

SIT MATTERS! The differences between sitters and non-sitters in a cohort of at-risk premature infants at six months adjusted age

Sandra Willett, PT, MS, PCS; Malinda Pleasant, DPT; Barbara Jackson, PhD; Howard Needelman, MD; Holly Roberts, PhD, Carol McMorris, BA

University of Nebraska Medical Center, Munroe-Meyer Institute, Omaha, Nebraska

BACKGROUND:

- In typically developing infants, independent sitting is linked with increased visual attention, social engagement and object exploration.
- Motor-linked behavioral advances, like sitting, drive developmental changes in cognition and language.
- Motor delays, common in pre-term infants, are considered an expected neuro-maturational consequence of prematurity.
- Delayed acquisition of sitting may compound cognitive and language deficits in at-risk, premature infants.

PURPOSE:

This retrospective study examines differences in prematurity-related risk and compares developmental outcomes between sitters and non-sitters at six months adjusted age in a cohort of at-risk infants born before 32 weeks gestation.

SUBJECTS:

- N = 105** graduates from four Midwestern, tertiary care Newborn Intensive Care Units.
- Inclusion Criteria:**
 - Birth on or before 32 0/7 weeks gestation.
 - Developmental follow-up between 5 months 16 days and 6 months 15 days.
 - Complete six-month developmental profiles on record.
 - Level II Tracking Infant Progress Statewide (TIPS) enrollment (i.e. infant not enrolled in or receiving OT/PT or EI services)
- Demographics of Final Sample:**
 - 64% singletons
 - 53% female
 - 79% Caucasian
 - 61% privately insured (proxy of SES)

METHODS/MATERIALS:

- Retrospective analysis of developmental records from 2012 – 2016 of infants meeting inclusion criteria.
- Demographic, medical risk and developmental profiles collected from electronic database.
- Sitting abilities retrieved from original Bayley protocols and infants classified as 'sitters' if they passed item described as: "sit for more than 60 seconds while playing with hands free".
- Descriptive statistics compared demographic variables between groups (t-tests, chi-square and ANOVA as appropriate).
- Regression analysis examined which factors contributed significantly to Bayley cognitive and language composite scores.

Summary of Findings:

Significant Differences Between Groups

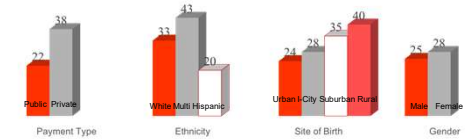
	Not Sitting (n = 72)	Sitting (n = 33)
Gestational age at birth** (weeks)	28.6 (2.3)	30 (2)
Chronological Age at Follow-up* (days)	262 (18)	254 (16)
Birthweight* (kg)	1.30 (.414)	1.48 (.34)
Days Assisted Ventilation*	17 (20)	10 (13)
Bayley Cognitive Composite***	97.78 (9.07)	104.1 (8.79)
Bayley Language Composite***	99.82 (9.7)	107.55 (9.91)

Significance: * = .05; ** = .01; *** = .001

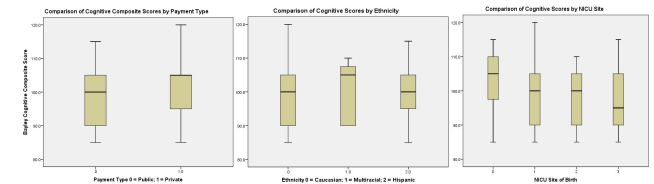
Sitting accounted for 12.2% (language) and 11.7% (cognitive) of variance in Bayley Composite Scores at six months adjusted age.

RESULTS:

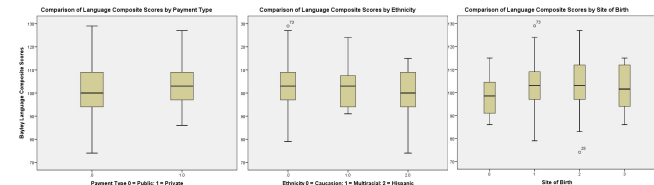
Sitting % did not differ significantly by Demographics



Cognitive scores did not differ significantly by Demographics



Language scores did not differ significantly by Demographics



CONCLUSION:

- Medical risk factors of premature, at-risk non-sitters at six months adjusted age differ from those of sitters.
- Cognitive and language scores differ significantly between sitters and non-sitters in this developmental window.

CLINICAL IMPLICATIONS:

- Delayed onset of sitting impacts cognitive and language abilities at six months adjusted age in at-risk, premature infants.
- Proactive intervention or parental education programs to enhance early sitting is warranted in this population.

ACKNOWLEDGEMENTS:

This work would not have been possible without the Tracking Infant Progress Statewide (TIPS) Program funded by the Nebraska Department of Education and Health and Human Services. Willett also receives ongoing support from the University of Nebraska Medical Center (UNMC) Clinical Translational Research/Mentored Scholar's Program and Munroe-Meyer Institute.

Willett contact Information: swillett@unmc.edu