

**Trends in Clinical Practice Research in ASHA Journals:
A Barrier to Implementing Evidence-Based Practice in Speech-Language Pathology?**

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Conflict of Interest: No conflicts of interest to disclose.

Abstract

Purpose: Despite the American Speech-Language-Hearing Association's (ASHA) endorsement of evidence-based practice (EBP) and speech-language pathologists' agreement on the importance of EBP, practicing clinicians report barriers to implementing EBP. The purpose of this study was to examine trends in clinical practice research published in ASHA journals over the past 11 years (2008 to 2018).

Method: A total of 2,483 articles from the *American Journal of Speech-Language Pathology; Language, Speech, and Hearing Services in Schools*, and the *Journal of Speech, Language; and Hearing Research (JSLHR)* were extracted for coding. Coders were licensed speech-language pathologists who were trained to 80% reliability on classifying the type of research in each article. Clinical practice research articles were further classified as studies on assessment, studies on intervention, and studies that explore the implementation of evidence-based practices.

Results: Clinical practice research comprised the minority of literature published in the primary journals in the field of speech-language pathology (25%). These articles were comprised of assessment (10%), intervention (15%), and implementation (0.02%). These articles were distributed across a variety of primary content areas, with an absence of implementation science for the majority of clinical areas.

Conclusions: The lack of clinical practice research readily available to practicing speech-language pathologists (SLPs) is a barrier to EBP. The results of this study underscore the need for increased clinical practice research. Future work should investigate EBP in the context of clinician-researcher partnerships and increasing the capacity of clinicians to conduct clinical practice research.

Trends in Clinical Practice Research in ASHA Journals:

A Barrier to Implementing Evidence-Based Practice in Speech-Language Pathology?

Evidence-based practice (EBP) is a central component of clinical practice for speech-language pathologists (SLPs). The concept of EBP has been supported by numerous allied healthcare organizations, including the American Speech-Language-Hearing Association (ASHA), following the conception of evidence-based medicine in the medical field in the 1970's. The most widely cited definition of evidence-based medicine is "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients," (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). This process requires practitioners to integrate clinical expertise with the best available scientific evidence (Sackett et al., 1996). The need for scientific evidence in the medical decision-making process was a direct response to differing medical practices and inconsistent recommendations among physicians as well as a pronounced gap between clinical practice and clinically-based research (Eddy, 2005). Although the use of clinical judgement alone resulted in an unstandardized level of care, it is noteworthy that the definition of evidence-based medicine highlights the integration of research and practice (Sackett et al., 1996). Although the medical field initiated the movement to use evidence in patient-care, the application of similar concepts across professions is widespread. ASHA has endorsed EBP in the field of speech-language pathology for the past two decades (Dollaghan, 2008).

ASHA and Evidence-Based Practice

The American-Speech-Language-Hearing Association (ASHA) emphasizes three integrated pillars of EBP: (a) systematic research, (b) clinical expertise, and (c) informed patient preference (ASHA, 2005). The response to the EBP movement in speech-language pathology has

varied, and some have questioned how SLPs should engage with evidence (Ratner, 2006). Dollaghan (2008) suggests an enhanced model of EBP, aptly named E³BP, that recommends the combination of three types of evidence when using research in clinical decision making. These types of evidence include (a) the best available external evidence, (b) the best available evidence internal to clinical practice (b) and the best available evidence on patient preferences (Dollaghan, 2008). It is clear that the integration of research and practice is critical for effective adherence to EBP (Kamhi, 2011). This notion requires that SLPs can effectively understand and apply the systematic research that is available (Haynes & Johnson, 2009).

