Evaluating the Feasibility and Utility of an Educational Webinar Series on Autism for Pediatric Primary Care Providers: A Pilot Study

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Abstract

Background: Parents of children later diagnosed with autism spectrum disorder (ASD) frequently raise concerns about their child's behavior and development with their pediatric primary care providers (PPCPs). However, few PPCPs make timely referrals to ASD specialists following positive ASD-screening results, and even fewer evaluate for ASD themselves-actions that contribute to the ASD-detection gap (i.e., the time span between first concerns and eventual diagnosis). Some literature suggests that PPCPs' lack of knowledge about and/or confidence in managing ASD/suspected ASD contributes to referral and diagnostic delays.

Methods: To evaluate the utility of an online educational platform to guide PPCPs in the early identification and management of ASD, we invited PPCPs within a hospital-affiliated, pediatric-practice network to participate in a three-part webinar series on screening, diagnosis, and referral practices for ASD. Each webinar lasted approximately one hour and conferred one continuing medical education credit. Pre- and post-test surveys were imbedded within each webinar and solicited open-ended feedback.

Results: Among 288 potential participants, 37 (12.8%) completed the first of three webinars and 28 (9.7%) completed all three. All pre-post knowledge and confidence scores increased significantly for each webinar (all p ≤ .001). Participants' open-ended feedback was largely positive; most reports cited information about the M-CHAT-R/F follow-up interview (Screening webinar), videos contrasting neurotypical/atypical behaviors (Diagnosis webinar), information on testing/medical workup (Referral webinar), and referral resources (Referral webinar) as the most helpful aspects.

Conclusion: The PPCP response rate was relatively low, despite efforts to increase engagement with the webinars. This may have resulted from lack of time, a frequently reported barrier to PPCPs' participation in educational activities. Among those who participated, significant knowledge and confidence gains were observed, and provider feedback was overwhelmingly positive. Findings have implications for the development/refinement of such webinars for broader distribution, as well as alternate learning platforms to increase utility.

Introduction

Diagnostic prevalence of autism spectrum disorder (ASD) has dramatically increased in the United States (U.S.), with the latest figure estimating 1-in-44 children have ASD [1]. Although core symptoms of ASD are usually observed within the first 2 years of life, only 42% of children with ASD are evaluated before age three [2].

Currently, the average age at ASD diagnosis in the U.S. is around 4 years, meaning many children are missing out on important interventions during the window of opportunity when they are most impactful [3]. Early diagnosis is key to families' access to intensive behavioral interventions that promote developmental outcomes across domains (language skills, adaptive-functioning skills, social skills) and throughout the lifespan. However, the present delay of approximately 2.7 years between initial parent concerns and ASD diagnosis (i.e., "the ASD-detection gap") is especially concerning because diagnostic delays or inaccurate diagnoses can limit or prevent access to these services. Moreover, these delays may be even greater for children from under-resourced or minoritized groups [4], representing a social injustice and highlighting the necessity of increasing access to timely diagnostic services for all children with suspected ASD. Bolstering access through existing points of contact in primary care represents a potentially effective mechanism for accomplishing such aims.

The Role of Pediatric Primary Care Providers in Early ASD Identification

During the first five years of a child's life, pediatric primary care providers (PPCPs) are typically the first point of contact for families when developmental concerns arise, which coincides with the critical years for an ASD diagnosis (Committee on Children with Disabilities [CCD], 2001; [5-7]. Because of the frequency of well-child visits and parent familiarity with pediatric offices, PPCPs are essential to early, accurate ASD identification and are considered a gateway to early

intervention services. PPCPs serve multiple roles in this process, including responding to parents' initial concerns, recognizing at-risk children though routine developmental surveillance, diagnosing ASD, referring children to appropriate specialists, and helping caregivers advocate for their children [7,15]. Consequently, the American Academy of Pediatrics (AAP) provides specific guidelines for PPCPs with regard to identifying, diagnosing, referring, and treating children with ASD within the primary care setting [8].

