>> SPEAKER: So, are we ready to get started, everyone? All right. Well, my name is Morgan Ross and, in today's presentation, we will be discussing the features of e-health platforms to promote hearing technology use in children. So, let's see here. I have my notes down here. I'm so sorry. Um, so, I am currently a third-year doctoral student at the Northeast Ohio Audiology Consortium, and I'm also apart of the first cohort of the interprofessional hearing early access response through tele-practice, or otherwise known as the IHEART program, and it is a government, United States education government-funded grant program that has given me some incredible opportunities and even gave me the opportunity to stand up here and speak today. So, I received grants from other activities, United States Department of Education and the University of Akron, and I have no other financial or non-financial disclosures to report. The co-author of today's presentation is Dr. Alex Meibos. He receives grants for other activities from the office of special education and rehabilitative services at the United States Department of Education and receives salary for employment from the University of Akron. I also had the pleasure of working with Dr. Todd Houston here of the United States of Akron as well. He is a royalty recipient for three books published by Plural Publishing and is the founding partner and CEO of The 3C Digital Media network. Let's jump right into it. First things first, what is an e-health platform? An e-health platform is an electronic link of patient-owned technologies to clinic-managed technologies. This creates opportunities for realtime, synchronous video conferencing appointments, asynchronous exchange of health information, and online social networking and peer support for group development. Almost three years ago to the day, I believe it was this week three years ago, the COVID-19 pandemic turned our world upside down, including our healthcare field. Parents and patients were unable to reach their providers, and the fear of coming into a doctor's office or a hospital prevented our patients from getting the necessary healthcare they so dyerly needed. In the wake of the pandemic, e-health platforms exploded overnight, and our hand was really forced into this new way of managing patients and dealing with our appointments. It's truly incredible, how far technology has come in terms of remote healthcare in just three short years, and there is no stopping what it is capable of for the future. E-health and remote care is efficient and convenient for thousands, if not millions of individuals across the country, but, unfortunately, not every situation is equipped for complete remote support care. So, how can we mediate this? Mobile applications that bring the individual's personal healthcare to their fingertips for the small issues that they don't need to drive to the clinic or the hospital for. Mobile phone applications have the capabilities of not only just connecting us to our friends and family, but so much more. From pulmonary health to heart health, face-to-face contact with the provider, to mobile health charts and history, mobile applications are capable of letting our patients take charge of their individual health needs wherever they may be. For the sake of today's presentation, we will talk about the world of tele-audiology, which brings me to my next question. How can patients and families that we serve take charge of their hearing health on the go? How can we incorporate this important technology into the lives of even our youngest patients and their families for them to feel comfortable and confident in the level of care we are providing, even if we are not there to guide them? All of the major manufacturers of hearing aids have developed a platform with their patients, but some are more developed than others. Few empirical studies have looked at the efficacy of these systems and, since the transition back to in-person appointments, fewer platforms are reportedly being used by providers in healthcare. However, there are, there's still many in use, and they are developing day by day, second by second. Right now, I want to take note of two of the hearing aid companies above, um, in particular. So, we have Oticon and Phonak especially. These two companies are the only ones that truly market to our pediatric populations, and they have a specific pediatric hearing aid lines to best fit the needs of our children and their families. Above me are the 12 mobile applications that are currently available on the iOS and Google Play Store. We can see applications, such as the Resound Smart 3D app, the My Phonak, and the Oticon remote care. As I switch into this, hopefully, my transition works. So, now, we can see that the My Phonak app has been replaced by the My Phonak, Jr. app. This is the only pediatric-centered, um, hearing application that we have on the market today. Of note, we also had a change in February of 2023, just between the ASHA presentation and now, where we have the Oticon companion app taking over the remote care app that Oticon previously had. So, this is an interesting transition to see, because we all know that patients, families, don't like when these technology things change, because they may not know enough about them to then transition to a brand new app. All right, so, in an article titled remote support: Crucial connections delivered via tele-audiology, published in The Hearing Journal, Dr. Sarah Newman and her colleagues explored ten highlights of the application of tele-audiology in terms of meeting the needs of children who use hearing aids. This study reviewed patients ages 5 to 17 years, 18 parents, and 18 audiologists. This was to further understand just how useful the My Phonak app is for, both, families and pediatric audiologists. This is the only known study as of now to look at the use of applications during the COVID-19 pandemic and the pediatric population that it impacted. In summary, they indicated that all 18 participants reported that they were either very or extremely likely to utilize, um, remote support with audiologists, agreeing that they were also extremely likely to utilize it as well. Parents reported that they appreciated the time and money saved by not having to take off work or school to come to the clinic to address small issues that could be simply fixed from afar. Although remote support is unlikely to replace the need for children with hearing loss to be seen in-person, this study suggests this likely remote support technologies will be successfully utilized in the future to provide many follow-up services, such as trouble-shooting, completion of minor programming changes, and a way to connect with families more regularly, to answer questions and coach them on proper hearing aid care, use, wear time, and maintenance. In this presentation, we are also highlighting the findings in a recent study published in the Journal of Early Hearing Detection and Intervention by our own, Dr. Alex Meibos. A review of current pediatric tele-audiology e-platforms, he identifies these platforms for young children who are deaf or hard of hearing and their families as well. All right, so, the screenshots available on the screen here are two different hearing aid manufacturers. So, we see that we have the My Phonak, Jr. app and, also, the Resound Smart 3D app as well. What I have circled, I went ahead and put the circles up there, because what we are really focusing on here is those age ratings. So, in these age ratings, we want our patients to be able to utilize these apps independently. Maybe, not the patients themselves, because they are so young, but our, the families also need to be able to manage it just as easily. Those listing an age content rating for users age 4 and older, all ages were chosen for review. These age ratings are especially important to keep in mind when working with patients and their families due to healthcare literacy and technology literacy. As professionals, we, sometimes, get lost in the things we have learned throughout our schooling and our experiences in clinic, and we get to a point where this information is secondhand nature to us. It's important to keep in mind that our patients and their families may be hearing these things for the first time and to have applications that are simple to use is absolutely necessary, um, for the ease of use of the app itself to avoid anxiety and loss of motivation for those we serve. The results of the study revealed only four of the major technology companies were found to have pediatric tele-audiology-friendly platforms designed to support young children and their families. Manufacturers above include Phonak, Oticon, Wide X, and Resound, keeping in mind that Phonak and Oticon are the only ones that have the specific pediatric lines. Resound and Wide X are not in that market necessarily. So, on slide 8, we discuss all the applications available in the various app stores for Apple and Android devices. The apps listed above were excluded in this review due to age ratings provided, including all implantable technology application devices and the Starkie Thrive app and the Signia app as well. In table one, a summary of e-health platforms and pediatric hearing devices were tabled with a couple new, more recent additions that have recently been added. Compatibility among devices include a wide variety of generations from each manufacturer, and the new additions, as of 2022 and 2023, include the Oticon Play PX pediatric line, and the 1Inomnia of Resound. They are free to all who use them, so the patients aren't going home and having to use Apple points or Apple Pay to download

