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Research Article

Need for Pediatric Resident Training in Autism Spectrum Disorder: Preparation for Primary Care

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ABSTRACT

Introduction: The increased prevalence of autism spectrum disorder and documented benefits of early intensive intervention have created a need for flexible systems for determining eligibility for autism-specific services, including primary care provider training. Unfortunately, many pediatricians feel uncertain assessing diagnostic risk and facilitating follow-up care for children with autism.

Methods: We surveyed current residents regarding their confidence around engaging in specific practice behaviors and providing care for patients presenting with concerns for autism compared to other common concerns seen in primary care.

Results: Residents were significantly more confident in their skills with respect to caring for patients with other common concerns than for patients with autism including statistically significant differences in their perceived ability to diagnose, communicate with families about, treat/manage, and facilitate follow-up care. Additionally, nearly all residents with career plans for primary care indicated that autism concerns should fall within their scope of practice and that further training and education about autism is important to their careers.

Discussion: These findings underscore that although many current residents feel that being able to recognize and diagnose autism is important, they feel unprepared to do so within current training models and will likely carry this uncertainty forward into future practice. This study reflects clear targets for advancing incorporation of enhanced and active autism-specific training into pediatric residency programs.

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Introduction

Given emphases on early detection and intervention, as well as the need for chronic management of complex medical, educational, and behavioral challenges over time, pediatric providers are increasingly asked to play critical roles in the lives of children with Autism Spectrum Disorder (ASD) and their families. Unfortunately, practicing physicians often report feeling unprepared and an overall lack of training related to caring for patients with ASD [1]. This leads to parents having limited confidence in their provider's ability to care for their child and often fuels frustrations surrounding delayed referrals for evaluations and inadequate guidance for treatment options and community supports [2].

Furthermore, although many pediatric residents report that ASD-specific education is important to their careers, the quality of such current training is perceived as fair or poor [3, 4]. This overall lack of preparation is often due to inadequate training regarding tools/methods for risk assessment, ways of talking about diagnostic risk or uncertainty with families, and methods of providing follow-up care [5].

In the past, the Accreditation Council for Graduate Medical Education (ACGME) specified that pediatric residency programs should provide an integrated experience that trains residents in collaboration and coordination of care for children who present with developmental and behavioral issues [6]. However, specific curricula and training requirements are not specified for most training programs [7]. Thus,

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there is a growing need for training programs to identify strengths, challenges, and needed supports to enact change and promote programs of meaning. This includes examining current resident training programs to assess future pediatric providers' perceptions of their training and abilities in providing diagnostic and follow-up care for children with ASD. We conducted the current study to assess the confidence of our own medical center's residents with regard to ASD-related care. We

hypothesized that resident confidence in screening, diagnosis, and follow-up care for ASD would be significantly lower in relation to other common concerns seen in their primary care clinic; highlighting the need for development of core curricula and training components to enhance current models of developmental and behavioral pediatric (DBP) training.

Table 1: Residents' ratings of confidence in practice behaviors for ASD versus other common pediatric concerns and whether these concerns should fall within their scope of practice.

	ASD Concerns	Medical Concerns	Developmental/Behavioral Concerns
Confidence in ability to: ^a			
Screen for and identify symptoms	2.62 (.78)	3.61 (.47) *	2.96 (.66) *
Diagnose	2.10 (.86)	3.48 (.54) *	2.65 (.62) *
Treat/manage symptoms	1.60 (.70)	3.42 (.54) *	2.00 (.49) *
Communicate about concerns	2.18 (.75)	3.57 (.54) *	2.69 (.58) *
Facilitate follow-up care	2.82 (.94)	3.67 (.58) *	3.27 (.76) *
Concerns should fall within your scope of practice ^b	3.08 (.92)	3.64 (.65) *	3.27 (.73) **

Note: Data presented as mean values (SD), ^a1 = Not confident at all, 4 = Very confident, ^b1 = Not at all, 4 = Very strongly

* Significant difference between ASD and other concern ($p < .001$)

** Significant difference between ASD and other concern ($p = .01$)

Table 2: Residents' ratings of confidence in their abilities to identify symptoms of ASD, connect families to ASD-related services, and the importance of ASD education to their careers.

	Career Plans			
	Primary Care ($n = 14$)	Subspecialty ($n = 27$)	Undetermined ($n = 9$)	All ($n = 50$)
Confidence in distinguishing between ASD and other delays ^a	1.86 (.66)	2.30 (.47)	2.11 (.78)	2.14 (.61)
Confidence in connecting families to ^a				
School-based services	1.93 (.73)	2.22 (.80)	2.22 (.67)	2.14 (.76)
Early intervention services	2.79 (.89)	2.93 (.68)	2.78 (.83)	2.86 (.76)
Behavioral support services (Applied Behavior Analysis)	1.71 (.73)	1.93 (.83)	1.56 (.53)	1.80 (.76)
Services to address mental health concerns	2.57 (1.16)	2.56 (.93)	2.56 (.88)	2.56 (.97)
Speech/language therapy	3.00 (.96)	3.11 (.89)	2.78 (.97)	3.02 (.92)
Importance of education about ASD to career ^b	3.57 (.85)	2.26 (.60)	3.00 (.87)	2.76 (.92)

Note. Data are presented as mean values (SD). There was a significant effect for future career plans (primary vs. subspecialty) on perceived importance of education about ASD; $t(39) = 5.77, p < 0.001$.