Screening Recommendations and Practices Following Positive Screens

Current AAP guidelines indicate that (a) general developmental surveillance should take place at the 9-, 18-, 24-, and 30-month well-child visits to determine whether a child is meeting expected milestones, and (b) ASD-specific screening should occur at 18- and 24-months to identify children whose symptoms may emerge or become more apparent during the second year of life (CDC, 2019). Though research supports the validity of ASD-specific screening tools in primary care, their use among PPCPs has ranged from as low as 8% to as high as 60% in recent years [9]. Barriers to use of the Modified Checklist of Autism in Toddlers, Revised with Follow-Up (M-CHAT-R/F, one of the most commonly used ASD screeners, have included an inability to complete necessary follow-up interviews, time constraints, and provider concerns about false-negative screens [10]. Despite these barriers, PPCPs in hospital-affiliated pediatric practice networks have high rates of M-CHAT-R/F screening [11]. In one of these studies, 93% and 82% of eligible children received ASD screening at their 18- or 24-month well-child visits, respectively; in another, 91% of children were screened with the M-CHAT-R/F at well-child visits between the ages of 16 to 24 months [12].

If a child screens positive (i.e., higher likelihood of ASD) and/or if a PPCP observes concerning symptoms, AAP guidelines suggest several concurrent steps [7], including referrals for comprehensive evaluation, audiology evaluation, and early intervention services. PPCPs should not wait for a definitive ASD diagnosis to make referrals [7,13]; following this guideline helps to expedite intervention to address developmental concerns while simultaneously exploring specific diagnostic considerations, as well as ruling out possible hearing loss. Yet recent studies suggest that referrals from pediatricians to ASD specialists are not happening as frequently as recommended. Monteiro and colleagues (2019) found that even though rates of ASD-specific screening were high in their study, only 31% of children who screened positive were referred for ASD specialist evaluation. Moreover, among these screen-positive children, PPCPs referred only 20% to ECI and 16% to private therapy (12% were already receiving services). These results are similar to those of Wallis and colleagues (2020) who found that 40.2% of children received at least one recommended referral (i.e., early intervention, audiology, and comprehensive ASD evaluation); however, only 3.7% received all recommended referrals.

Reasons for Referral and Diagnostic Inactions Following Positive Screening

Considering that some interventions are predicated on the ASD diagnosis, it is critical to understand where potential obstacles lay in PPCPs' screening, diagnostic, and referral workflows so that they can be addressed. PPCPs themselves report lacking knowledge of treatment options, insufficient training in ASD diagnosis and treatment, ambiguity regarding their role in ASD-specific care, and difficulty with care coordination [14-16]. Some research indicates that, although PPCP knowledge of ASD symptomology is high (i.e., recognizing language communication problems, social interaction, limited area of interest), a majority of PPCPs (61%) report difficulty facilitating connections between families of children with ASD and community services [17], as well as having discussions about recommended next steps. PPCPs also consistently report lacking knowledge about school-based services (Hastings et al., 2014) - a critical gap because so many families rely heavily on services offered through their local school districts [18].

In addition to lacking knowledge about available services and supports, PPCPs also hold a number of beliefs about ASD that may affect their referral/diagnostic actions. Some providers endorse negative attitudes toward the utility and necessity of validated screening tools and believe that developmental surveillance alone is sufficient for ASD identification [19,20]. Other providers claim they do not refer children with suspected ASD for a comprehensive evaluation so as to avoid negative emotional reactions from parents. Many PPCPs report difficulty reconciling the AAP mandate to screen and diagnose ASD early with a lack of knowledge about treatment options and resources available for this population [21]. Moreover, because of insufficient training, many PPCPs report low confidence in their ability to provide care for children with ASD, as well as low self-efficacy in the ASD-referral process [4-6]. Lacking knowledge and confidence in these areas may help explain PPCPs' poor follow-through in making necessary referrals to autism specialists, thereby contributing to the ASD-detection gap.

ASD-Specific Education and Supports for Pediatricians

One means of addressing PPCPs' role in ASD identification is through training that improves their ASD-specific knowledge and confidence. A study of PPCPs in Brazil found that an educational training program in ASD identification, diagnosis, and treatment significantly improved PPCPs' knowledge about ASD and was associated with increased referral patterns four months after the training program ended, with providers referring six times as many suspected cases of ASD [22]. ASD-specific training programs have also had significant effects when implemented with medical residents. In one such study, web-based learning activities, combined with hands-on training, resulted in 95% of residents reporting increased confidence identifying ASD within the primary care setting (Hine et al., 2021). Web-based or online training programs may be particularly valuable in offering a free and flexible way for healthcare providers to access such information, and an internet search quickly reveals that the number of such course offerings abounds. However, there is limited evidence of their quality and utility. It is not clear how often such programs are actually being used, how they are valued by the intended audiences, and whether they influence providers' knowledge and confidence about ASD and subsequent clinical practices. For example, one study found that health care professionals who held inaccurate perceptions about their role within the ASD diagnostic process were less likely to acknowledge their need for such information/supports and advocate for training [13],

