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Maternal Speech as Regulator of Neural Development in Premature Infants

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Introduction: Maternal speech has been shown to benefit premature infants by improving feeding outcomes and potentiating the development of the auditory cortex. To our knowledge, no prior study has addressed the benefits of exposure to maternal speech on neural development in premature infants. The objective of this study was to investigate the effect of early controlled exposure to maternal recording a passage of speech on HRV (obtained before, during, and after playback of a test stimulus of a female stranger speaking the same passage) in very-low-birth-weight premature infants tracked weekly from 28 to 34 weeks. Methods: Prospective, randomized-clinical trial, longitudinal, and repeated-measures design was conducted on 49 subjects. Infants heard a recording of their mother's speech twice a day from either 28 to 34 weeks (group1) or from 32 to 34 weeks (group 2). Spectral analysis was measured weekly for 45 seconds before, during, and after playback of maternal speech. A Generalized Linear Mixed Model was conducted to examine the two-way interaction in the log high frequency power between groups, genders, sessions, and conditions. Results: It was found that there were no significant differences between groups before, during, and after playback of the stimulus. A significant difference, however, was noted between conditions (before versus during period). Conclusion: It can be concluded cautiously that playing back of maternal speech recordings to the premature infant has a beneficial impact on neural development after 32 weeks gestational age.

Recent Publications

1. DeArmond, A. C., et al. "Revisiting sound in the NICU: implications for the developmental timing, amount and type of sound." Pediatr Neonatal Nurs 2.10.16966 (2016): 2470-0983.

2. Angus, Sarah. Acute Cardiac Responses to Respiratory Muscle Unloading at Different Exercise Intensities. MS thesis. University of Waterloo, 2022.

3. Bubshait, Khlood. "Building a Conceptual Framework from Polyvagal Theory to Explore Effect of Maternal Speech on Neural Development in Premature Infants." Journal of Biology and Life Science 12.2 (2021): 27-41.

Biography

The focus of Dr. Khlood' s program of research is early developmental exposure to sound among premature infants, specifically maternal voice. She believes that her background and clinical experience obtained during completion of her master's degree, as well as in doctoral degree have prepared her well to develop feasible, important research questions applicable to the delivery of developmentally appropriate, non-pharmacologic care for premature infants to prevent serious and long-term complications. Dr. Kholod's goal is to work towards addressing NIH priorities consistent with those of my home country, Kingdome of Saudi Arabia: (1) creative discoveries, innovative research strategies, and their implementation as a basis improving health; (2) to develop scientific human resources that will ensure the Nation's capability to prevent disease;(3) to expand the knowledge base particularly among nurses and other health care providers regarding the essential relationship between infants and parents in NICU , and (4) to promote the highest level of scientific research integrity and social responsibility in the conduct of science. My unique knowledge in conducting clinical trial research will help me to expand the kind of research developed by nurses.

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