

Addressing Sensory Processing in the NICU and NICU Follow-up Clinics

Shaylee Backer, OTS – The University of South Dakota

Faculty Mentor: Jessica McHugh, PhD, OTR/L, BCP

BACKGROUND

One out of ten infants are born premature in the U.S. annually (Ryckman, Hilton, Rogers, & Pineda, 2017; World Health Organization [WHO], 2019). Prematurity typically results in admittance to a Neonatal Intensive Care Unit (NICU). Occupational therapy fills a vital role in NICU's through addressing positioning, handling, self-regulation, bonding, feeding, and reduction of adverse stimuli and experiences (Barbosa, 2013; Hybertson, 2018).

Neurosensory development occurs primarily in the last 16 to 20 weeks of gestation; therefore, premature birth shortens the length of in-utero sensory developmental and ultimately sensory maturity at birth (Mitchell et al., 2014). Sensory processing refers to how the brain interprets and responds to sensory information (Crozier et al., 2015). Failure to process sensory input adequately may lead to sensory processing disorder (SPD). The NICU presents sensory stimuli that may negatively affect sensory development. This may include overstimulation of the auditory, visual, and tactile systems and under-stimulation to the vestibular system (Celik, Elbasan, Gucuyener, Kayihan, & Huri, 2017; Ryckman et al., 2017). Motor, self-regulation, cognitive, social-emotional, and/or behavior concerns may later arise due to SPD (Cabral et al., 2016, Szklut, 2014).

Research suggests that 39-50% of children born prematurely have a SPD upon follow-up at ages four to six (Ryckman et al., 2017; Crozier et al., 2015). There is a positive correlation between sensory processing and motor development in preterm infants (Celik et al., 2015). Thus, sensory processing should be addressed in NICU's and NICU follow-up clinics. Increasing the ability of healthcare practitioners to correctly recognize behaviors related to unfavorable sensory processing may introduce a clearer understanding of infant development in many areas (DeSantis et al., 2011). Occupational therapy is a profession well-suited to provide education and assessment in this area. With inclusion of the profession in follow-up clinics, the neglected assessment area of sensory processing would be addressed (DeSantis et al., 2011).



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PURPOSE/METHODS

Purpose: To gain advanced clinical practice in the NICU and NICU follow-up setting and to advocate for occupational therapy via caregiver and healthcare practitioner education, specifically focusing on sensory integration.

The initial two weeks of this capstone experience were spent observing at two NICU sites: Mercy Medical Center (MMC) and Sanford Hospital. The additional 14 weeks were completed at ChildServe. ChildServe is a pediatric rehabilitation facility serving children birth through 30 years old. Time was split between an outpatient caseload and Developmental Clinic (NICU follow-up), which works in collaboration with the MMC NICU to screen, monitor, and provide referrals to for high-risk children following NICU discharge. Capstone objectives were met through the following deliverables:

- 30 hours of NICU observation at two sites with reflection and comparison chart of sites
- 3+ hours of continuing education hours with reflection
- Creation of three educational handouts
- Development of a Quick Reference Guide
- Sensory Screen Questionnaire
- Developmental Clinic outcome tracking form
- Scholarly theory paper, literature matrix, and final presentation
- Activity log tracking hours and intervention and evaluation experience at all sites

OT IMPLICATIONS

- SPDs are common in children born prematurely following NICU discharge and occupational therapy offer a skills perspective in identifying sensory deficits and related concerns.
- Routine referral to and evaluation by occupational therapists is appropriate for this population and NICU follow-up settings are ideal opportunity for completing sensory-based screenings.
- Occupational therapists must continually advocate and foster education on sensory development to caregivers and healthcare practitioners for increased awareness and early recognition of deficits, appropriately referral to OT, and to encourage/implement sensory-based recommendations for the home-environment.

RESULTS/CONCLUSION

- Achievement of all capstone learning objectives indicated through onsite hours and completion of deliverables.
- **Advanced practice:** enhanced clinical knowledge and skills in developmental delays and sensory-based challenges as evidenced by onsite experience and research.
- **Advocacy:** for occupational therapy in NICU follow-up settings, and for inclusion of a sensory processing screening tool in the ChildServe Developmental Clinic, as indicated by education to healthcare practitioners on appropriate occupational therapy referrals and the importance of sensory processing related to development.
- **Education:** to caregivers on developmental milestones and the importance of supporting sensory development in premature infants as evidenced by providing appropriate recommendations to caregivers and developing and disseminating educational handouts.

Developmental Clinic Outcomes Jan.-April 2019	
Total Clients:	90
Average Gestational Age:	32 weeks 0 days
Male to Female Ratio:	54:36
Referrals to Occupational Therapy:	8
Most Common Conditions:	Retinopathy of Prematurity, Respiratory Distress Syndrome, congenital heart defects, chromosome anomaly, Intraventricular hemorrhage

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