suggesting that those who are most in need of this information may be unlikely to seek it on their own. Furthermore, because of the time and costs involved with developing and updating online training materials, it is important to examine whether this is an acceptable educational platform for PPCPs. To that end, the current pilot study sought to evaluate (a) PPCPs' use and acceptability of an introductory educational webinar series on ASD-screening, diagnosis, and referral practices; and (b) potential improvements in PPCPs' knowledge and confidence about ASD-screening, diagnosis, and referral practices following their participation.

Methods

Participants

Participants were PPCPs from a network of 51 primary care clinics associated with a large hospital system in Houston, Texas. Email invitations to PPCPs were sent by the study team in two waves to 263 providers within the network (Wave 1 [$n = 132$], Wave 2 [$n = 131$]). A third group of providers ($n = 25$) from an integrated primary care clinic were also invited following a specific request from their group for training in ASD diagnosis, thus creating a total sampling pool of 288 providers. Because these participants were employees of the hospital system, we did not solicit demographic or otherwise potentially identifiable information. This strategy helped to maintain privacy, reduce time burden on participants and encourage participation, and further mimicked real-world training opportunities (i.e., outside the research context).

Materials

This study was reviewed and approved by the Internal Review Board at Baylor College of Medicine. The three-part webinar series was designed by the study team to educate PPCPs in Screening, Diagnosis, and Referrals for ASD. This series was developed with input from a paid consultant who had extensive expertise in ASD screening with the M-CHAT-R/F and in partnership with Diagnose First (diagnosefirst.com), a web-based resource that provides video-based education and instruction in early ASD detection and ASD diagnosis. Each of the three webinars included evidence-based content that was consistent with current AAP-practice parameters for screening and management of ASD. The Diagnosis webinar, in particular, focused on ASD core symptoms and included high-quality videos selected from Diagnose First's extensive ASD video library that contrasted neurotypical and ASD-related behaviors in young children. An overview of the content for each webinar is in Figure 1. The webinar series was hosted on Diagnose First's web-based platform, which required users to request a free, unique login to access the site's content. Each webinar was self-paced, lasted approximately one hour, and conferred one hour of continuing medical education (CME) credit, as approved through the hospital's Office of Continuing Medical Education.

Electronic pre- and post-webinar questionnaires were developed by the study team and embedded within each webinar. Each questionnaire contained 10 items, three of which assessed potential changes inself-reported knowledge of and confidence in ASD-screening, -diagnosis, and -referral practices. Response options to these items were on a four-point Likert-type scale ranging from "1-Not at all" to "-Extremely," with higher scores indicating greater knowledge/confidence. The remaining items on each survey queried

other content presented in each webinar; because these content items were not part of a validated instrument, they were collected to inform future efforts only. Pre- and post- survey items for each webinar were identical, yet item wording was tailored to match the webinar's topic (Screening, Diagnosis, or Referral). Additionally, post-test questionnaires included open-ended text boxes for provision of optional feedback. Table 1 contains the self-reported knowledge and confidence items that were the primary focus of this study.

Procedure

Potential participants received an initial email invitation, followed by up to three reminder emails at two-week intervals. Each invite/reminder email included instructions for requesting their unique login information to access the webinar website. Once logged in, participants were authorized to view the Screening, Diagnosis, and Referral webinars, with controls enabled that mandated their viewing in that order because content built on the preceding webinar. Before and after each webinar, participants received the pre- and post-test questionnaires; a participant could not view a given webinar without first completing the pre-test for that webinar. Likewise, a participant must have completed the prior webinar's post-test in order to access the next webinar's pre-test. Following completion of each post-test questionnaire, participants had the option to print a CME certificate. Once participants completed the Referral post-test, they could download and/or print the entire webinar series for future reference. Overall, we designed the participation process to mimic training opportunities outside the context of research, where institutional mandates and monetary incentives are typically not encountered.

