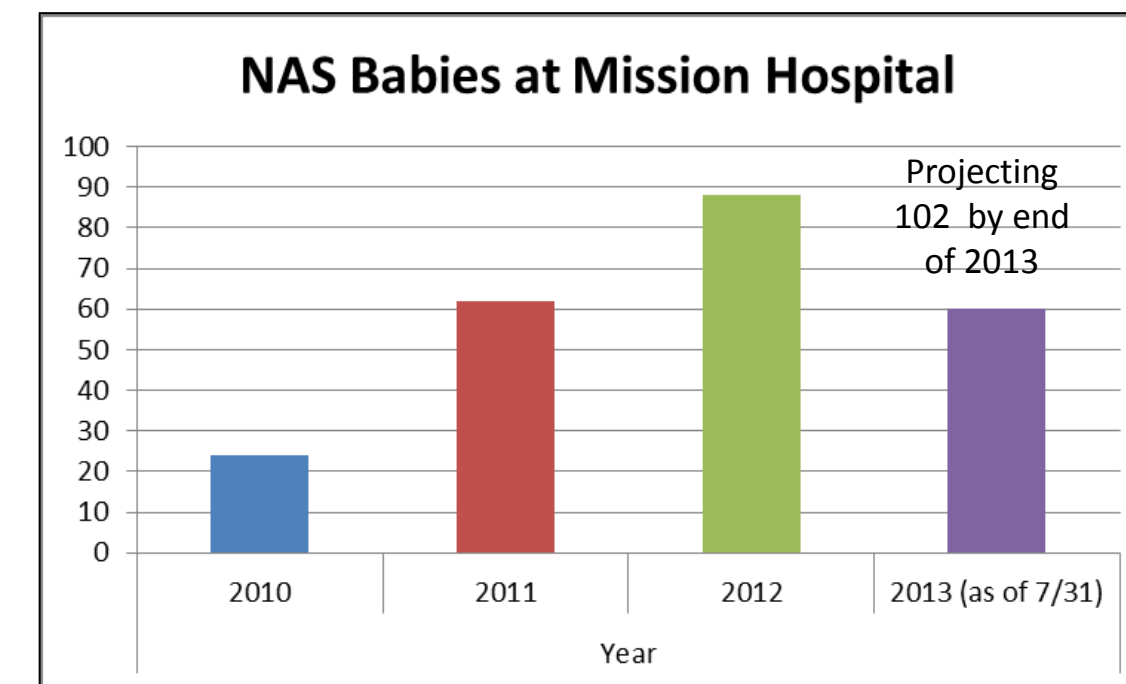


Why is this study important?

Continued increase in the number of babies diagnosed with NAS. Not all infants can be cared for in the NICU, so it is imperative that Mother/Baby and PEDS/PICU maintain the same standards in Finnegan scoring as the NICU.