^a1 = Not confident at all, 4 = Very confident ^b1 = Not important, 4 = Very important

Methods

I Participants and Setting

All 96 residents in the departments of Pediatrics (Peds) and Internal Medicine and Pediatrics (Med-Peds) at Vanderbilt University Medical Center (VUMC) during the 2017-18 academic year were eligible to participate. Our existing residency DBP training, in line with other models across the country, emphasizes broad exposure to a variety of

neurodevelopmental and behavioral challenges of childhood. All residents also are required to spend 4 total weeks in a DBP rotation, split across their first and final years. Current residents receive ongoing training in paper-and-pencil tools to screen for ASD at 18 and 24 months in the primary care continuity clinic and spend some time observing in an ASD diagnostic clinic. Most of the experiences provided within the DBP rotation require shadowing of the pediatric provider only and often do not include active, "hands-on" components.

II Instrument

We designed an 18-item survey based on review of existing literature on physician and resident comfort level and confidence with a range of presenting concerns [8-10]. Residents provided basic demographic information then completed Likert-type rating scales assessing their confidence in providing care for patients presenting with ASD versus other common concerns: asthma, constipation, recurrent acute otitis media (RAOM), sleep problems, attention-deficit/hyperactivity disorder (ADHD), and speech delay. For each condition they rated their confidence on a scale from 1 (not confident at all) to 4 (very confident) in their ability to a) screen for and identify symptoms, b) communicate effectively about concerns, c) definitively diagnose, d) treat/manage symptoms, e) facilitate follow-up care, and f) how strongly they felt that concerns about the above conditions should fall within their scope of practice. Specific to ASD, residents were asked to rate the importance of education about ASD to their career (1 = not at all to 4 = very important), their confidence in their ability to distinguish between ASD and other delays, their proficiency in using ASD screening tools, and their ability to connect families to services.

III Analysis

We calculated descriptive statistics for all demographic data and resident ratings. A priori planned comparisons involved creating two new dependent variables. Mean ratings for asthma, constipation, and RAOM were compiled to compare resident ratings for ASD with common medical concerns (MED), while mean ratings for sleep problems, ADHD, and speech delay were compiled to compare resident ratings for ASD with other common behavioral/developmental concerns (DBP). We completed paired t-tests to examine significant differences across mean ratings for each practice behavior. All statistical analysis was computed with SPSS version 25. We obtained ethical approval from the VUMC institutional review board.

Results

Thirty-four of the 72 Peds residents and 16 of the 24 Med-Peds residents completed the survey (47% and 66%, respectively, total $n = 50$). For Peds residents, this encapsulated 42% of all Peds interns and 50% of all Peds upper levels. For Med-Peds residents, this encapsulated 67% of all Med-Peds interns and 67% of all upper levels. Eighty-six percent of our sample had completed at least one 2-week DBP rotation and all were actively seeing patients in their continuity clinics. Fifty-four percent of our sample listed a subspecialty for "career plans," with 21% listing primary care, and 18% undetermined. Table 1 summarizes residents' reported confidence levels in employing specific practice behaviors. Analyses revealed that residents were significantly less confident in their ability to a) screen, b) diagnose, c) communicate effectively about, d) treat/manage symptoms, or e) facilitate follow-up care for concerns related to ASD in comparison to all other medical and developmental/behavioral concerns. Specific to ASD, a significant proportion of residents reported no/low confidence in their ability to screen for and identify symptoms (48%), diagnose (62%), treat/manage symptoms (88%), communicate with families about symptoms (66%), and facilitate follow-up care (38%).

