



The following are a selection of publications from late 2019 to early 2020 relevant to NIDCAP.

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2019

1. Alvarez MJ, Rodriguez-Gonzalez D, Roson M, Lapena S, Gomez-Salgado J, Fernandez-Garcia D. **Effects of massage therapy and kinesitherapy to develop hospitalized preterm infant's anthropometry: A quasi-experimental study.** *Journal of Pediatric Nursing.* 2019, 46:e86-e91. DOI: 10.1016/j.pedn.2019.03.015

The implementation of a massage therapy and kinesitherapy protocol is beneficial for the anthropometric development of hospitalized preterm infants. An easy to administer and cost-effective intervention such as massage therapy and kinesitherapy can improve the anthropometric development of preterm infants and reduce growth-related morbidity in the short, medium, and long term.

2. Baghlani R, Hosseini MB, Safaiyan A, Alizadeh M, Arshadi-Bostanabad M. **Neonatal intensive care unit nurses' perceptions and knowledge of newborn individualized developmental care and assessment program: A multicenter study.** *Iranian Journal of Nursing and Midwifery Research.* 2019, 24:113-117. DOI: 10.4103/ijnmr.IJNMR_54_18

This cross-sectional study was conducted on 149 nurses working in the NICUs across Iran. Three questionnaires were used to collect demographic data and to explore the nurses' perceptions and knowledge of the NIDCAP program. The results of this study showed that the majority of nurses participating in the study had high knowledge about NIDCAP.

3. Butler S, Sadhwani A, Stopp C, Singer J, Wypij D, Dunbar-Masterson C, Ware J, Newburger J. **Neurodevelopmental assessment of infants with congenital heart disease in the early postoperative period.** *Congenital Heart Disease.* 2019, 14(2):236-245. DOI: 10.1111/chd.12686

The neurodevelopment of a convenience sample of high-risk infants following cardiac surgery but before hospital discharge were evaluated using an adaptation of the Newborn Behavioral Observation. At discharge, postoperative infants with CHD had impairments in autonomic, motor, attention, and state regulation following cardiac surgery. Findings suggest that neurodevelopmental follow-up and intervention should begin early in infancy.

4. Chuang LJ, Wang SH, Ma MC, Lin CN, Chen C, Huang M. **A modified developmental care bundle reduces pain and stress in preterm infants undergoing examinations for retinopathy of prematurity: A randomised controlled trial.** *Journal of Clinical Nursing.* 2019, 28(3-4):545-559. PMID: 30091495, DOI: 10.1111/jocn.14645

To determine the comparative efficacy of developmental care versus standard care for reducing pain and stress in preterm infants during examinations for retinopathy of prematurity (ROP). Since the results show the benefits of developmental care in an ROP examination, it can be the practical evidence basis by which to develop a standard of procedure or guideline for clinical practice.

5. Griffiths N, Spence K, Loughran-Fowlds, Westrup B. **Individualised developmental care for babies and parents in the NICU: Evidence-based best practice guideline recommendations.** *Early Human Development.* 2019, 139. DOI: 10.1016/j.earlhumdev.2019.104840

The application of a systematic approach to improve practice is considered the most effective strategy for implementing neuro-protective developmentally supportive care. The content of this paper incorporates evidence-based systematic reviews to guide clinicians in the application of developmentally supportive interventions.

6. Mirlashari J, Valizadeh S, Navab E, Craig J, Ghorbani F. **Dark and bright-two sides of family-centered care in the NICU: A qualitative study.** *Clinical Nursing Research.* 2019, 28:869-885. DOI: 10.1177/1054773818758171

The aim of the study was to explore the lived experiences of NICU nurses on implementing FCC. This study provided deeper understanding about nurses' perceptions of FCC implementation. In Muslim developing countries, FCC implementation is challenging and nurses are under extra pressure because of a shortage in nursing workforce; however, having positive experiences with family participation and valuing their beliefs allowed them to support family involvement.

7. Painter L, Lewis S, Hamilton B. **Improving neurodevelopmental outcomes in NICU patients.** *Advances in Neonatal Care.* 2019, 19(3):236-243. DOI: 10.1097/ANC.0000000000000583

The purpose of this study was to measure the effectiveness of a developmental positioning intervention on length of stay, weight gain, and tone/flexion compared with neonates without structured positioning. With greater structure and consistent attention to developmental positioning, outcomes are positively affected. Further research with larger sample sizes will identify stronger associations and relationships between positioning and outcome measures.

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8. Park J, Kim JS. **Factors influencing developmental care practice among neonatal intensive care unit nurses.** *Journal of Pediatric Nursing.* 2019, 47:e10-e15. DOI: 10.1016/j.pedn.2019.03.014

This study found that professional efficacy had the largest influence on developmental care practice, followed by perception of developmental care, and a task-oriented organizational culture. Clinical and educational experience regarding developmental care and working environment was not associated with developmental care practice. A practical training program should be provided to nurses to promote confidence in implementing developmental care for preterm infants.