In fact, standard IV-F of the 2014 standards and implementation procedures for the Certificate of Clinical Competence (CCC) in Speech-Language Pathology, mandates that the “the applicant must have demonstrated knowledge of processes used in research and of the integration of research principles into evidence-based clinical practice.” Not only does ASHA endorse EBP in its position statements, but ASHA also requires SLPs seeking their CCC to attend accredited institutions (ASHA, 2005; CFCC, 2014), such that students have opportunities to develop critical professional competencies, one of which is EBP (CFCC, 2017). In addition to the promotion of EBP during graduate programs, ASHA implemented a continuing education requirement for its members beginning in 1980, stating the primary aims to, “(a) maintain competence within the scope of professional practice, (b) maintain currentness within the scope of professional practice, and (c) expand the information base related to human communication and its disorders,” (ASHA, 2018). Although it is clear that ASHA promotes EBP through several mechanisms, it is of critical importance that SLPs have access to research relevant to clinical practice to implement the EBP skills that are fostered during graduate programs and clinical training.

Clinical Practice Research

Clinical practice research is an essential resource to inform SLPs of EBP. According to ASHA's Clinical Research Education (CREd) Library, clinical practice research is a subset of clinical research, which focuses on the evaluation of methods for: (a) preventing disorders, (b) improving assessment and diagnostic measures, (c) enhancing the effectiveness of interventions and (d) maximizing the implementation of evidence-based practices (ASHA, 2014). Clinical practice research differs from clinical, basic, or translational research in that it specifically includes methods that may be used in the delivery of services or may directly influence clinical practice. The integration of each pillar of EBP is impossible without clinical practice research.

Across fields, it is recognized that seeking out clinical practice research is the preferred modality for executing EBP (Eddy, 2005). Many maintain that EBP is not equivalent to using research in general, but instead involves selecting the appropriate type of research to answer the clinical question (Sackett et al., 1996). Some believe that EBP can only be applied in the context of empirically-validated practices (Schlosser & Sigafoos, 2008). Indeed, cross-sectional studies and randomized clinical trials or systematic reviews are the gold-standards for evidence in selecting methods for diagnosis and treatment (Eddy, 2005). Although these types of studies have substantially increased in the medical field in response to the evidence-based medicine movement, there is a paucity of rigorously designed randomized controlled efficacy and meta-analytic studies in the field of speech-language pathology (Ratner, 2006). Further, this observation does not acknowledge that far fewer studies address the implementation of these practices in real world settings. In the absence of randomized controlled trials and meta-analyses, clinicians should access the next best option to apply research to practice (Worrall, 2002). This research may come from quasi-experimental studies or single-subject experimental designs

applicable to clinical practice. Reports of a lack of clinical practice research when considering all methods motivate the need to examine current trends in the primary scientific journals within the field of speech-language pathology (Ratner, 2006).

Barriers to EBP

There has been an increased interest in identifying barriers to implementation of EBP in the field of speech-language pathology since its endorsement by ASHA. Many have observed that, in line with ASHA's endorsement, practicing SLPs recognize the importance of using EBP in their practice (Vallino-Napoli & Reilly, 2004; Zipoli & Kennedy, 2005). Still, understanding the importance of EBP differs from successful implementation of EBP. Studies investigating barriers to implementation of EBP widely cite 'time' as a primary barrier (Metcalf et al., 2001; Vallino-Napoli & Reilly, 2004; Zipoli & Kennedy, 2005). In addition, limited access to relevant research may be a significant factor in the inability to effectively apply evidence to clinical practice. In fact, Plante (2004) suggests that there is a limited evidence base for research available for clinical utility in comparison to the breadth of practices that are within the scope of SLP practice.

It is not surprising that studies surveying healthcare professionals have found that SLPs perceive more barriers to EBP than their peers in other allied healthcare fields, such as occupational therapists and physical therapists (Metcalf et al., 2001). Limited access to clinical practice research may be something that differentiates SLPs from other rehabilitation professionals. In fact, SLPs report using research studies less than any other form of information when making clinical decisions (Zipoli & Kennedy, 2005). Furthermore, SLPs use traditional non-evidence-based sources of information (e.g., expert opinion and anecdotal claims on websites) significantly more than evidence-based sources of information (Zipoli & Kennedy,

2005). Indeed, a ‘lack of available evidence’ was identified as the greatest barrier in implementing EBP by SLP supervisors and administrators (Mullen, 2005).