Table 2 summarizes residents' responses regarding their confidence in distinguishing ASD from other delays, confidence in their ability to connect families to a number of ASD follow-up services, and perceptions regarding the importance of ASD education to their careers. Overall, 74% of residents reported no/low confidence in their ability to distinguish symptoms of ASD from other delays ($M = 2.14$, $SD = 0.61$). Residents also reported no/low confidence in their ability to connect families to school-based services (68%), early intervention services (28%), behavioral services (i.e., applied behavioral analysis [ABA]; 84%), mental health services (50%), and speech therapy (28%). Interestingly, residents reported that they were significantly less confident in their ability to connect families to ABA/behavioral services ($M = 1.83$) compared to other services. Overall, 92% of residents rated ASD education as somewhat/very important to their careers; however, t-test analysis revealed that residents going into primary care described education about ASD as significantly more important to their careers compared to residents pursuing a subspecialty (primary care: $M = 3.57$, $SD = 0.85$; subspecialty: $M = 2.26$, $SD = 0.60$); $t(39) = 5.77$, $p < .001$. Other summary analyses revealed that of the 80% of residents that reported proficiency using paper/pencil screening measures, 68% had no/low confidence in distinguishing ASD from other delays and 56% reported no/low confidence in formally diagnosing ASD. Of the 74% of residents that strongly/very strongly felt that concerns for ASD should fall within their scope of practice, 78% reported no/low confidence in distinguishing ASD from other delays, and 60% reported no/low confidence in diagnosing. Lastly, of the 20 residents who were in their last year of residency and who had completed one or both rotations, 80% believed ASD concerns should fall within their scope of practice (regardless of career plans), but only 25% reported moderate/high levels of confidence in distinguishing ASD from other delays, and only 45% reported moderate/high levels of confidence in diagnosing ASD.

Discussion

A majority of residents in our study felt ASD concerns should fall within their scope of practice and that education regarding ASD is important to their careers. Unfortunately, residents were significantly more confident in caring for patients with other common concerns than for patients with ASD. These data underscore that many residents feel unprepared to provide ASD-related care within current training models and will likely carry this uncertainty forward into future practice. This finding extends past research conducted with community pediatricians indicating an overall lack of "hands-on," applied learning opportunities to strengthen competence in recognizing symptoms of ASD in young children and caring for these patients [2, 4]. With few exceptions, most medical education programs do not currently provide residents with specific, applied training in the evaluation, diagnosis, and management of young children with ASD-related concerns. This represents a tremendous training gap that, in turn, is also a tremendous opportunity for service system intervention. Considering this need, numerous recent works have demonstrated benefits of giving pediatricians focused training in ASD-specific assessment tools as well as establishing active learning collaboratives [11, 12]. This research suggests that training pediatricians to use a decision-making framework for within-practice identification of ASD results in a realistic, accurate, and preferable practice model that can lead to dramatic increases in children enrolling in evidence-based treatment [12, 13]. However, such ad hoc specialty programs are difficult to replicate and do not contribute to shifts in service system capacity on

a large enough scale to enhance the quality of care for children with ASD. Teaching and expecting residents, however, to provide ASD-specific consultation as part of routine pediatric care for young patients increases the probability that these practices will be carried forward into diverse community practice settings over time.

Our study includes some notable limitations. First, this study was conducted at a single large academic medical center and significant findings may not translate fully to other settings. However, past research has shown similar limitations in ASD training and practice behaviors across academic and community pediatric settings [4, 5, 7]. Second, it is possible that the residents who did not respond to our survey perceive their abilities differently and may differ in their views of the importance of ASD education and training. Third, although our survey was adapted from other surveys, our survey has not undergone validity testing. Lastly, ASD prevalence does not necessarily match that of other conditions in our comparisons, and our residents' confidence in managing presenting concerns could simply be proportional to their incidence in primary care. However, ASD prevalence estimates continue to increase nationally, and as the challenges and barriers related to ASD diagnostics and follow-up increase, so will pediatric providers' role in initial detection and long-term management.

Similar to training models for other concerns seen in primary care continuity clinics, ASD-specific training programs should introduce components of active, supervised learning experiences in order to enhance residents' abilities to a) observe/detect symptoms, b) administer structured interactive screening methods within practice or make referrals for further evaluation if symptom profiles are more complex, c) communicate clearly with families and other providers about results and recommendations, and d) coordinate patient care by linking patients to appropriate community resources. If we do not provide this wide-scale training in the basics of ASD recognition, triage, and care coordination to future pediatric medical providers, then current "screen-and-refer" procedures may continue to lead to lengthy waits for diagnostic confirmation and service initiation. As pediatricians are the central figures within the medical home, which is increasingly functioning as the entry point for developmental and behavioral health intervention, it is reasonable to expect that all pediatric physicians should leave their residencies with a basic competency in recognizing ASD within practice, diagnosing in straightforward cases, interfacing with specialists for children with more complex profiles, referring for follow-up as needed, and effectively communicating with families as challenges evolve over time.

Declaration of Interest Statement

The authors declared no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

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Notes on Contributor

Dr. Hine specializes in behavioral pediatrics and integrated primary care, assessment and treatment of children with autism spectrum disorder and other neurodevelopmental disabilities, and direct application of behavioral-health services and provider/parent/teacher training for children with a wide variety of behavioral-health and developmental needs. His current research and clinical interests include integration of behavioral-health services into pediatric primary care practices, early identification and treatment of autism spectrum disorders within primary care and use of telemedicine to enhance treatment and support for children with behavioral-health concerns and their families.

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