

Pediatric Dysphagia: A Rise in Preterm Infants and a Need for More Formal Training for Speech-Language Pathologists

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Abstract: *Background:* The purpose of this study was to estimate how many master's programs in speech-language pathology (SLP) offer a course in pediatric dysphagia and to determine if taking this course improves how prepared SLPs are to work with this population.

Methods: One hundred SLP master's programs were examined to determine if they offered a pediatric dysphagia course. Next, a pediatric dysphagia survey was sent out to SLPs to examine three main questions: 1) if their master's program offered a pediatric dysphagia course, 2) if they completed the course, and 3) how prepared they felt to work with this population.

Results: Of the 100 SLP master's programs contacted, only 21% of the SLP master's programs offered a pediatric dysphagia course. A majority (64.50%) of SLPs who did not complete a pediatric dysphagia course reported feeling unprepared to work with this population.

Conclusions: There should be an increased focus on adding pediatric dysphagia courses into SLP master's programs in an effort to increase the level of preparedness for SLPs and to improve patient outcomes.

Keywords: Speech-language pathologist, Neonatal intensive care unit, Pediatric dysphagia, Education.

BACKGROUND

The incidence of premature birth has increased from 9.4% in 1981 to 11.72% in 2011 [1]. Most preterm infants must confront the challenge of learning to orally feed while in the neonatal intensive care unit (NICU) and are at risk for speech-language delays during early childhood. The prevalence of pediatric dysphagia is estimated to range from 25 to 45% in typically developing children and 33 to 80% in children who have developmental disorders [2-8]. If left untreated, feeding problems may persist well into early childhood and manifest as long-term feeding disabilities, requiring management by pediatric gastroenterologists [9, 10]. In fact, premature infants comprise more than 40% of the patients followed in feeding disorder clinics [11]. While speech-language pathologists (SLPs) are vital members of the interprofessional care team for preemies and their families, they often enter the NICU environment, and many other pediatric dysphagia settings, lacking the specific training that would have better prepared them to work with these fragile and medically complicated infants.

Speech-Language Pathologists' Role in Pediatric Dysphagia

SLPs play a central role in the assessment, diagnosis, and treatment of infants and children with

swallowing and feeding disorders. The American Speech-Language-Hearing Association (ASHA) has taken several steps toward addressing the increasing need for more education in pediatric dysphagia. In 2007, a technical report entitled "Graduate Curriculum on Swallowing and Swallowing Disorders" was released by ASHA [12] that encouraged graduate programs to increase the education and training demands and provide students with the knowledge and skills to evaluate and treat dysphagia across a variety of populations and settings. In 2010, the ASHA Code of Ethics [13] stated that SLPs who work in pediatric dysphagia settings should be specifically educated and that experience in adult dysphagia does not qualify an individual to provide dysphagia assessment or management services to children. It is clear that additional knowledge is required to work in pediatric dysphagia and that education in adult dysphagia is not sufficient. However, pediatric dysphagia courses are rarely embedded into SLP master's programs in the United States, leaving both SLPs and pediatric dysphagia patients at a disadvantage. Therefore, the goal of this study was to estimate how many SLP master's programs offer courses in pediatric dysphagia and to determine how well prepared SLPs feel to work with this population.

METHODS AND PROCEDURES

Estimating How Many SLP Master's Programs Offer Pediatric Dysphagia

In order to estimate the prevalence of pediatric dysphagia courses among SLP master's programs, the

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curricula of the top 100 Speech-Language Pathology programs from the 2012 U.S. News and World Report's Best Graduate School Rankings were examined. The search was expanded to rankings 1-107, as several programs never responded to our email inquiry; therefore, we contacted 107 schools and received feedback from 100. First, each program's website was checked for an available current curriculum to examine if a pediatric/infant dysphagia course is available (yes/no). If the curriculum posted online did not show a separate pediatric/infant dysphagia course, we e-mailed the department asking if they offered a pediatric dysphagia course. While many programs reported covering pediatric/infant dysphagia within their general dysphagia course, we still counted this as not offering a course on pediatric dysphagia. This is because the majority of schools contacted indicated that when pediatric dysphagia was covered during the dysphagia course, only a single class period was devoted to the topic.

Surveying SLPs Working with the Pediatric Dysphagia Population

The Survey Monkey® web portal was chosen to host this survey. Survey Monkey® is a website that facilitates conducting online surveys. There were eleven questions in the survey.