these apps. They are free and accessible for all who are able to connect to it. All right, so, above that, we can see the features of these applications deemed important for young children and their families. These include, but are not limited to tele-communications support, remote programming and fine-tuning alterations, remote battery status monitoring, manual volume control, data logging, and so much more. Not only are these features useful and convenient for our patients, they're also useful to the managing professionals, so, all of us. We can learn so much from these applications and apply it to our treatment recommendations just based on the data that we can draw from these apps. It is important to note that it is our responsibility to also educate our patients and families about these features, so they can feel more confident and independent in the management of their child's hearing care, their hearing care, especially when these kids are starting to get older and they have their iPhones and are managing their hearing aids at school. In table two, a summary of pediatric design features available in Phonak, Oticon, and Resound and Wide X platforms. The checkmark indicates what features are currently included on the platform and similarities across the platforms were identified with a checkmark. Um, so, as we can see here, um, the Phonak and the Oticon apps are very, very, very similar. They include all of the same things and exclude the same things as well, but I believe in the new Oticon app of 2023, some additions have been made since this presentation was created. Resound and Wide X currently have the most features available, but, as I said, these aren't necessarily as pediatric-friendly to pair with the devices the child may have. All right, so, in summary, we have made incredible progress in terms of e-health platforms available to our patients, but so much more needs to be done. Much more research, more utilize, more studies to prove the benefits of utilizing the app. So, in terms of needing improvement, um, it is important to note that the use of e-health platforms may not be appropriate in all circumstances for all pediatric patients. It is also important to note that not all state licensure, clinic site logistics, and other laws can limit the use of e-platforms, especially in terms of communicating directly with their providers, despite being free to all of our users. So, these inner state laws that are currently being passed and such, all of our patients are able to download every single app up here, but we may not be able to talk directly to them, depending on if they go on vacation, if they move to a new location and such. So, this review has highlighted that there is a dyer need for more research to establish the efficacy measures for the application of e-health platforms across the lifespan and across more types of hearing technology for young children than just hearing aids. Moral of the story is these applications will be forever changing, and they change extremely quickly. Like I stated before, we've even had additions just since ASHA back in January, February to now. It is our duty as professionals to constantly be educating ourselves on the availability and the changes that are made, so that we can better serve our patients. Whether it be teaching our patients how to use the software, how to utilize it to its fullest potential, or just simply giving them a way to change their volume of their devices manually, it is our job to make sure that our patients are as independent as possible when it comes to incorporating modern technology into their healthcare. For more information on how you can incorporate tele-audiology into your practice, the link above is a fantastic resource for getting started. You'll find more information here on general tele-health techniques, to new techniques for testing and treatment, and frequently asked questions of all things tele-audiology. The references and access to the articles we have discussed today are available by using the QR code above me here. They're a great read, and I highly recommend referencing these, if this is something you are genuinely interested in or if you believe your practice and your patients can benefit from these types of appointments and methods utilized. I'll give you guys a second to take a look. If you need to come up and get a little closer for it, I know it can be finnicky. All right, so, we kept it very, very short and sweet today, so you guys can get on to some other ones and take a look around, enjoy Cincinnati a little bit. So, if you have, are there any questions today at all? I promise, you'll utilize this a lot, especially with these kids now having iPhones so young. I've been seeing it more and more.