To compare pre-post changes across all self-reported knowledge and confidence scores for each webinar, paired-samples t-tests were used, as these were ordinal variables with no "right" versus "wrong" responses. Participants' open-ended feedback was initially reviewed for possible thematic analysis; however, because of the brevity of these responses and clear emotional valence, content analysis was applied to categorize participants' statements as positive (i.e., praised/found value) [27], negative (i.e., criticized/disagreed with), constructive (i.e., provided recommendations), and/or neutral (i.e., impartial comment). If a statement included more than one type of content, then it was classified in each appropriate category (i.e., a statement could have both positive and constructive components and be counted in each of these categories).

Results

Overall, 37/288 providers (12.8%) completed the Screening webinar; 31/288 providers (10.8%) completed the Diagnosis webinar; and 28/288 (9.7%) providers competed the Referral webinar. However, even in this small sample, paired samples t-tests revealed statistically significant pre-post increases ($p \leq .001$) across all self-reported knowledge and confidence scores for each webinar (see Table 1). Similarly, disagreement with the statement that "Only specialists are able to diagnose ASD, and primary care providers do not have the training to make an accurate diagnosis," significantly increased from pre- to post-test ($t[29] = -2.757, p = 0.01$).

A total of 19 PPCPs provided open-ended feedback about the webinars; 15 (78.9%) included positive sentiments. Three responses (15.8%) contained negative feedback; five (26.3%), constructive feedback; and three (15.8%), neutral feedback (see examples in Table

Table 1: Mean Pre-Post Score Changes in Self-reported Knowledge and Confidence Items for Each Webinar.

Webinar	Item‡	Pre-test μ (SD)	Post-test μ (SD)	t(df)
Screening	1. How knowledgeable do you feel about the prevalence of autism spectrum disorder (ASD)? †	2.4 (0.8)	3.3 (0.5)	-6.681 (36)**
	2. How knowledgeable do you feel about the value of ASD screening and surveillance? †	2.8 (0.8)	3.7 (0.5)	-7.002 (36)**
	3. How confident do you feel in your ability to accurately interpret results from an ASD screener? ‡	2.5 (0.7)	3.1 (0.7)	-5.499 (36)**
Diagnosis	1. How knowledgeable do you feel about DSM-5 criteria for ASD? †	2.3 (0.7)	3.3 (0.6)	-6.225 (30)**
	2. How knowledgeable are you about the medical workup for ASD and associated medical conditions that often co-occur with ASD? †	2.3 (0.7)	2.9 (0.6)	-5.135 (29)**
	3. How confident are you in making diagnoses of ASD? ‡	2.4 (0.6)	3.2 (0.5)	-5.996 (30)**
Referral	1. How knowledgeable do you feel about educational and therapeutic referrals for families with ASD or suspected ASD? †	3.0 (0.6)	3.5 (0.6)	-3.813 (27)*
	2. How knowledgeable do you feel about which medical tests should be considered for children with ASD? †	2.4 (0.8)	3.4 (0.6)	-6.854 (27)**
	3. How confident are you in knowing when to refer a child for an ASD specialist evaluation? ‡	2.1 (0.7)	3.3 (0.6)	-8.208 (25)**

Note. ‡Response options were on a four-point Likert-type scale ranging from "1-Not at all" to "4-Extremely." †Knowledge item. ‡Confidence item. `p = 0.001; ``p< 0.001.

Table 2: Feedback Categorization: Examples of Positive, Negative, Constructive.

