

## **“Babywearing” as a Tool to Decrease Pain Associated with Neonatal Abstinence Syndrome**

**Introduction:** Prescription opioid sales in the U.S. has almost quadrupled from 1999 to 2014; correspondingly, infants diagnosed with Neonatal Abstinence Syndrome (NAS) has increased more than fivefold. NAS is commonly associated with maternal opioid use and includes symptoms such as high-pitched crying, tremors, and poor feeding. Infants with NAS are accustomed to drug exposure in utero; consequently, when the drug is no longer present, the absence of the stimuli is painful. Elevated heart rate (HR) is synonymous with increased infant pain and stress in adults. Research on skin-to-skin or kangaroo care has found decreased perceptions of pain (i.e., HR) during heel prick procedures. The purpose of the study is to examine whether infant carrying or “babywearing” (i.e. holding an infant on one’s body using cloth) can reduce stress and symptoms associated with NAS.

**Methods:** This repeated-measure study took place in a Neonatal Intensive Care Unit (NICU) in the Southwest USA. Starting when infants were four days old, physiological readings (N=97 readings; N=15 infants; 53% White, 20% Hispanic, 13% African American; 53% female) were assessed daily. Heart rates of infants and individuals wearing the infant (e.g. parents, nurses) were taken every 15-seconds before- (no touching), during- (20 minutes into being worn in a carrier) and post-babywearing (five to ten minutes later), approximately a forty-five minute procedure from start to finish. A finger plethysmograph, also known as a pulse oximeter, measured heart rate for the adults wearing the infants. Infants were continuously monitored by cardiopulmonary machines using a pulse oximeter wrapped around their foot.

**Results:** A 3-Level Hierarchical Linear Model (HLM) was used in order to account for the nested data (HRs nested within readings, nested within infant-adult dyads) at three time points (before, during, and after babywearing). We found that babywearing decreased infant and caregiver heart rates. Approximately, across a 30-minute period, infants worn by parents

decreased 15 beats per minute (bpm) compared to 5.5 bpm for infants worn by an unfamiliar adult, and adults decreased by 7 bpm (parents) and nearly 3 bpm (unfamiliar adult).

**Discussion:** Findings from this study suggest that babywearing is a non-invasive and accessible intervention that can decrease symptoms in infants diagnosed with NAS. Babywearing is cost-effective, culturally relevant, and can be done by non-caregivers (e.g., nurses, family members, friends). Results suggest that babywearing is especially calming when parents are the ones wearing the infants. Babywearing supports parenting by including the parent in the treatment and empowering them in caring for their infant. This intervention can be used outside of the NICU and provide additional support to parents and caregivers once infants are discharged. Close physical contact, by way of babywearing, can improve infant outcomes in NICUs as an alternative to pharmacological treatment.