>> SPEAKER: Thank you for a great talk. Do you know any, um, any, what am I trying to say? Manufacturers that are trying to do, um, remote testing, um, instead of remote fitting, but remote testing of, you know, hearing aid function or auditory function?

>> SPEAKER: Mm-hmm. So, as for that, I believe there's multiple studies that I have actually recently read that are discussing doing more like insitue audiology from home. So, as we, kind of, look at that testing, as I said, these platforms are not perfect, and they're not fit for every single situation. So, actually, in the first study we discussed published in The Hearing Journal, the audiologist expressed that it is best if we utilize, both, these remote care applications, as well as the patient still coming in for their proper first fitting as well, but small adjustments will still be able to be made through the Cloud and different software systems in clinic, to the hearing aids and to the families at home as well.

>> SPEAKER: Thanks for the great presentation. I just wanted to share, we completed a small study recently with three parents, looking at using the app for data logging and how that affected hearing aid use and, in all of the parents, hearing aid use went up just from their awareness of knowing to look at the app regularly, and they all went up even a little bit more when we coupled it with coaching, but the app is a great way to promote the work that you're doing with parents, um, that's just one great use.

>> SPEAKER: Yeah. I've noticed, um, I've worked with cochlear implants for a little while now, and they can also utilize the data logging in those apps as well, and with kids, we like to always, kind of, make it a game, how long can you wear your cochlear implants today, how long can you wear your hearing aids, let's beat it next time, I know you can do it. So, keeping that encouragement, checking that data logging, it's great information for the parents, and it's incredible information for us, making sure that our kids are eyes open, ears on. Anyone else? All right, well, that concludes today's presentation. Thank you guys for your attention, and enjoy the rest of the conference.

(Applause.)