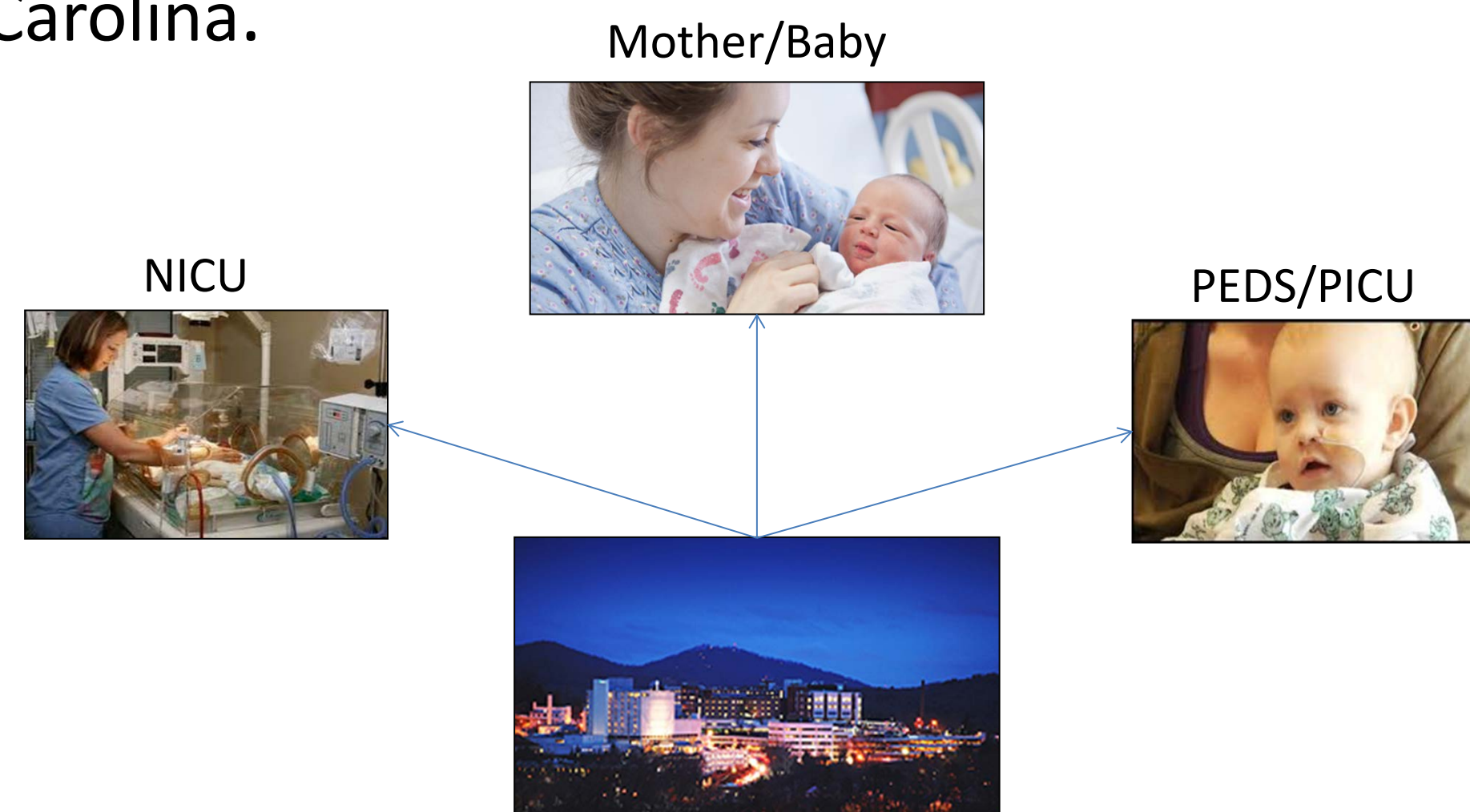


Aim

To evaluate the inter-observer reliability of the Finnegan Neonatal Abstinence Scoring Tool among nurses in the NICU, Mother/Baby, and PEDS/PICU units. Then, retest a subset of participants after education to see if inter-observer reliability scores improve.

