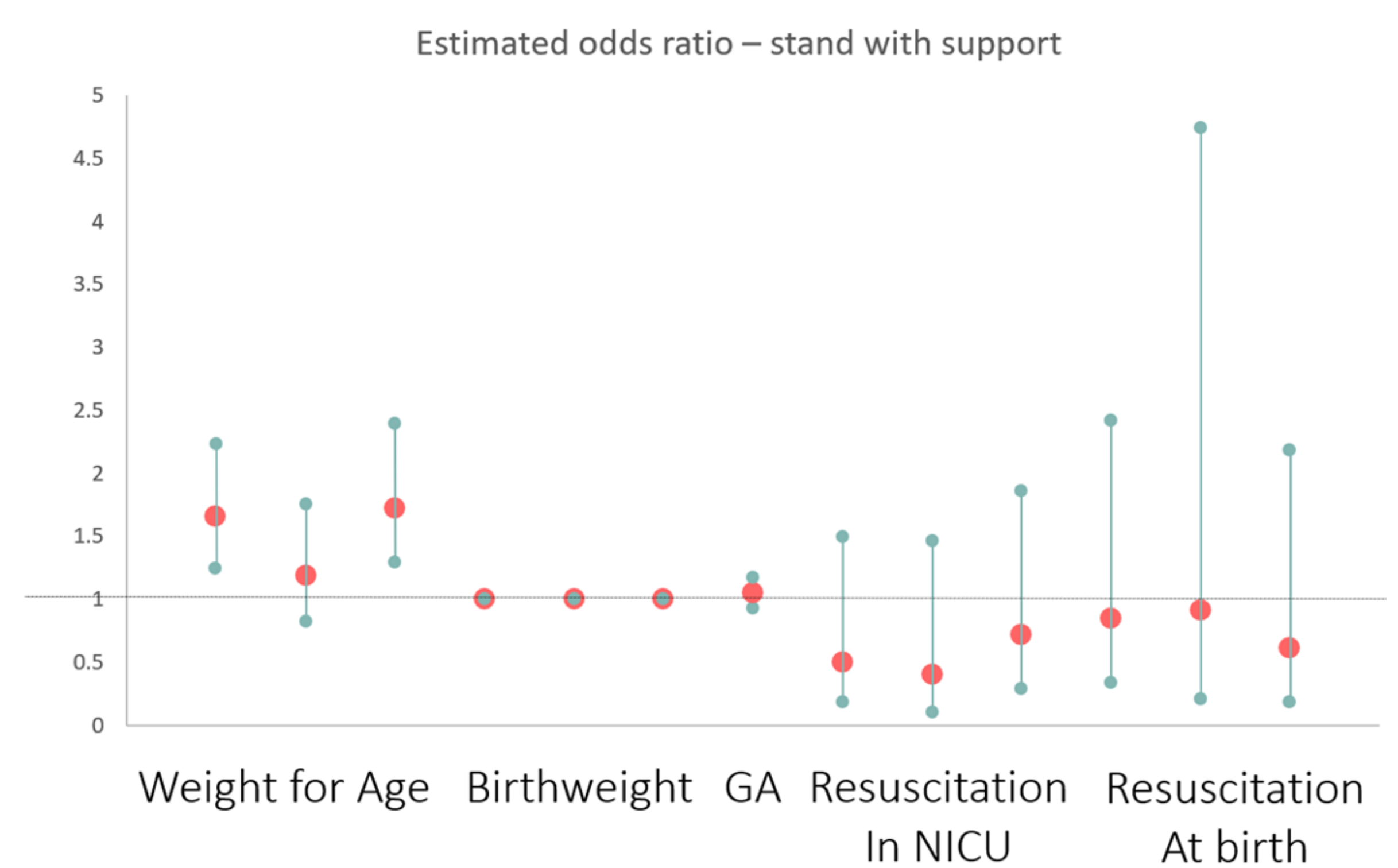
Background: little is known about long-term outcomes of NICU survivors in low-resource settings. We aimed to describe mortality, growth, and neurodevelopmental outcomes of newborns admitted to a low-technology NICU in Aweil Civil Hospital, South Sudan, followed up to 24 months of age.

Mortality keeps rising after NICU discharge — from 84.4 per 1000 live births in the unit to 136.5 per 1000 by 6 months.



Most deaths occurred among preterm and low-birth-weight babies. The highest mortality was recorded in the NICU, with the first three months post-discharge remaining a critical period.”

After correction of birth weight & prematurity, weight for age is positively associated with gross motor development.



Grow first then learn. The impact of resuscitation at birth or during NICU stay on neurodevelopmental outcome (gross motor achievement) is examined using logistic regression under correction of birth weight and prematurity. Weight for age is significantly associated with the motor outcome among term normal birth weight and preterm babies.