SURVEY FORM

Pediatric/Infant Dysphagia Survey Form

Hosted by Survey Monkey®

1. Welcome Page

The goal of this survey is to learn more about SLPs working with Pediatric/Infant Dysphagia clients. Please be aware that results from this survey may be published. This survey should take no longer than 5 minutes to complete. Thank you for participating, your feedback is important!

2. Demographic Information Page

- 1) Age: 20-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51-55, 56-60, +60
- 2) Sex: Male, Female
- 3) Home Zip Code _____(open-ended)
- 4) Work Schedule Type: Full-time, part-time, per diem

- 5) Describe the clinical setting you work most in right now

(i.e. Outpatient hospital, NICU, private practice, etc)._____(open-ended)
- 6) How long have you been an SLP? 0-5 years, 6-10 years, 11-15 years, >15 years
- 7) How long have you worked with the Pediatric/Infant Dysphagia population? 0-5 years, 6-10 years, 11-15 years, >15 years

3. Graduate Schooling

- 8) Where did you go to graduate school?
_____(open-ended)
- 9) Did your graduate program offer a course in Pediatric/Infant Dysphagia? Yes, No, I don't know
- 10) If offered, did you take the course? Yes, No, n/a
- 11) Did you feel well prepared to work with the Pediatric/Infant Dysphagia Population? Very prepared, somewhat prepared, neither prepared or unprepared, somewhat prepared, very prepared.

Once the survey page was designed, an initial review of the survey was completed internally in the lab where we discussed the appropriateness of each question. Next, a test run was conducted by sending the link to five colleagues to ensure that the survey was functional and fully operational without any system errors and confirmed that the data could be accurately exported. After preliminary testing, the survey link was sent via e-mail attachment to a local SLP pediatric dysphagia group and posted on ASHA's Special Interest Group 13: Swallowing and Swallowing Disorders discussion board (9,900 members). All of the sent emails and posts contained brief details of the survey stating the purpose and asking their voluntary consent. The email also had a link to direct the eligible and interested participants to the Survey Monkey® website where they could complete the survey. All necessary directions to complete the survey were given on the first page. The survey took approximately five minutes to complete. It was designed to be brief and targeted to attract the maximum number of respondents.

RESULTS AND OUTCOMES

Estimating How Many SLP Master's Programs Offer Pediatric Dysphagia

Of the 100 SLP master's programs examined, 21.00% offered a pediatric dysphagia course and the remaining 79.00% did not.

Surveying SLPs Working with the Pediatric Dysphagia Population

Overall, 188 clinicians responded to the pediatric/infant dysphagia survey. Data were extracted from the Excel report generated by Survey Monkey®. For further analysis, the data were imported to SPSS (version 21). Data from 13 subjects who skipped survey questions 10 and 11 regarding pediatric dysphagia courses were not included for in-depth analysis resulting in a total of 175 participants whose data were used for analysis.

Of the 175 participants, 7 were males and 168 were females. Participants were then divided into two groups based on their response to Question 10, which asked if participants took a pediatric dysphagia course. 51 participants (29.14%) completed a pediatric dysphagia course during their master's program and 124 participants (70.86%) did not (Table 1). For question 11, 62.70% of SLPs who completed a pediatric dysphagia course reported feeling somewhat (49.00%) or very (13.70%) prepared to work with the pediatric dysphagia population, whereas, of those who did not complete a pediatric dysphagia course only 23.33% reported feeling somewhat (18.50%) or very (4.80%) prepared (see Figure 1; Table 1). The majority (64.50%) of participants who did not take a pediatric dysphagia course felt unprepared to work with this population. In general, participants who completed a pediatric dysphagia course during their graduate program tended to be younger (33.30% were between the ages of 31-35 years) and had spent less time working as an SLP (37.30% 0-5 years) compared to the participants who did not complete the course.

DISCUSSION

This study examined approximately what percentage of higher-tiered SLP master's programs in the United States offer a separate course in pediatric dysphagia and determined how well prepared SLPs feel to work with this population. The results suggest that few SLP master's programs offer separate pediatric dysphagia courses and that individuals who completed a pediatric dysphagia course during their SLP master's program felt more prepared to work with

this population. Alternatively, a majority SLPs who did not take a pediatric dysphagia course felt unprepared to work with this population. This finding is alarming considering the medical severity and complications often present in this population. The fact that participants who took a pediatric dysphagia course tended to be younger may indicate that recent SLP graduates have a greater likelihood of having a pediatric dysphagia course offered in their graduate curricula. It is possible that this trend has emerged as a result of the ASHA's 2007 SIG 13 technical report(12) or ASHA's 2010 code of ethics(13). However, more still needs to be done to ensure that pediatric dysphagia is a focus in SLP master's programs.