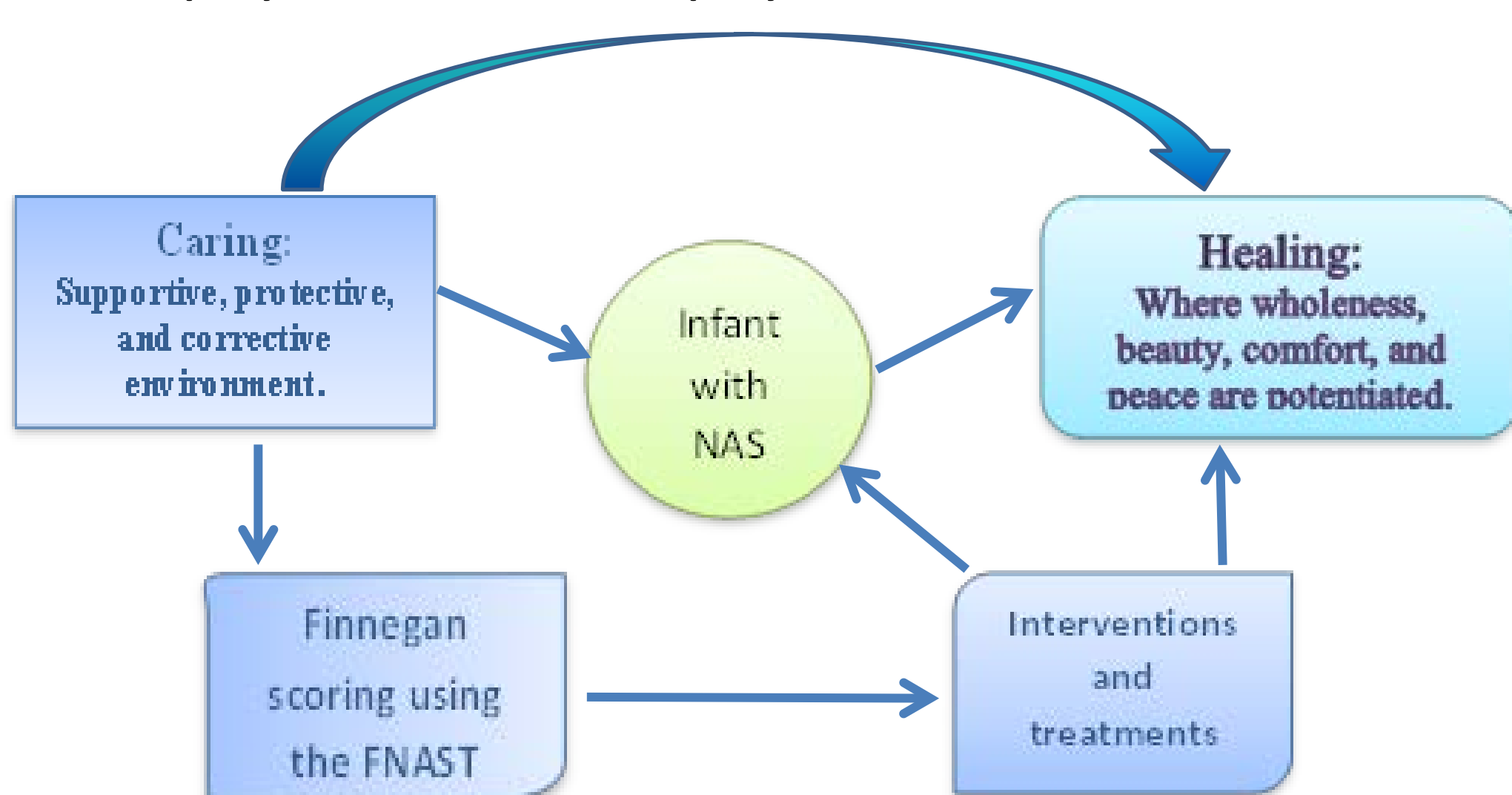
Setting

The NICU, Mother/Baby, and Pediatric/PICU units in a regional tertiary hospital in Western North Carolina.



Theory

Watson's Theory of Human Caring: Caritas 8 was the guiding framework for this project. Caritas 8 is about helping a patient transition from a supportive, corrective environment to a healing environment that impacts the patient on all levels; both physical and non-physical.

