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Multisensory early intervention can improve visual function in preterm infants at term equivalent age

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TITLE OF WRITE-UP

Multisensory early intervention can improve visual function in preterm infants at term equivalent age

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COMMENTARY

The visual system is a complex pathway which incorporates multiple motor, cognitive and perceptual functions. Suboptimal neonatal visual function has been associated with poorer neurodevelopmental outcome.[1] It is well accepted that early experiences in the neonatal intensive care unit (NICU) influences the development of preterm infants[2] and that the involvement of parents in the NICU is key to improving infant outcomes.[3] While early experience is hypothesized to enhance visual development in preterm infants, limited research exists for specific intervention programs.

Fontana et al. implemented a multisensory early intervention program (behavioural cues, massage and visual training) for preterm infants born between 25+0 and 29+6 weeks gestation. Infants in the intervention group showed more mature visual performance at term equivalent age (TEA) compared with the control group who received standard care. Differences between the groups were noted in attention at distance and stripes discrimination. Additionally, infants in the intervention group had better ocular motility and tracking for an arc, supporting previous research which suggests that the maturation of these subcortically mediated aspects of visual function may be accelerated by early experience.[1] Use of a control group allowed the authors to determine the efficacy of the intervention relative to normal maturation over time. Given the multiple interventions employed in this study it is impossible to extrapolate the individual effect of each intervention on outcomes, a point which the authors acknowledge in their discussion. Further research should aim to determine the relative contribution of each intervention.

A strength of this study was that the early, enriched multisensory program commenced early, in the NICU and was provided by parents following a period of training to support them in understanding their infant's behaviour and developing the parent-infant relationship. The authors highlight the importance of active engagement of parents in the NICU and the potential long term benefits of this to infant brain development. Of note, single parent families were excluded from this study with the rationale for this exclusion criteria not described. Further discussion of the infants' tolerance of the intervention and any associated stress responses would be useful, particularly given the potential for early visual stimulation to be inappropriate as the visual system is the last sense to develop.

It will be important to examine the long term outcomes of the infants and parents in this study. Firstly, to determine whether the differences in vision between groups are maintained beyond TEA and secondly, to determine whether the accelerated visual maturity translates into a functional difference in overall neurodevelopment, for example at 2 years or beyond. Furthermore, the authors acknowledge a systematic review which suggests improved visual outcomes with early visual interventions in infants who are at high risk of cerebral palsy[4] and suggest that these children should be included in future studies. Indeed infants

with more severe brain lesions (who were excluded from the present trial) or significant comorbidities such as bronchopulmonary dysplasia or those who have required surgery are known to be at highest risk of developmental delay[5] and may therefore benefit more from Fontana et al.'s early intervention program.

URL LINK: URL TO THE FULL REVIEW ON THE EBNEO WEBSITE

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None

CONFLICTS OF INTEREST

None

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