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Efficacy of Audiology Pedagogy

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Abstract

In this phenomenological research paper, the authors present a discussion of the efficacy of teaching and research efforts within the context of various audiology programs. There are two types of audiology programs in existence: Research programs (PhD) and Practitioner programs (AuD). The authors explore several models that discuss qualities for competency of education within each area. Furthermore, a number of quality rankings for these programs are presented and discussed.

Introduction

The purpose of this research article is to provide a discussion on the efficacy of teaching university-level audiology. To begin the discussion, a brief explanation of audiology and the different areas within the field are established. Next, researchers present a literature review and discuss the various approaches to educating students, what makes a successful audiology instructor, and how the top programs in the nation became successful. Then the authors look into the impacts of COVID-19 on audiology instructors/students and their educational experiences.

Audiology Overview

As defined by the American Academy of Audiology, "An audiologist is a person who, by virtue of academic degree, clinical training, and license to practice and/or professional credential, is uniquely qualified to provide a comprehensive array of professional services related to the prevention of hearing loss and the audiologic identification, assessment, diagnosis, and treatment of persons with impairment of auditory and vestibular function, and to the prevention of impairments associated with them" (Scope of Practice, 2014, para. 4). There are many outside professionals with whom audiologists often work alongside and provide information about identification, assessment, diagnosis, prevention, and treatment of persons with hearing and/or vestibular impairment. Such

professionals include physicians, medical students, residents, colleagues, psychologists, counselors, rehabilitation services, and other educators (Scope of Practice, 2014).

In this article, the authors discuss successful academic programs that produce educators of audiology. The goal of each program is to construct competent and experienced clinicians through both academics and clinical work. All programs obtain supervising audiologists that oversee and uphold legal and ethical accountability for all designated audiology tasks provided by audiology assistants and students. It is not uncommon for students to continue to become audiology educators and provide clinical and academic training to future doctoral students.

Researchers versus Practitioners

There are two routes an audiology graduate student can pursue. One, taking more of a clinician-based approach and the other taking a research-based approach. The aim of an academic doctorate (PhD) is on research ending in the dissertation and final defense. The aim of the clinical doctorate in audiology (AuD) is on the development of clinical competence. Obtaining a PhD is the groundwork for prolific scholarship and research, often resulting in teaching at a university or college.

An AuD, on the other hand, is the highest university award given in a specific field in confirmation of completing academic training for professional practice. The AuD does not require a dissertation but requires a final doctoral-level project. The primary goal of an AuD program is to mold students into clinicians that are functionally proficient in providing a large selection of diagnostic and remedial skills as well as other skills and services associated with audiology. Research, however, is not irrelevant to AuD students and clinicians. It is still a necessary skill required in order to be familiar with scientific and research literature in order to form a solid basis of audiology, have the ability to evaluate and interpret the audiological related research literature, and have the ability to produce and apply relevant research knowledge to the problems presented in clinical practice (The Professional Doctorate (AuD), 2014).

Literature Review

Qualities of Clinical Educators

Higgs and McAllister (2007) inspected the basis and professional advancement of clinical educators based on researching the experiences of clinical educators themselves. Their research method consisted of a combination of hermeneutic phenomenology and narrative inquiry. Hermeneutic phenomenology being the study of interpretive structures of experience. Although the subjects interviewed in this study were speech pathologists, it is still relevant to this paper because of how closely related speech pathology and audiology are in the healthcare field. As stated in the research, the model presented could benefit other disciplines due to similarities within duties and challenges. For instance, balancing patient care, educational activities and professional progress. A phenomenological analysis process was used to analyze the data obtained from the interviews. Higgs and McAllister (2007) identified clinical education to be centered

around understanding and providing a framework for education. This is built on earlier models of adult learning and reflective practice which includes the following aspects:

- Learning in communities of practice
- Work-based learning; student-centered, team-based, cooperative and interdisciplinary, process-oriented, activity-based, performance-related, problem-based, contextualized and consequential
- Professional socialization
- Situated learning
- Peer learning
- Flexible learning
- Learning for capability

The model of the experience of being a clinical educator (McAllister, 2001) consists of six interactive and influential measurements:

- A sense of self: self-awareness and self-knowledge, self-acceptance, self-identity, choosing a level of control, and being a lifelong learner.
- A sense of building strong rapport with others: being people-centered, being aware of others, conscience in bonding to others, seeking to bring about morals and views in relationships with other individuals.
- A sense of being a clinical educator: understanding of role, motivations for becoming a clinical educator, desired approaches to clinical supervision, affective aspects of being a clinical educator.
- A sense of control as a clinical educator: perceptions of competence and capacity to act as a clinical educator, creating and maintaining facilitative learning environments, designing, managing and evaluating students' learning programs, managing self, and managing others.
- Seeking a higher level of attention to the role, drawing the self-concept and brand personality together, striving for plan-action agreement.
- Growth and development – possible stages and pathways: embarking on the journey of becoming a clinical educator, moving from novice to advanced beginner, developing competence in the role, pursuing professional artistry suffering burnout.