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9. Shanty L, Dowling R, Sonnenschein S, Hussey-Gardner B. **Evaluation of an early language and literacy program for parents of infants in the NICU.** *Neonatal Network.* 2019, 38(4):206-216. DOI: 10.1891/0730-0832.38.4.206

To evaluate the effect of a NICU parent education program on parents' early language and literacy practices, and on their confidence interpreting and responding to infant signals. The program significantly increased intention to engage in more early language and literacy practices, and increased parent-reported knowledge of how and when to interact with their infants. The majority of interviewed parents reported engaging in these practices one to two weeks later.

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10. Treyvaud K, Spittle A, Anderson PJ, O'Brien K. **A multilayered approach is needed in the NICU to support parents after the preterm birth of their infant.** *Early Human Development.* 2019, 139. DOI: 10.1016/j.earlhumdev.2019.104838

A multilayered approach to supporting parents of infants born preterm in the NICU is recommended, with evidence specifically for including layers of individual psychological and psychosocial support, peer-to-peer support, and family centered care. Consideration of fathers in the NICU, and areas for future research are also discussed.

2020

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11. Almadhoob A, Ohlsson A. **Sound reduction management in the neonatal intensive care unit for preterm or very low**

birth weight infants. *EBM Reviews - Cochrane Database of Systematic Reviews Cochrane Database of Systematic Reviews.* 2020. Issue 1. Art. No.: CD010333. DOI: 10.1002/14651858.CD010333.pub3

To date, 34 infants have been enrolled in a randomized controlled trial (RCT) testing the effectiveness of reducing sound levels that reach the infants' ears in the NICU. Based on the small sample size of this single trial, no recommendations were made for clinical practice. Larger, well designed, conducted and reported trials are needed.

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12. Anderson PJ, Treyvaud K, Spittle AJ. **Early developmental interventions for infants born very preterm – what works?** *Seminars in Fetal and neonatal Medicine.* 2020, online May 15 DOI:10.1016/j.siny.2020.101119

Although early developmental interventions vary widely in focus, timing, and mode of delivery, evidence generally supports the effectiveness of these programs to improve specific outcomes for children born very preterm and their families. However, little is known about mechanisms for effectiveness, cost- and long-term effectiveness, which programs might work better for whom, and how to provide early intervention services equitably. This information is critical to facilitate systematic integration of effective developmental interventions into clinical care for infants born very preterm and their families.

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13. Bembich S, Trappan A, Galimberti A, Taglieri J, Scolz S, Risso FM, Sanson G. **The role of weighing-bathing sequence and postmenstrual age in eliciting adaptive/maladaptive responses in very low birth weight preterm infants.** *Journal for Specialists of Pediatric Nursing.* 2020;e12292. DOI: 10.1111/jspn.12292

Responses were assessed using an observational sheet based on Als' Synactive Theory of Development. Autonomic and motor responses were scored according to five-point Likert scales. Effects of weighing/bathing execution sequence and post menstrual age (PMA) on autonomic and motor response scores were analyzed by linear multiple regression analysis. The real-time recognition of adaptive/maladaptive responses allows nurses to personalize their approach to preterm infants, taking into account PMA and adjusting the appropriate sequence of execution of weighing/bathing nursing procedures.

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14. Buil A, Sankey C, Laurence C, Apter G, Gratier M, Devouche E. **Fostering mother-very preterm infant communication during skin-to-skin contact through a modified positioning.** *Early Human Development.* 2020, 141. DOI: 10.1016/j.earlhumdev.2019.104939

The study shows that Supported Diagonal Flexion (SDF) positioning creates more opportunities for mother-infant communication during SSC. SDF positioning fosters a greater multimodal

temporal proximity, thus supporting a more qualitative mother-infant communication.

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15. Govindaswamy P, Laing SM, Waters D, Walker K, Spence K, Badawi N. **Fathers' needs in a surgical neonatal intensive care unit: Assuring the other parent.** *Plos One.* 2020, 15(5):e0232190. DOI: 10.1371/journal.pone.0232190

Reassurance is a priority for fathers of neonates in a surgical NICU, particularly regarding infant pain management and comfort. It is important that health-care professionals provide reliable, honest information and open-access visiting. Notably, fathers seek greater recognition of their role in the NICU, beyond being the 'other' parent.

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16. Griffiths N, James-Nunez K, Spence K, Crowle C, Pettigrew J, Loughran-Fowlds A. **The evolution of an interdisciplinary developmental round in a surgical neonatal intensive care unit.** *Advances in Neonatal Care.* 2020, May 06, Volume Publish Ahead of Print. DOI: 10.1097/ANC.0000000000000741

This article provides retrospective audit data of a developmental round intervention in the surgical neonatal intensive care unit with a focus on data over four years to highlight key areas, including the structure and process, recommended educational standards for team members, and parental engagement, as key markers for developmental round efficacy. Future research should focus on the link between the developmental round intervention and long-term neonatal outcomes.