The lack of clinical practice research available is further complicated by the variety of primary areas within the scope of practice for SLPs. For example, school-based SLPs report rarely using ASHA journals to read articles about intervention or assessment (Hoffman, Ireland, Hall-Mills, & Flynn, 2013). Similarly, SLPs report feeling that there is limited research literature related to aphasia management in the acute setting (Foster, Worrall, Rose, & O’Halloran, 2015). These findings suggest that the limited availability of clinical practice research may vary considerably based on the area of practice.

To determine the quantity of usable research available to SLPs, Justice (2008) found that there was minimal intervention research published in the *American Journal of Speech-Language Pathology (AJSLP)* over a ten-year period (1997-2006). This finding was consistent across three primary ASHA journals, highlighting a need for increased intervention literature in the field of speech-language pathology (Justice, Nye, Schwarz, McGinty, & Rivera, 2008). Difficulty accessing the limited research in other professional journals (e.g., research published in journals with high fees) may also contribute to the perceived barriers to implementing EBP. Thus, there is a particular need for clinical practice research in ASHA journals to support the use of EBP in clinical practice, given the ease of access to these journals.

Purpose

More than two decades have passed since EBP has been recognized as a cornerstone of clinical practice in speech-language pathology. Furthermore, considerable time has passed since the assertion that the evidence base within the field is small (Plante, 2004; Justice, 2008). Therefore, it is timely to reassess the status of the evidence base for speech-language pathology

practice. The purpose of this study was to examine trends in clinical practice research published in ASHA journals over the past 11 years (2008 to 2018). The following research questions guided this study:

- 1) How much and what types of clinical practice research have been published between 2008 and 2018 in the *American Journal of Speech-Language Pathology (AJSLP)*; *Language, Speech, and Hearing Services in Schools (LSHSS)*; and the *Journal of Speech, Language, and Hearing Research (JSLHR)*?
- 2) What are the trends in clinical practice research published in ASHA journals over the past 11 years?
- 3) In which populations is clinical practice research conducted (e.g. clinical diagnosis, age group)?
- 4) How much and what types of implementation science research is being conducted?

Method

Procedure

All studies published in *AJSLP*, *LSHSS*, and *JSLHR* from 2008-2018 were extracted for coding. Articles published in the hearing section of *JSLHR* were excluded to understand the evidence base specific to the field of speech-language pathology. A total of 2,483 articles were identified. Coders ($n = 7$) were licensed speech-language pathologists with at least three years of clinical practice experience. All coders also held and maintained their Certificate of Clinical Competence (CCC) and ASHA membership. Data were managed and stored electronically using REDCap (Harris et al., 2009). A three-phase coding scheme was designed to effectively classify each article.

Coding Scheme

Data. Publication information was collected for all articles. Variables of interest included year published, authors, type of article (e.g. Research Article, Research Note, Review Article, etc.), and ASHA journal of publication. Articles that did not analyze data (e.g. Editorials, Tutorials, Clinical Focus, etc.) were considered non-research and were not coded further.

Clinical Practice Research. Articles that contained original data or analyzed previously published data (e.g. systematic reviews or meta-analyses) were coded based upon their abstracts. To be considered clinical practice research, articles were required to report an investigation of a population served by an SLP or key, relevant stakeholders in service delivery (i.e. studies that only included typical participants or samples of convenience with no history of speech and language disorders were classified as not clinical practice research). All studies that investigated an assessment, intervention, or implementation were considered clinical practice research. Codes were not mutually exclusive (i.e. studies coded as implementation could also be coded as intervention or assessment). Table 1 contains the definitions used to guide coding decisions.

