



COMMENT

The missing link in autism spectrum disorder: a specific cause and the practitioner

Scott A. Rivkees¹ and Valerie Oipari²*Pediatric Research* (2018) 84:151–152; <https://doi.org/10.1038/s41390-018-0058-0>

Among the most prevalent and pernicious problems affecting children is autism spectrum disorder (ASD), which affects up to 1 in 68 children in the United States.¹ A neurodevelopmental disorder of varying severity, the considerable prevalence of this disorder has resulted in a quest for a better understanding of causation and risk factors. In this issue of *Pediatric Research*, Hisle-Gorman et al.² report results of an elegant epidemiologic study aimed at identifying prenatal, perinatal, and neonatal conditions associated with ASD.

Utilizing a case-cohort study approach of the Military Health System database, the authors identified ASD risk factors among 8760 children diagnosed with ASD, matched with 26,280 controls.² Similar to other epidemiologic studies of this issue,^{3–5} an association of ASD and multiple prenatal and postnatal risk factors were observed.² These findings support the notion that the roots of ASD are multifactorial. As such, without a specific risk factor or condition to target, global approaches are needed for risk factor mitigation, and to support the care and evaluation of these special children.

Seventeen prenatal conditions were examined in this cohort to assess associations with ASD.² ASD was associated with several maternal conditions, which included mental illness, epilepsy, hypertension, diabetes, and asthma.² The use of maternal medications for medical conditions, which may reflect severity of illness, was identified as a risk factor too.² What is not known is whether improved management of these maternal conditions, reduces the likelihood of ASD in children.

In the neonatal period, six conditions were evaluated.² Seizure activity and neonatal infections were found to be risk factors.² Fascinating data from others also show that there are genetic elements that influences the development of ASD in children.^{3,6} Yet, we do not know how genetic factors mesh with infant illness or environmental factors to influence the risk of ASD.

It is laudable that federal government has supported the type of research, similar that of Hisle-Gorman and co-workers, which is essential to provide new insights into our understanding of autisms. The bipartisan Autism Collaboration, Accountability, Research, Education and Support Act, or Autism CARES Act of 2014,⁷ clearly provides important funding for this problem. It is important that this legislation be renewed prior to its expiration in 2019.

Recognizing the unknowns of ASD causation, from a practical vantage, women should take all possible measures to ensure a healthy pregnancy. Yet, this critical pillar of prenatal care is challenged by a serious and worsening shortage of obstetricians.^{8–10} Reflecting this dire workforce need, about half of the

counties in the United States currently do not have obstetricians, and it is estimated that there will be a short fall of 6000 to 8000 obstetricians in the United States by 2020.^{8–10} This shortage is especially acute among practitioners focusing on high-risk pregnancies, practitioners who focus on conditions found to be associated with ASD.² A national strategy that embraces the importance of women's health is needed to address this critical workforce issue. Unfortunately, this discussion has been fractured by the abortion debate.¹⁰

Similar to how many women struggle to find prenatal care, many families with children with ASD, struggle to find specialists to evaluate and treat their children. It is estimated that 15% of children in the United States have developmental or behavioral problems, some of which include ASD.^{11,12} Yet, the developmental and behavioral pediatrics workforce is woefully inadequate in the United States.

It is estimated that there are about 500 fellowship-trained physicians in developmental and behavioral pediatrics along with nearly 300 other practitioners with expertise in this area.¹¹ Compounding this problem, <50 developmental behavioral pediatric fellows graduate each year in the United States. Thus, the pipeline of trainees is inadequate to satisfy future national needs.

Similar practitioner shortages hold true for child psychiatrists. There are about 8000 child psychiatrists in the United States, and severe shortages of child psychiatrics are recognized in nearly every state.¹² Considering that mental health issues are increasing substantially in the United States, we have a perfect storm of consequence, as the understaffed pediatric mental health workforce cannot keep up with rising demand.

In ASD, we face the challenge of a prevalent pediatric condition, without a specific preventative intervention. Thus, to address this complex condition with multifactorial causes, we need to advocate for proper prenatal and postnatal care. Yet, we have great shortages in obstetrical care, and thousands of children with ASD lack access to needed care. Efforts have been proposed by different academic organizations to address these workforce shortages.^{8,12} However, despite these recommendations that have largely gone unanswered, the gap between clinical needs and the numbers of trainees in obstetrics, developmental and behavioral pediatrics, and child psychiatry, is worsening. Proposed solutions to these workforce shortages that need to move forward include the expansion of loan repayment programs to these disciplines, the increased use of physician-extenders and expert generalists, and the expanded use of technology through telemedicine to reach more patients.¹³ A renewed dialog is clearly needed

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to recognize the impact of workforce shortages on one of the most prevalent disorders affecting families and children, as we continue to search for causes and cures.

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