Gibson, S.J., et al. (2019) investigated the identification and synthesization of skills and qualities of clinical educators in allied health professions and the effects on student learning and patient care. The authors indicated seven educator skills and qualities which included: intrinsic and personal attributes of clinical educators, provision of skillful feedback, teaching skills, fostering collaborative learning, understanding expectations, organization and planning and clinical educators in their professional role. Another important finding within this study revealed a diagnosis between allied health and

medical education, and that was the importance of treating students as future colleagues and supporting the development of professional identity.

Habibi, Rouzbahani, & Kamali (2018), surveyed audiology students, teachers, and graduates regarding characteristics affecting clinical education in audiology. The method behind the survey included a qualitative study through content analysis at the School of Rehabilitation Sciences in Iran University of Medical Sciences, Tehran, Iran. There were three subject groups of interest: professors with a minimum of 12 months experience in Audiology clinical training, students in their last semester of Bachelor of Science courses and graduates with a minimum of two years' experience in the clinical area and at least five years of graduation. The two main themes produced in evaluating the professors were professional and personality characteristics, which was further broken down into six sub-categories including clinical experience, training, capabilities, commitment and rigor, behavior, motivation and compassion, discipline and timeliness. The *behavior characteristic* viewed as extremely important to students was how the educator treats patients and the effects of that behavior on students. Discipline and timeliness seemed to illustrate the indifference of some professors with regard to this quality. Motivation and compassion importance to educating students was also found to be of value.

Improvements in Clinical Education

Within the last five years, ASHA and other audiology affiliates identified various areas within clinical doctoral education in audiology that could benefit from improvement, according to Koehnke (2020). The improvements would include standardization of some aspects of the fourth-year externship, tools to evaluate student competency, and increase student preparedness entering the field. In October of 2016 ASHA hosted the AuD Education Summit to review the most current model of audiology education. Students, academic personnel and clinical preceptors collaborated and identified a need to develop a national database of available externship sites, a standard approach for applying and special training for preceptors. An AuD task force was subsequently built to address the areas of greatest concern highlighted at the summit, which consisted of (1) vision for AuD education, (2) competency-based student evaluations, (3) student readiness, (4) guidelines for AuD clinical training sites and (5) residency post-graduation (Koehnke, 2020). The task force and their highlighted areas of improvement ended up developing a report called the "AuD Education Task Force Report," which highlighted various areas. It provides recommendations for AuD programs, students preceptors, and externship sites, and standards-setting bodies. One area of significance shines a light on the importance for programs to continuously implement best practices into clinical education and provide clinical experiences in a variety of health care settings (Koehnke, 2020).

Most Successful Programs

In order to identify the most successful audiology doctoral programs, the authors of this paper utilized an accepted scholastic ranking system: U.S. News published Best Health Ranking Schools (Morse, Castonguay, & Vega-Rodriguez, 2020), which was analyzed and established based on peer assessment surveys sent to deans, administrators, and/or faculty at accredited degree programs. Those filling out the surveys ranked the academic quality of programs on a scale of 1 (marginal) to 5 (outstanding). Schools with highest average scores appear in the rankings sorted in descending order. For doctor of audiology

programs, 75 schools total were ranked. For purposes of this paper, the authors look at the top three schools and what aspects of their programs make them so valuable.

Vanderbilt University

Vanderbilt University offers a Doctor of Philosophy (PhD) in Audiology, housing one of the finest facilities in the country. This large, multidisciplinary program logs over 85,000 patient visits annually for various types of communication related disorders. Their partnership with the Department of Otolaryngology, deaf education, and speech pathology allows for students to work closely with other professionals and present them with a vast variety of learning opportunities. They also offer an additional aspect within their program called Specialty Track in Audiology, giving their students who are interested the opportunity to pursue one of two specialties; pediatric audiology or vestibular sciences. These two opportunities require students to participate in an off-site experience during the spring semester of their third year.