Primary Area of Study. All articles that were evaluated as clinical practice research were coded further to describe the primary area of study. Variables of interest included the primary population studied (e.g. a clinical population, caregivers, healthcare providers, etc.), age of the clinical population (e.g. birth-three, adults, etc.), primary diagnosis of the clinical population (e.g. autism, developmental language disorder, stroke, etc.), and if applicable, the secondary diagnosis of the clinical population (e.g. language delay or disorder, aphasia, dysphagia, etc.). Selection of multiple items for each variable was permitted so that each population, age, or diagnosis included in the study was represented in the code. A decision tree containing the complete coding scheme is provided in Figure 1.

Barriers and Facilitators to Implementation. Non-clinical practice research articles were coded to account for a subset of studies that do not fit the criteria of clinical practice research but are related to implementation. Such studies were non-experimental and aimed to describe barriers and facilitators that impact the use of EBP. This subset of articles had to report an investigation of current clinical practice patterns; factors affecting implementation, fidelity, training, scale-up or sustainability of an EBP; or factors affecting dissemination of an EBP.

Reliability

Coders were trained to 80% reliability on a standard set of articles that were verified for training by two of the primary authors. All articles were coded twice, and reliability was monitored by a primary author following training. All disagreements were resolved by a PhD-level speech-language pathologist. The rationale for the resolution of any disagreement was shared with primary coders during monitoring. Full text review was employed when disagreements could not be solved at the abstract level. Coders classified whether or not articles were clinical practice research with 89% agreement. Assessment articles were classified with 92% agreement, and intervention articles were classified with 93% agreement. There were no disagreements in classifying implementation articles.

Results

Clinical Practice Research in ASHA Journals

Analysis of the 2,483 total articles identified a total of 264 non-research articles and 2,219 research articles. Further analysis of the research studies revealed that 554 articles fit the criteria for clinical practice research (25%). These articles were comprised of assessment (n = 227; 10%), intervention (n = 324; 15%), and implementation (n = 5; 0.02%).

Table 2 presents a breakdown of the clinical practice research published in each ASHA journal. *AJSLP* included the greatest percentage of clinical practice research articles relative to the total number of articles published in that journal (207 of 543 total articles; 38.1%). *JSLHR*, published the highest number of clinical practice research articles ($n = 250$), but that 250 articles out of 1315 total articles comprised only 19.0%. *LSHSS* published 97 clinical practice articles out of a total of 361 articles, reflecting 26.9%. The distribution of assessment, intervention, and implementation articles out of a total of 554 was 40.8%, 58.3%, and 0.9%, respectively.

Eleven-Year Trends in Clinical Practice Research

As can be seen in Figure 2, the yearly number of clinical practice research articles published in ASHA journals has increased since 2008, with 35 clinical practice research articles published in 2008 and 87 clinical practice research articles published in 2018. However, the percentage of clinical practice research articles relative to the number of total published articles has remained relatively stable and low (range = 18-30%).

Clinical Practice Research by Population

Age. The total number of clinical practice research articles ($n = 554$) was distributed across various primary content areas. Age is a primary factor in service delivery, with common places of employment that are specific to the ages served (e.g. early intervention, school districts, skilled nursing facilities). The distribution of articles available in any single age group resulted in a lower number of total available clinical practice research articles for SLPs working in these settings. Adults, school age, preschool, and aging populations participated in 216, 198, 177, and 166 clinical practice articles. In contrast, birth to three-year-olds participated in much fewer articles ($n = 58$; Table 3).

Primary Diagnosis. All 554 clinical practice research articles also were broken down by the diagnosis of the study participants. Articles that included participants with developmental language delay (n = 126) and stroke (n = 108) were the most common. Articles that included participants with neurodegenerative disorders (n = 46) and autism spectrum disorder (ASD; n = 42) were the next most common. Articles that included participants with central auditory processing disorder (CAPD; n = 3) and craniofacial anomalies (n = 6) were the least common. These results, summarized in Table 4, roughly correspond to prevalence rates, with more clinical practice research for more common diagnoses.