| Positive Feedback (n = 15)	Negative Feedback (n = 3)	Constructive Feedback (n = 3)
"Should be mandatory for all general pediatricians associated with [hospital] and available for community pediatricians. I get too many patients that clearly have ASD but were told to wait and see by community doctors." "This course has helped me a great deal. I have already changed my perspective as I evaluate children during well-child visits." "Every bit was helpful. I feel like I am 'drinking from a fire hose' of information! All of the slides have finally put things that I didn't know and things that I only partially know about ASD into one place."	"While very factual, the means of addressing the barriers do not recognize the validity of the general pediatrician's concerns." "I wish the presenter did not read the slides. I enjoyed when information was provided that was not on the slides." "I will try to implement what I learned but do NOT feel comfortable making a diagnosis myself yet; I am not sure how to ascertain all the information of DSM-5 criteria in a single 15-minute visit with a parent besides the MCHAT-R/F and needed a systematic way to review these criteria."	"Disseminate this information more widely, especially the local connections for families to get information." "More patient vignettes/ scenarios would be helpful as well." "I would have preferred to hear endorsement of the time requirement with suggestion to either complete follow up at the visit OR suggest than an additional visit would be appropriate to review further with the family."
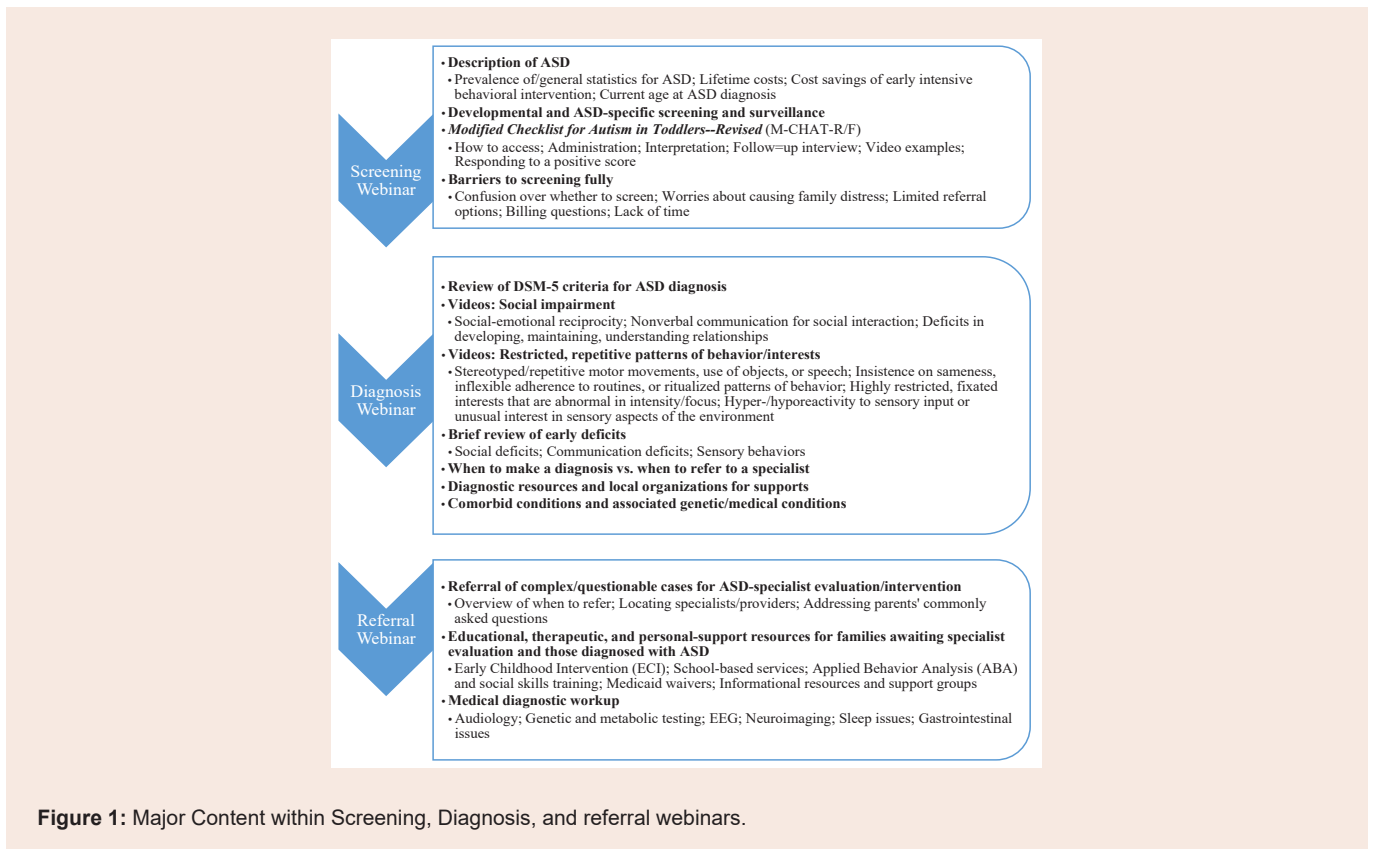
Figure 1: Major Content within Screening, Diagnosis, and referral webinars.