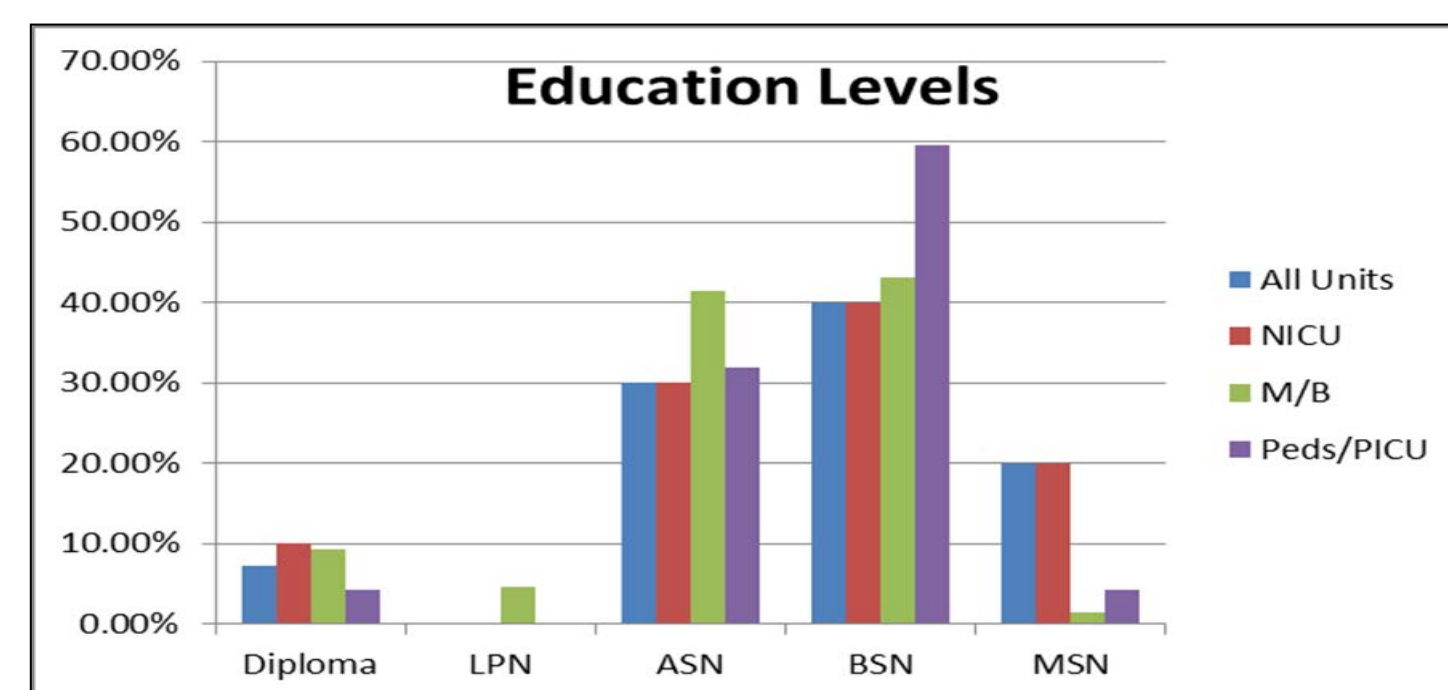


Participants

122 nurses from across the disciplines of NICU, Mother/Baby, and Pediatrics/PICU units participated in the study.

Demographics

	NICU	Mother/Baby	PEDS/PICU	Total	Total %
Education Level					
Diploma	1	6	2	9	7.3
LPN	0	3	0	3	2.4
AND	3	27	15	47	38.2
BSN	4	28	28	58	47.2
MSN	2	1	2	5	4.1
Total	10	65	47	122	100.0
Years of Experience					
0-5	1	35	31	66	54.0
6-10	0	10	6	17	13.9
11-16	1	10	5	16	13.2
16-60	2	3	1	6	5.0
21+	6	7	4	17	13.9
Total	10	65	47	122	100.0
Certification					
Yes	4	21	30	37	46.2
No	6	44	17	66	52.8
Total	10	65	47	122	100.0