The early identification and management of children with hearing loss specialty track provides additional coursework and practical experience in preparation to working with infants and children who are deaf or hard of hearing. They are also given the opportunity of incorporating an interdisciplinary approach to training by including speech-language pathology, audiology and deaf education.

The vestibular sciences specialty offers skills to students regarding the assessment of the peripheral and central vestibular system, a complex understanding of rehabilitation options available to patients with either unilateral or bilateral vestibular system impairments. They also have priority for practical experiences in the Balance Disorders Clinic, which assesses about 1400 patients per year.

Another valuable aspect to the university is the variety of clinical placements they offer, which include:

- Odess Balance and Hearing Center, Department of Otolaryngology: Experiences include hearing assessments, electrophysiology, middle ear testing, and vestibular assessments including a risk-of-falls center.
- Audiology Clinic, MCE: Comprehensive adult and pediatric hearing evaluations, hearing aid and bone anchored implant selections, fittings, and rehabilitation; tinnitus evaluations and management, and adult/pediatric cochlear implant programs.
- Audiology Clinic, Franklin Walk-In Clinic (WIC): Comprehensive hearing evaluations for adults and pediatrics, tinnitus evaluations, vestibular assessment and hearing aid fittings.
- Doctors Office Tower: Audiologic assessment and rehabilitation programs for pediatrics, sedated auditory brainstem responses and newborn hearing screenings.

Other opportunities include practicals and Veterans Administrations (2 locations), local medical clinics, and remote newborn hearing screenings ("Doctor of Audiology," 2020).

University of Iowa

The University of Iowa offers an opportunity for their students to complete both an AuD and a PhD simultaneously. The program offers academic training from nationally recognized faculty who provide a global theoretical basis to the field of audiology. In addition, they provide a vast variety of clinical practicum opportunities to prepare their students for any work-environment they choose to pursue.

The clinical opportunities offered to their students include the site of Wendell Johnson Speech and Hearing Clinic. Which is an on-campus facility serving nearly 700 patients per year, allowing audiology students to be mentored by licensed clinicians. Additional off-campus clinical placements are included within the local community for second and third-year students. Having these placements allow students to develop broad-based skills in clinical areas such as diagnostics, auditory brainstem response testing, otoacoustic emission testing, hearing aids, cochlear implants, tinnitus assessment and management, vestibular assessment and management, and educational audiology. The clients served in the various clinical placements range across the lifespan, as well as including those with varying abilities/disabilities.

Along with the academic and unique experiences, they also put an emphasis on student involvement in various outreach programs and membership forums. For incoming students, they participate in a *boot camp* before the start of classes, which offers introductory information about clinical practice, orientation to the in-house training clinic and social events. They are also encouraged to become active members of the Student Academy of Audiology, as well as the University of Iowa-Sound Awareness (IU-SAFE). IU-SAFE is an outreach program providing hearing education and conducting hearing screenings for the university as well as local and state-wide communities. Another opportunity provided to their students is the Listen and Speak Up Preschool summer program for children with hearing losses.

The University of Iowa is mainly a clinical based program, however they still put an emphasis on the importance of enriching skills to critically evaluate and integrate information from professional journals and conferences throughout their careers. To accomplish this goal, they require their students to enroll in the Evidence-Based Practice Seminar course to introduce students to the design and conduct of research and evidence-based clinical practice. The Department of Communication Sciences and Disorders at the university contains some of the top research programs in the nation, allowing for AuD students to participate in ongoing research projects. Areas of research include the study of auditory physiology, auditory rehabilitation, clinical experimental and medical audiology, language disorders and intervention, neurology and speech and language, psychoacoustics, psycholinguistics, speech physiology, stuttering, and voice acoustics and biomechanics (AuD Program: Clinical Doctorate in Audiology | Department of Communication Sciences & Disorders | College of Liberal Arts & Sciences | The University of Iowa, 2020).

University of Texas - Dallas

The University of Texas - Dallas program consists of internationally acclaimed audiologists and hearing scientists who aid clinical preparation through advanced and

cooperative clinical services both on campus and within the community, in addition to remaining actively involved in the research of understanding, treating, and preventing disorders associated with auditory and vestibular impairments. Similar to University of Iowa, UT-Dallas offers a simultaneous PhD and AuD accreditation for students who wish to pursue both.