2). One participant recommended that the webinar series, "…should be mandatory for all general pediatricians associated with [hospital]," and two participants recommended broader distribution of the webinars to community pediatricians. Four participants requested a page of resources (e.g., .pdf or Word document), and one requested a copy of the slides. Two of the comments categorized as neutral were related to technical issues and one was a comment about Epic (the electronic health record [EHR] used by the network of practices). In terms of the most helpful content/information in each webinar, the most common responses were (a) M-CHAT-R/F follow-up interview for the Screening webinar (50.0%); (b) videos contrasting neurotypical/atypical behaviors for the Diagnosis webinar (57.1%); and (c) testing/medical workup (57.1%) and referral resources (57.1%) for the Referral webinar.

Discussion

We created an online educational program to educate PPCPs on ASD-screening, diagnosis, and referral practices and then evaluated provider use, acceptability, and potential improvements in PPCPs' self-reported knowledge and confidence about these practices following their participation. An important observation with respect to use was the low response rate. Our research design (a) included multiple reminders as a means to encourage participation; (b) extended recruitment beyond the targeted study-close date; (c) incentivized participants with one hour of CME credit per webinar; and (d) enabled downloading of each webinar as a take-away resource. We selected a study design that mimicked real-world training opportunities, with no institutional requirements to complete the webinars and no financial incentives-essentially, an "if you build it, they will come" approach. Despite efforts to increase participation rates, our sample size remained small. This is particularly notable because those in the integrated primary care clinic specifically requested training in ASD diagnosis, yet only a handful participated. It is possible that many providers simply could not find the time, as pediatricians frequently report time constraints as barriers to providing ASD-specific support and care. Additionally, the requirement to complete all aspects of the previous webinar (i.e., pre-post measurements) before accessing the next webinar may have deterred PPCPs from completing the series. Although we included this requirement so that our content sequentially built upon itself to reinforce key messages and align with clinical practice (i.e., screening diagnosis referral), it may have exasperated providers who were only interested in specific content materials (i.e., referral information, medical workup). It also limited our pool of participants for the Diagnosis and Referral webinars to those who completed the Screening webinar. This is an important take away, as many providers want more information about ASD (Carbone et al., 2020), which emphasizes a critical need to understand how providers want to receive this information. Interestingly, there was relatively little drop off in participation from one webinar to the next; 31/37 (83.7%) who participated in the Screening webinar completed the Diagnosis webinar, and 28/31 (90.3%) who participated in the Diagnosis webinar completed the Referral webinar. Such continued engagement may reflect providers' acceptability of the series once they began; though it is also likely that those who began the series in the first place were those most interested in the content offered [28].

Despite our relatively small sample, results demonstrated that a

brief (i.e., three 1-hour sessions) and convenient (i.e., self-paced and available on-demand) webinar series on ASD screening, diagnosis, and referral may be an effective way to educate PPCPs on these topics. Participants showed measurable gains in self ratings of knowledge and confidence in managing ASD following each of the webinars. Also, more providers moved from thinking that only specialists could diagnose ASD to recognizing that PPCPs could make the diagnosis themselves. This is encouraging, as some providers who may have felt that ASD diagnoses were out of their scope of practice may now feel empowered to make the diagnosis in clear cases, thereby expediting families' next steps in accessing intervention services. Earlier research suggested that, compared to other medical specialists who may commonly see individuals with ASD (e.g., psychiatrists), PPCPs did not differ in their knowledge about DSM criteria for ASD (Heidgerken et al., 2005). Therefore, it is possible that providing information that enhances PPCP confidence in their application of this knowledge could facilitate clinical actions that lead to earlier ASD diagnoses.

Among those who offered open-ended feedback, most of their comments were complimentary, with many pointing out that the materials were helpful, informative, and should be made available to other pediatricians. Information about the M-CHAT-R/F follow-up interview, videos in the Diagnosis webinar, and guidance regarding medical workup and referrals were cited as the most valuable aspects. PPCPs' preference for diagnostic information and referral practices are consistent with previously reported learning collaboratives [6]. Interestingly, many PPCPs in this study indicated no prior knowledge of the follow-up interview and/or a desire for more information on how to obtain/administer it. While the M-CHAT-R/F was always intended as a two-part screener [29], the majority of pediatricians do not use the follow-up interview [8]. It is not clear how this interview becomes separated from the initial screening questions during clinical implementation, but our results suggest an interest among some PPCPs to include it in their screening practices. Pediatric clinics should evaluate whether they currently support follow-up practices that enhance specificity of ASD-screening tools, which may subsequently help providers feel more confident in their referral actions.