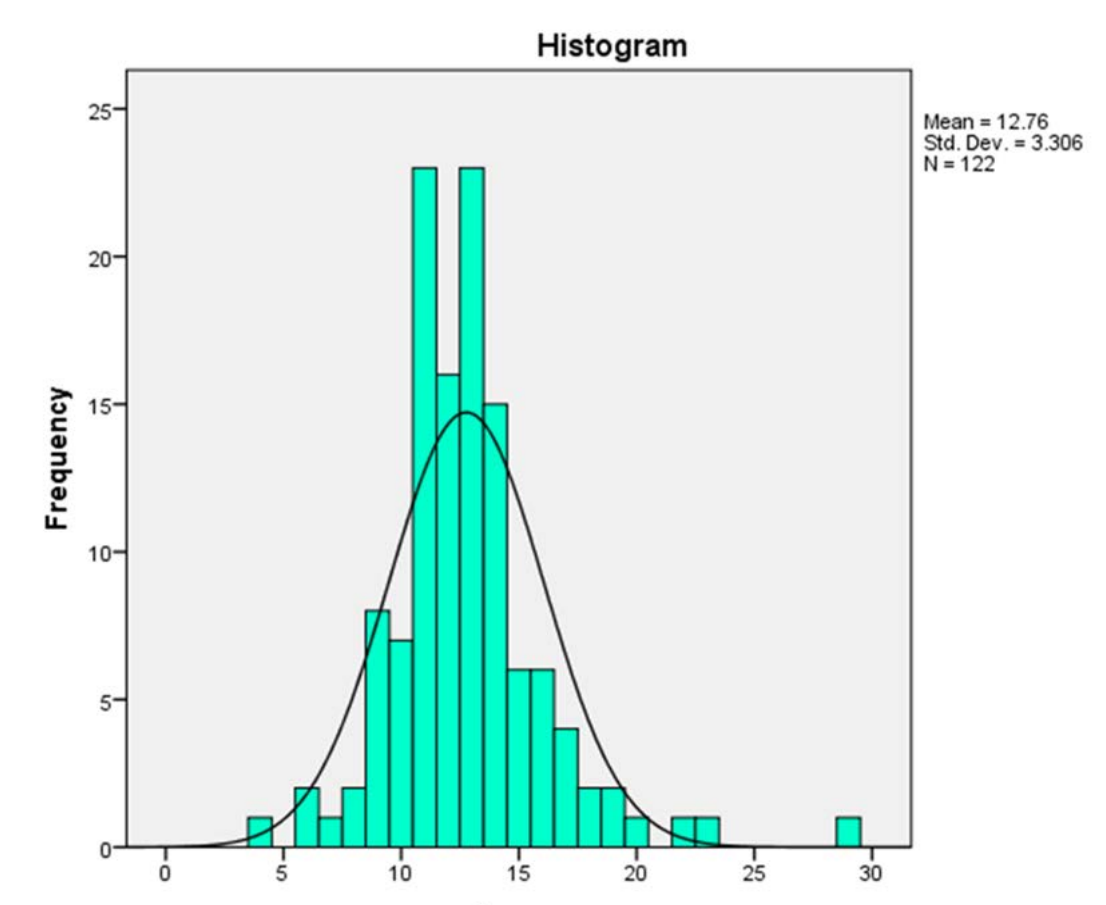


Measures

- Intraclass correlation coefficient (ICC) was chosen as the statistical measure for this study using IBM SPSS Statistical 21 software.
- In addition, descriptive statistics of mean, standard deviation, and percentages were calculated.