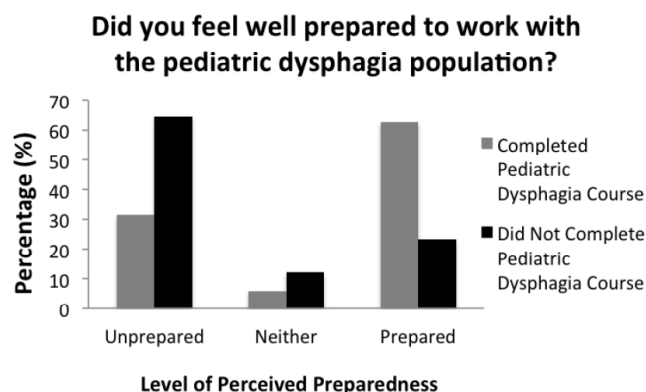


Figure 1: Individuals who completed a pediatric dysphagia course (gray) during their SLP master's program felt more prepared to work with this population than individuals who did not completed a pediatric dysphagia course (black).

SLPs work in a variety of settings, with a variety of clients, and with a variety of care providers. Many of these settings and populations are very unique and require an immense knowledge of particular medical issues; thus, SLP master's coursework should reflect this level of specificity. For instance, an SLP in the NICU requires an in-depth understanding of the medical issues these infants face, the co-morbidities that they may be experiencing, as well as the short-term (cardiorespiratory, nutrition, neurological, etc.) and long-term (poor neurodevelopmental outcomes) complications that may impact feeding and subsequent speech-language development. This level of complexity and understanding requires a separate pediatric dysphagia course and cannot be fully covered in a few hours within the adult-focused dysphagia class. This logic is shared by ASHA and stated within the code of ethics, but the majority of SLP master's programs themselves still do not offer the additional coursework. While continuing education units (CEUs) are imperative for additional education and training, they do not provide the in-depth understanding and framework that

Table 1: The Survey Results Examining if Taking a Pediatric Dysphagia Course Better Prepares an SLP to Work with this Population

Does taking the pediatric dysphagia course better prepare you to work with this population?		
Parameters	Completed Pediatric Dysphagia Course (n=51)	Did not complete Pediatric Dysphagia Course (n=124)
PERSONAL DEMOGRAPHICS		
Females, n (%)	49 (98%)	119 (98.3%)
Live in a rural setting, n (%)	5 (10%)	22 (17.9%)
Live in an Urban setting, n (%)	45 (90%)	101 (82.1%)
Age Ranges:		
20-25, n (%)	4 (7.8%)	3 (2.5%)
26-30, n (%)	15 (29.4%)	18 (14.8%)
31-35, n (%)	17 (33.3%)	21 (17.2%)
36-40, n (%)	6 (11.8%)	8 (6.6%)
41-45, n (%)	4 (7.8%)	20 (16.4%)
46-50, n (%)	1 (2%)	9 (7.4%)
51-55, n (%)	1 (2%)	15 (12.3%)
56-60, n (%)	3 (5.9%)	28 (23%)
SLP JOB CHARACTERISTICS		
Work Schedule:		
Full-time SLP, n (%)	44 (86.3%)	100 (80.6%)
Part-time SLP, n (%)	7 (13.7%)	18 (14.5%)
Per Diem, SLP, n (%)	0 (0%)	6 (4.8%)
Clinical Settings:		
Hospital, in-patient, n (%)	15 (29.4%)	42 (34.1%)
Hospital, out-patient, n (%)	10 (19.6%)	16 (13%)
NICU, n (%)	11 (21.6%)	23 (18.7%)
Private Practice Setting, n (%)	5 (9.8%)	17 (13.8%)
School, n (%)	3 (5.9%)	4 (3.3%)
Rehabilitation, n (%)	2 (3.9%)	5 (4.1%)
Early Intervention, n (%)	4 (7.8%)	13 (10.6%)
Academic, n (%)	1 (2%)	3 (2.4%)
Years spent working as an SLP:		
0-5 years, n (%)	19 (37.3%)	19 (15.3%)
6-10 years, n (%)	18 (35.3%)	25 (20.2%)
11-15 years, n (%)	7 (13.7%)	10 (8.1%)
>15 years, n (%)	7 (13.7%)	70 (56.5%)
PEDIATRIC DYSPHAGIA		
Completed the pediatric dysphagia course	51 (100%)	0 (0%)
Years spent working with pediatric dysphagia population:		
0-5 years, n (%)	26 (51%)	35 (28.2%)
6-10 years, n (%)	18 (35.3%)	28 (22.6%)
11-15 years, n (%)	2 (3.9%)	8 (6.5%)
>15 years, n (%)	5 (9.8%)	53 (42.7%)
Level of perceived preparedness to to work with the pediatric dysphagia population:		
Very Unprepared, n (%)	3 (5.9%)	43 (34.7%)
Somewhat unprepared, n (%)	13 (25.5%)	37 (29.8%)
Neither Prepared nor Unprepared, n (%)	3 (5.9%)	15 (12.1%)
Somewhat Prepared, n (%)	25 (49%)	23 (18.5%)
Very Prepared, n (%)	7 (13.7%)	6 (4.8%)