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17. Jannes C, Miedaner F, Langhammer K, Enke C, Göpel W, Kribs A, Nitzsche A, Riedel R, Woopen C, Kuntz L, Roth B. **Increased parental satisfaction by unrestricted visiting hours and developmentally supportive care in NICUs – results of a German multicenter study.** *The Journal of Maternal-Fetal & Neonatal Medicine.* 2020, 33(11): 1874-80. DOI: 10.1080/14767058.2018.1532499

Very low birthweight infants from 66 NICUs in Germany were enrolled in this multicenter study. 1493 questionnaires were completed by 1277 parents. The existence of unrestricted visiting hours and standardized procedures for developmentally supportive care were positively associated with parental satisfaction. Fostering the parent–infant interaction through the provision of developmentally supportive care and unrestricted visiting hours for parents whose infants are hospitalized within an NICU significantly contributes to the satisfaction of parents.

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18. Johnson MR, Helm JM. **Neonatal and early infant development.** *North Carolina Medical Journal.* 2020, 81(1):46-47. DOI: 10.18043/ncm.81.1.46

As with neonatal development, the field of infant mental health continues to evolve. Another current trend is the development of evidence-based models of both prevention and therapeutic intervention for infants and very young children, including direct parent support and interventions to strengthen the parent-child relationship. The field of infant and young child mental health has also embraced the importance of collaboration with other professionals and service systems.

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19. Miller TA, Lisanti AJ, Witte MK, Elhoff JJ, Mahle WT, Uzark KC, Alexander N, Butler SC. **A collaborative learning assessment of developmental care practices for infants in the cardiac intensive care unit.** *Journal of Pediatrics.* 2020. DOI: 10.1016/j.jpeds.2020.01.043

A collaborative learning approach was used to stratify, assess, and compare individualized developmental care practices among multidisciplinary teams at six pediatric heart centers. The collaborative findings were a first step toward strategies to quantify and measure developmental care practices in the cardiac intensive care unit to assess the association of complex inpatient practices with long-term neurodevelopmental outcomes.

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20. Mirlashari J, Brown H, Fomani F, Khoshnavay de Salaberry J, Tahereh K, Khoshkhou F. **The challenges of implementing family-centered care in NICU from the perspectives of physicians and nurses.** *Journal of Pediatric Nursing.* 2020, 50:e91-e98. DOI: 10.1016/j.pedn.2019.06.0

The implementation of family-centered care (FCC) in the neonatal intensive care unit in Iran is shaped by the health care provider, cultural, legal and operational challenges. Organizational, managerial and operational changes are required for FCC implementation. Nurses and physicians are well-positioned as leaders and facilitators of family-centered care implementation within the neonatal intensive care unit.

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21. Morag I, Ohlsson A. **Cycled light in the intensive care unit for preterm and low birth weight infants.** EBM Reviews - Cochrane Database of Systematic Reviews Cochrane Database of Systematic Reviews. 1, 2020. DOI: 10.1002/14651858.CD006982.pub2

One additional study enrolling 38 participants was included in this update, for a total of nine studies reporting on 544 infants. Results from one additional study strengthen our findings that cycled lighting (CL) versus continuous bright light shortens length of stay, as does CL versus near darkness (ND). The quality of the evidence on both comparisons for this outcome according to GRADE was low. Future research should focus on comparing CL versus ND.

22. Pierrat, V, Marchand-Martin L, Durrmeyer X, Vasante L, Burguet A, Cambonie G, Kuhn P, Datin-Dorrière V, Durox M, Kaminski M, Carbajal R, Ancel P-Y. **Neurodevelopmental Care Study Group of EPIPAGE -2. Perceived maternal information on premature infant's pain during hospitalization: the French EPIPAGE-2 national cohort study.** *Pediatric Research*. 2020, 87:153–162. DOI: 10.1038/s41390-019-0422-8

Analyses of questionnaires from the French national cohort study of preterm neonates, EPIPAGE-2. Perceived Maternal Information on Infants' Pain (PMIP) was derived from mothers' answers to questions about information perceived on both pain assessment and management. Mothers reporting PMIP as "sufficient" were more frequently present and more likely comforting their child during painful procedures. Factors independently associated with "sufficient" PMIP were high maternal education, gestational age <29 weeks, daily maternal visits, perception of high team support, and implementation of the newborn individualized developmental care and assessment program.

23. Pineda R, Wallendorf M, Smith, J. **A pilot study demonstrating the impact of the supporting and enhancing NICU sensory experiences (SENSE) program on the mother and infant.** *Early Human Development*. 2020, 144, DOI: 10.1016/j.earlhumdev.2020.105000

To explore differences in maternal mental health and infant neurobehavioral outcome among infants who received and did not receive the Supporting and Enhancing NICU Sensory Experiences (SENSE) program. Preliminary evidence demonstrates improvements in maternal confidence and infant neurobehavioral performance following SENSE implementation.

24. Soleimani F, Azari N, Ghiasvand H, Shahrokhi A, Rahmani N, Fatollahierad S. **Do NICU developmental care improve cognitive and motor outcomes for preterm infants? A systematic review and meta-analysis.** *BMC Pediatrics*. 2020, 20, 67. DOI: 10.1186/s12887-020-1953-1

Current evidence suggests that developmental care in NICU settings could have significant effects on mental and motor development of preterm infants, especially at 12 months of age. However, because of clinical heterogeneity, more studies are needed to evaluate the effects of developmental NICU care in the development of preterm infants.



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