Methods & Additional Results

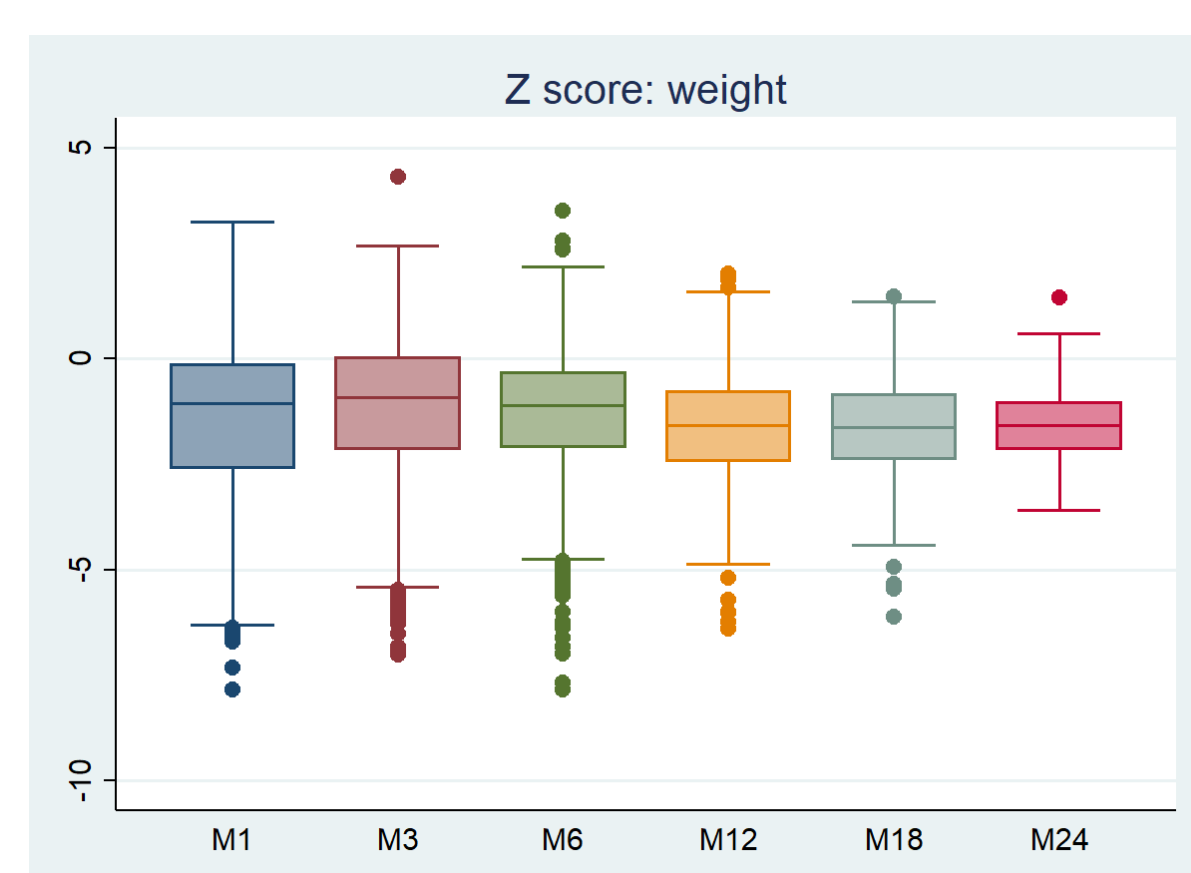
A prospective cohort study of all neonates admitted between September 2016 and September 2017. Post-discharge follow-up was planned at 1, 3, 6, 12, 18 and 24 months. Data collected included anthropometric measures and neurodevelopmental assessments using the DMC-II tool. Analyses focused on cumulative mortality, growth indicators (WAZ, HAZ, WHZ, MUAC), and gross motor skill development. Subgroup comparisons were made by birthweight, gestational age, and resuscitation exposure using T-tests, Fisher’s exact test, and logistic regression.

Inclusion & assessment tool

- Inform consent
- Contact information
- Hospital record
- Maternal history
- Birth history
- Hospital course
- Diagnosis
- Discharge condition
- Status
- Vaccination/Breast feeding
- Height/Weight/MUAC
- Developmental milestones

	Cost	Time	Training	Illiteracy	Application
Bayley III*	High	High	Standard	High	assessment
Denver II*	High	High	Standard	High	assessment
DMC II	Free	Low	Minimal	Low	assessment
ASQ3	Free	Low	Minimal	High	screening
Ten questions	Free	Low	Minimal	Low	screening

Overall growth is below global average and exacerbates with time



Decreasing Z score through time is observed in all growth indicator except head circumference.

At 12 months, 27.8% of infants had not achieved standing with support, and 22.6% could not walk with assistance — both below the 97th percentile according to WHO developmental norms.

Motor skill	95 th percentile	97 th percentile	99 th percentile	N of failure (%)
Sitting alone	8.0 (7.9, 8.2)	8.4 (8.2, 8.6)	9.2 (8.9, 9.4)	18(2.16)
Standing held/ Standing with support	10.1 (9.9, 10.3)	10.5 (10.3, 10.7)	11.4 (11.1, 11.7)	10(1.19) 221(27.80)
Hand – knee crawling	11.3 (11.1, 11.6)	12.0 (11.7, 12.3)	13.5 (13.0, 13.9)	110(14.75)
Walk with assistance	11.8 (11.6, 12.0)	12.4 (12.1, 12.7)	13.7 (13.4, 14.1)	174(22.57)

We observed higher proportion of poor growth, and gross motor under development in the cohort. The growth outcome is associated with neurodevelopment outcome. Further analysis will be extended to the 2 years follow up period and other neurodevelopment outcomes included in the DMCII tool.

Limitations: Currently, analysis is limited by scarce comparable data in South Sudan, high loss to follow-up in a displaced population (23.6% at 12 months, with possible selective dropout among preterm), incomplete antenatal/perinatal records, and potential under-detection of subtle neurological impairments due to limited standardization of developmental milestone assessments.