a graduate level course provides. Therefore, we need to focus on adding this specific training by offering pediatric dysphagia courses within our SLP master's program for individuals who have an interest in working with this population after graduation.

A pediatric dysphagia course should emphasize the following topics: 1) premature infants; 2) the NICU environment; 3) interprofessional teams; 4) pediatric ICU; 5) assessments completed with pediatric population; 6) treatments used with pediatric

population; and 7) large focus on the current research in the field. Also, if a few different masters' programs offer the pediatric dysphagia course online so that those whose programs do not offer the course may still take it. A separate pediatric dysphagia as part of the SLP master's program curriculum course will serve as strong foundation for those that would like to work with the pediatric dysphagia population. This foundation will leverage the SLP's ability to get a job within the NICU or other specialty feeding clinics and allow these individuals to have a deeper understanding of the current research being completed with this population. This will in turn improve the interprofessional collaborations within the pediatric dysphagia setting as well as improve outcomes with the fragile infants.

Study Limitations

While our survey gave insights into the current trends, it had some limitations in the participants it sampled. A majority of participants were women living in urban locations who work full-time in hospital settings therefore this may make it difficult to generalize these results to men, a rural setting or school-based clinicians. Also, most participants found the survey through the ASHA SIG 13 discussion board- therefore we only sampled from individuals who are an active part of that discussion board- especially considering that we sampled 175 participants from the entire 9,900 members of SIG 13. Thus, it is possible that the SLPs we surveyed actually received better training in pediatric dysphagia during their master's program than the general population of SLPs as they were more actively engaged on the SIG 13 website. If this is the case, it means that the gap we observed is likely even larger in the general population of SLPs.

There was a large discrepancy in our sample size for the individuals who completed a pediatric dysphagia course (n=51) compared to those who did not (n=124); however, this discrepancy is consistent with the small percentage of SLP master's programs that offer a pediatric dysphagia course. We did not ask participants regarding the number of CE hours they had prior to working with this population and if they felt this form of education helped them to feel more prepared. There is a tremendous amount of variability in CEUs and we thought that the best estimate of education and preparedness would be to assess the education within the master's program as this formal education likely leverages a more in-depth level of fundamental learning and allows the student to be ready for a career in pediatric dysphagia post-graduation. In addition, a

more formal measure to objectively assess the SLP's actual performance with this population is a logical next step to examine if perception of preparedness and performance are similar. Lastly, SLPs are only one group of specialists who care for infants with pediatric dysphagia, a large number of NICUs utilize occupational therapists (OT) as well. A similar type of survey should be completed with OTs to gauge how prepared they feel to work with this population. Perhaps educating the two disciplines together during their graduate program would improve clinical outcomes and readiness to work with this population.

CONCLUSIONS AND IMPLICATIONS

Pediatric dysphagia is on the rise and very few SLP master's programs in the United States offer a pediatric dysphagia course. This study found that completing a pediatric dysphagia course in one's SLP master's program likely makes one feel more prepared to work with the pediatric dysphagia population. Pediatric dysphagia is a very specialized domain that requires additional education due to the severity of these patient's medical conditions.

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