Constructive and negative comments shared by participants provided important considerations for future work to enhance/expand educational tools and increase providers' engagement in training. A few participants made specific recommendations for improving content, as well as shared their hesitation about implementing the follow-up interview after a positive screen; both should be addressed in updates to the webinars prior to subsequent distribution. The recommendations to make the webinars more widely accessible suggest that developing template presentations with information tailored to a specific locale may increase generalizability and utility. Additionally, participants were given the option to download and use the webinar slides as a reference or resource for families they serve; however, some may not have realized that they had this option, so clarifying this feature and/or providing some instructions on this process may be helpful [30-33].

Limitations and Future Directions

While this pilot study demonstrated the utility of an educational webinar series for enhancing PPCPs' knowledge and confidence

in ASD-screening, diagnostic, and referral practices, there are limitations to note. One is that our response rate was low; rendering a relatively small sample that may not be reflective of the broader group of PPCPs in the sampling pool. Notably, this study was conducted prior to the onset of the COVID-19 pandemic, and it is possible that learning preferences may be different now in the wake of increased reliance on/familiarity with remote-engagement platforms. A second limitation is that our questionnaires were not validated tools and were designed to be extremely brief to encourage participant retention; as such, they were limited in their range of content and likely do not reflect a comprehensive assessment of what PPCPs learned about ASD. A review of literature that included assessment of ASD knowledge revealed no standardized approach or strong measure of this construct, and there is a need for improved tools that are cross-culturally relevant with corresponding content [11]. For this reason, our focus in the current study was on PPCPs' self-reported knowledge and confidence ratings in the management of ASD. Fourth, we do not know whether participation in the webinars led to changes in providers' screening, diagnostic, and referral behaviors in their practices, although we intend to examine these actions in subsequent work. Previous research in health professions suggests that knowing does not always give rise to doing [17]. Therefore, educational strategies alone may be insufficient to prompt changes in practice. However, other research has observed changes in screening and referral practices after educational interventions, such as ECHO Autism [22]. As such, it will be valuable to follow the screening, diagnostic, and referral practices of PPCP participants and compare those to the practices of non-participant providers in the network. Finally, our solicitation of open-ended feedback about the webinars yielded brief comments from a relatively small number of PPCPs. It is possible that a different methodological approach (e.g., in-depth interviews, focus groups) would yield data for more intensive investigation of PPCPs' experiences/recommendations regarding provider education/training in the identification and management of ASD.

Considering that participating PPCPs demonstrated important self-reported knowledge and confidence gains as a result of their participation in the webinars, further research should (a) explore and compare the utility, acceptability, and efficacy of alternate ASD-training platforms for PPCPs; (b) develop and include validated measures of ASD knowledge; (c) longitudinally assess potential changes in PPCPs' clinical practices following their participation in educational/training opportunities; and (d) investigate the acceptability of in-clinic supports (e.g., a best practice advisory), in concert with educational opportunities, to remind providers of appropriate courses of action at the point-of-care. Because the response rate to participate in our webinar series was low, alternate approaches to disseminating webinar content should also be explored to provide more acceptable, on-the-go training opportunities that providers can tailor to more precisely meet their educational needs.

Summary & Conclusion

Understanding PPCPs' knowledge of and confidence in ASD screening, diagnosis, and referral practices may allow behavioral-health professionals (e.g., psychologists, school-based personnel) to collaborate more effectively with PPCPs by streamlining referral processes for ASD evaluation and facilitating earlier connections with intervention services that ultimately stand to improve children's developmental outcomes. Our pilot findings highlight the promise of a brief, webinar-based approach for improving PPCPs' self-reported ASD-care knowledge, as well as the need for more accessible, effective educational tools and supports for PPCPs that will help close the ASD-detection gap and provide immediate provisions for affected children and their families.

Acknowledgement

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