Preterm birth remains an important public health challenge for improving the quality of immediate and long-term care of the child and their family. Nearly 1 in 10 live births worldwide are preterm, with higher rates in marginalized populations and developing countries. Advances in medical intensive care of these infants mean more infants born very preterm and extremely preterm are surviving. The preponderance of research on children born very preterm has revealed the linkages between numerous risks and acute and long-term adverse health and developmental outcomes for the children, and social and psychological challenges for the families. Although children born earlier in gestation are at increased risk for poor outcomes, there is wide variability, with many children doing well. Therefore, research that can identify the protective factors or identify who, when, or under what circumstance some preterm children thrive is essential for informing interventions to assist those preterm children who are at risk of ongoing emotional problems. Very preterm (<32 weeks’ gestational age) and very low birth weight (<1500 g) children are more at risk than their full-term peers for developing internalizing symptoms (eg, anxiety and/or depression). Emerging evidence suggests that maternal sensitivity is a long-term resilience factor in the development of internalizing problems in early adolescence in very preterm children.

McLean et al provide further evidence that supportive parenting of infants born very preterm is associated with more optimal emotional outcomes across early and middle childhood. They report the findings from a prospective, longitudinal cohort study of 186 very preterm neonates (24-32 weeks’ gestational age) recruited from the level III neonatal intensive care unit (NICU) at BC Women’s Hospital in Vancouver, Canada. This report aimed to investigate whether neonatal pain-related stress experienced by neonates in the NICU was associated with trajectories of internalizing behaviors at ages 1.5 (159 children), 3.0 (169 children), 4.5 (162 children), and 8.0 (153 children) years and whether supportive parenting behaviors and lower self-reported parental stress at ages 1.5 and 3 years attenuated this association. Cumulative pain and stress was defined as the number of invasive procedures performed in the NICU. The main outcome was parent reports of child internalizing behaviors measured with the Child Behavior Checklist at every follow-up. At ages 1.5 and 3 years, parental stress was obtained from the Parenting Stress Index, and parent-child interactions were obtained from videotapes of a 5-minute teaching task coded by independent examiners using the Emotional Availability Scale–IV. After accounting for gestational age at birth and neonatal clinical factors, greater exposure to neonatal pain-related stress, related to invasive procedures from birth to NICU discharge, was associated with increased internalizing symptoms across follow-up. At 1.5 years, internalizing behaviors were within the normative range; however, by age 8 years, parent reports indicated that 24 of 153 children (16%) had symptoms that put them in the clinical range for internalizing behaviors. Latent profile analyses of parenting behaviors observed in parent-child interactions at ages 1.5 and 3 years and parenting stress at 3 years identified 3 profiles: average support with average stress, high support with low stress, and low support with high stress. Higher parenting stress at 1.5 years contributed to parent reports of greater internalizing problems across development to age 8 years. At age 3 years, the profile of high support and lower stress was associated with a reduction in the development of parent reports of internalizing behavior across development to age 8 years. Parents in this group demonstrated more behaviors that were characterized as sensitive, nonhostile, and nonintrusive and provided more structure in parent-child interactions.
The Bidirectional Nature of Parenting

Although sensitive supportive parenting in the general population is important for a child's development, it is even more critical for preterm-born children. However, the communication abilities, atypical behavior, and regulation systems of very preterm-born children can affect the quality of these interactions. McLean et al\(^4\) found at 3 years, but not 1.5 years, children exhibited lower parent-reported internalizing behaviors related to supportive parenting interactions, even after accounting for child behavior in parent-child interactions in a teaching task.

Supportive parenting interactions rely on several social and psychological determinants of the mother-infant dyad, including maternal culture, depression, socioeconomic status, substance use disorders, the home environment, and whether the child was unplanned or unwanted.\(^5\) The prevalence rates of posttraumatic stress or acute stress disorders in mothers of preterm infants in the NICU range from 23\% to 28\%.\(^6\) Several factors contribute to the traumatic stress experienced by parents of preterm infants in the NICU; however, the most stressful aspects of the NICU experience reported by parents were the physical separation from their infant and their feelings of a loss of control and helplessness in their inability to shield their infant from the numerous painful procedures.\(^7\) The findings of McLean et al\(^4\) show that reduced parental stress and sensitive supportive parenting may temper the association between the effects of neonatal pain-related stressors in the NICU and internalizing behaviors throughout early and middle childhood. Therefore, interventions that help reduce stress should be part of postnatal care for mothers of very preterm children.

Where to Now?

Many of the stressors experienced by neonates and parents in the NICU and after discharge from the hospital have been addressed by interventions in the NICU, such as the Newborn Individualized Developmental Care and Assessment Program. This intervention is designed to identify both what is supportive and regulating, and what is disruptive to infant neurodevelopment. Further approaches include the redesign and reorganization of the NICU environment from large, open bays with multiple babies close to each other, to single-family rooms combined with neuroprotective approaches that emphasize developmentally appropriate care. The transition to single-family rooms aims to protect the infant from intrusive environmental stimuli of open bay NICUs while facilitating parental care and around-the-clock family presence.\(^8\)

Notwithstanding the advances made in caring for these vulnerable infants in the NICU, there are important questions left to answer. Preterm birth is increasing worldwide,\(^1\) but most studies on very preterm infants have involved White Western populations. The cohort in the study by McLean et al\(^4\) was predominantly a more mature, well-educated sample of parents (60\% White and 84\% with partial or complete university degree or postgraduate degree) with universal access to health care. Culture, poverty, and maternal mental well-being strongly influence parenting; therefore, more research is needed to determine who and under what social and psychological circumstances parents of children born very preterm require parenting support.

In addition, parental perceptions and attitudes toward the child born very preterm may be distorted and impact the developing parent-child relationship, particularly in circumstances where the pregnancy was unintended or unwanted.\(^5\) With the recent legal constraints to obtaining terminations for unintended or unwanted pregnancies, maternal mental health, stress, and the financial burden of very preterm birth is likely to escalate, particularly in already marginalized populations. Therefore, research is needed to understand what the potential impact of the lack of access to termination of an unwanted pregnancy will have on parenting very preterm infants.
ARTICLE INFORMATION
Published: October 21, 2022. doi:10.1001/jamanetworkopen.2022.38095
Open Access: This is an open access article distributed under the terms of the CC-BY License. © 2022 Wouldes TA. JAMA Network Open.
Corresponding Author: Trecia A. Wouldes, BA, MA, PhD, Department of Psychological Medicine, Faculty of Medical and Health Sciences, The University of Auckland, Private Bag 92019, Auckland 1142, New Zealand (t.wouldes@auckland.ac.nz).
Author Affiliation: Department of Psychological Medicine, Faculty of Medical and Health Sciences, The University of Auckland, Auckland, New Zealand.
Conflict of Interest Disclosures: None reported.
REFERENCES