Compared to Expert Rater

The expert rater's score was 13. Mean score = 12.76 Std. Dev. = 3.306 N = 122



Finnegan Neonatal Abstinence Scoring Tool

Signs & Symptoms	Score	Your Score	
Central Nervous System			
1. Crying: Excessive high-pitched	2	Reliability score for CNS using ICC 0.603	
Crying: Continuous high-pitched	3		
2. Sleeps < 1 Hour after feeding	3		
Sleeps < 2 Hours after feeding	2		
Sleeps < 3 Hours after feeding	1		
3. Hyperactive Moro reflex	2		
Markedly hyperactive Moro reflex	3		
4. Mild tremors: Disturbed	1		
Moderate/Severe tremors: Disturbed	2		
5. Mild tremors: Undisturbed	3	Reliability score for MVR using ICC 0.851	
Moderate/Severe tremors: Undisturbed	4		
6. Increased muscle tone	2		
7. Excoriation (Specific area)	1		
8. Myoclonic jerk	3		
9. Generalized convulsions	5		
Metabolic/Vasomotor/Respiratory			
10. Sweating	1		Reliability score for GI using ICC 0.944
11. Fever < 101 (37.2 - 38.3c)	1		
Fever > 101 (38.4c)	2		
12. Frequent yawning	1		
13. Mottling	1		
14. Nasal Stuffiness	1		
15. Sneezing (>3)	1		
16. Nasal Flaring	2		
17. Respiratory rate > 60/min	1		
Respiratory rate > 60/min with retractions	2		
Gastrointestinal			
18. Excessive sucking	1	Reliability score for GI using ICC 0.944	
19. Poor feeding	2		
20. Regurgitation	2		
Projectile vomiting	3		
21. Loose stools	2		
Watery stools	3		
Total Score			

Finnegan LF. (1990). Neonatal abstinence syndrome: assessment and pharmacotherapy. In: Nelson N, editor. Current therapy in neonatal-perinatal medicine (2 ed.). Ontario: BC Decker.

How reliable are your scores?

Statistical Measure

- Intraclass Correlation Coefficient (ICC) was evaluated using two-way mixed effects model where people effects are random and measures effects are fixed.
- Values of 0.60 to 0.80 are often used as minimal standards.
- The value of 0.70 was the minimal standard for the purpose of the study.

Results

ICC average measure 0.996 (total score)
ICC single measure 0.694 (21 items)

N=122	Intraclass Correlation	95% Confidence Level	
		Lower Bound	Upper Bound
Single Measure	0.694	0.569	0.826
Average Measure	0.996	0.994	0.998

The results demonstrate inter-observer reliability in total score. However, how those scores were derived varied greatly.

Discussion

- If clinical decisions are made based on the reliability of these scores, values for both average and single scores should be a minimum of 0.90.
- Further evaluation of the data revealed that the majority of the discrepancies were noted within Central Nervous System Disturbances.

NICU

NICU Participants

n = 10

Unit	Frequency	Percent
NICU	10	100.0
Level of Education		
Diploma	1	10.0
LPN	0	00.0
ADN	3	30.0
BSN	4	40.0
MSN	2	20.0
Total	10	100.0
Years of Experience		
0-5	0	00.0
6-10	1	10.0
11-15	1	10.0
16-20	2	20.0
21+	6	60.0
Total	10	100.0
Certifications		
Yes	5	50.0
No	5	50.0
Total	10	100.0

Results

ICC average measure 0.996 (total score)
ICC single measure 0.965 (21 items)

NICU	Intraclass Correlation	95% Confidence Interval	
		Lower Bound	Upper Bound
Single Measure	0.965	0.939	0.983
Average Measure	0.996	0.994	0.998



Subgroup

- Of the 122 original participants, 65 practiced on Mother/Baby.
- ICC for Mother/Baby was 0.993 for average measure and 0.691 for single measure.
- Education was provided for the Mother/Baby nurses on Finnegan scoring using the FNAST

Results

- 48 nurses from the original 65 were retested.
- The results showed an increase in the average measure to 0.995 and the single measure to 0.795.

Mother/Baby	Intraclass Correlation Original Study N=65	Intraclass Correlation After Education N=48
Single Measures	0.691	0.795
Average Measures	0.993	0.995

- A significant improvement is noted. However, there is still an opportunity for further improvement.

What did we learn?

- There is a need for more NAS & FNAST education with a focus on CNS criteria.
- IOR should be evaluated every 6 months to maintain standards of 0.90 or greater in both average and single measures.
- NAS and Finnegan scoring should be included in annual education and a component of orientation for units who care for NAS babies.

Going Forward

- Provide more NAS & Finnegan scoring education with a focus on CNS criteria.
- Consider training a core group of nurses on each unit for Finnegan scoring.
- Conduct studies of IOR of scoring tools used throughout the organization.