UT Dallas offers clinical experiences at two Dallas Callier Center for Communication Disorders sites (Callier-Richardson and Callier-Dallas). Both locations provide state-of-the-art laboratories for behavioral, neurophysiological, neuroimaging, kinematic studies of speech, language, and hearing within patients of all ages. Between both centers, services are provided to thousands of patients per year, and the Callier-Dallas location being home to a nationally recognized child development program for infants through kindergarten. Off-site clinical opportunities consist of hospitals, clinics, and schools, such as the UT Southwestern Medical Center offering opportunities for investigating neuroanatomical, neurophysiological, and neurochemical bases in both pathological and nonpathological auditory systems ("AUDIOLOGY AUD - School of Behavioral and Brain Sciences - The University of Texas at Dallas," 2020).

Impacts of COVID-19 on Clinical Audiology

As the world is in the midst of the COVID-19 pandemic, education and healthcare services have been impacted across all levels. Even pre-pandemic hardships for higher education consisted of rising labor costs, falling enrollment, reduced public funding, expenses that exceed revenue, and public doubt about the value of higher education (Nielson, D.W., 2020). Pandemic closures have exacerbated these troubling issues, making it an important aspect to consider when looking at audiology education and student clinicians. The Centers for Disease Control and Prevention (CDC) classify audiological health care to pose a medium-to-high risk for COVID-19 infection due to proximity, test setup, and length of appointments. In addition, most patients seen for audiological services are those within the age range at highest risk of mortality and morbidity (Swanepoel & Hall, 2020). Two critical components of gaining competency as a student clinician require direct patient interaction and professional observation hours, both of which have been significantly reduced due to the new restrictions at hand (Demas, Leiderman, & Bravo, 2020).

There have been adjustments made within clinical facilities to accommodate for the decrease in hands-on learning experiences. Many clinics have implemented a hybrid or rotating schedule, helping limit the number of individuals (patients, preceptors, and students) in the clinic each day (Demas, Leiderman, & Bravo, 2020). Appointments have been categorized as essential versus non-essential, allowing the non-essentials to be conducted online via telehealth. Students are also being given opportunities to complete "simulated clinic" and web-based learning of telehealth practices (Demas, Leiderman, & Bravo, 2020). Telehealth referring to "the use of communications technologies to provide and support health care at a distance," has begun to transform the educational structure within healthcare. There are four models of telehealth available within audiology (1) synchronous/real-time data collection (video teleconference), (2) store and forward telehealth where data are collected at one location by a technician and then referred to a

specialist for interpretation or diagnosis, (3) remote monitoring in which data are collected through a device worn by the patient and monitored remotely by a provider, and (4) mobile health in which smartphone applications or other software is used by the patient to self-manage (Saunders & Roughley, 2020). Over the years, audiology has become a technologically involved profession when looking at assessment and intervention options, allowing for remote and telehealth hearing care solution opportunities. Resulting in effective care for existing patients and those with newer hearing aid technology (Swanepoel & Hall, 2020).

There are additional changes that need to be made within audiology programs that involve transforming the business models to help conquer and improve based on the COVID-19 dilemma. Nielsen (2020), identifies steps in implementing clinic change which include assessing the pre-pandemic business plan, creating a new business plan, and then analyzing the steps that need to be taken to get to the goal. Three principal categories were identified as being core, adjacencies, and new growth (Nielsen, 2020). Core clinic offerings must transform, extend or be eliminated to meet the current circumstance of the post-pandemic world. Meaning, shifts to telehealth and remote diagnosis/rehabilitation services, as well as eliminating testing that is not cost efficient or essential. Adjacencies refers to new services and products demanded, such as implementing and marketing for over-the-counter products and complimentary professional services. Lastly, new growth meaning changing and implementing new businesses to meet demands and opportunities that are new (Nielsen, 2020).

Conclusion and Efficacy Suggestions

Throughout the research, the authors have identified a commonality of attributes clinical educators within the field of audiology obtain to provide the best possible experiences for students. Instructors must understand how to create and implement an interactive, flexible, and professional learning environment for students. Also, they must be self-aware, self-knowledgeable, have a sense of control and authority, and a sense of growth and development. Displaying such qualities allow for a solid role-model and an exceptional environment to learn from an effective preceptor.

As for the most successful audiology programs, they all have similar characteristics to offer students a wide range of learning experiences. Successful audiology programs consist of a combination of diverse clinical opportunities with on-campus facilities, as well as off-campus placements. They also provide a wide range of treatment options and care for patients across the lifespan, while having opportunities specific to the students' university.

Suggested areas of differentiation for successful audiology programs can be a specialization in particular areas, highly accredited professors, or extracurricular learning opportunities for students. To improve the quality of education for students, especially during COVID-19 setbacks, following a standard of practice can help identify and implement new protocols that can aid in continuously providing quality education for clinical audiology students.

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