Secondary Diagnosis. In addition to determining the primary diagnosis of study participants, secondary diagnosis served as a second point of distribution of clinical practice research articles. This allowed for distinction when the primary diagnosis did not account for the speech and language diagnosis. For example, among the studies including participants with ASD, two studies included participants with a secondary diagnosis of decreased speech intelligibility, 40 studies included participants with a secondary diagnosis of language delay or disorder, and one study included participants with both speech and language difficulties. Articles that included participants with a language delay or disorder (n = 96) and aphasia (n = 94) were the most common. Articles that included participants with dysphagia (n = 19) and cognitive communication disorder (n = 11) were among the least common (see Table 5).

Implementation Science

Implementation was the least represented type of research, with only five articles meeting the criteria for clinical practice implementation research. Of these articles, only three articles tested an implementation strategy. Two articles that tested an implementation strategy were also coded as intervention studies (also known as a hybrid type II implementation-effectiveness trial;

Schliep, Alonzo, & Morris, 2017). Of note, the primary participants in both of these articles were the same sample of teachers. The remaining article evaluated the implementation of an assessment, but only included implementation outcomes for SLPs and did not include assessment outcomes (type III implementation trial; Schliep et al., 2017). Two other studies taught SLPs to implement a specific evidence-based practice and used a single group pre-post design to assess either the acceptability or implementation of an intervention approach.

As shown in Table 6, there was an additional 59 studies (3% of all studies) that described barriers and facilitators of EBP implementation. Examples of such studies includes investigations of the current use of EBP, SLPs' perceptions of the EBP, barriers related to referral and access to services, and barriers to implementing EBP in the speech-language pathology literature.

Discussion

The results of this study indicate that clinical practice research comprises the minority (25%) of the research articles published in ASHA journals. The distribution of clinical practice research articles across content areas results in a dearth of information in any single area of study and even less when answering a clinical question about an individual client. For example, only three articles investigated intervention for dysphagia in the children birth to three years of age. In light of the calls for clinical practice research in the field and a strategic objective identified by ASHA (ASHA, 2018), the lack of growth in the percentage of clinical practice research over the past 11 years is especially striking. Given the lack of intervention and assessment studies, it is not surprising that implementation, which requires the study of an evidence-based practice to implement, is the most infrequent type of clinical practice research. Even fewer implementation studies include SLPs as the primary participants, calling into question the real-world feasibility of most research available to practicing clinicians. In fact, only a single study tested an

implementation strategy specifically for SLPs (Bainbridge, Stavros, Ebrahimian, Wang, & Ingham, 2015).

The current state of the evidence-base in speech-language pathology is surprising, given that substantial time has passed since ASHA's endorsement of EBP and the previous recognition of 'lack of research' as a barrier to EBP implementation. One potential explanation for this finding is that there are very few clinician-scientists, which may reduce the capacity for clinical practice research in our field. Clinician-scientists are uniquely equipped to facilitate clinically applicable research and support community-research partnerships due to their balanced training in both research and clinical practice. A small proportion of practicing SLPs choose to pursue PhDs and, of those individuals, a small percentage specialize in clinical practice research. Thus, SLP clinician-scientists are uncommon in both research institutions and clinical practice settings.

Other rehabilitation professions have progressed towards clinical doctorate degrees, and this additional education often provides knowledge and experience in both research and clinical skills. For example, a clinical doctorate is the entry level degree in physical therapy, replacing the former master's degree (APTA, 2015). In occupational therapy, clinical doctorate degrees are accredited and an optional addition to the entry level master's degree. Such clinical doctorate degrees may increase research experience and maximize clinical expertise (ACOTE, 2012). In fact, a clinical doctorate is the required entry level degree in speech-language pathology's sister discipline, audiology. Education in scientific and research foundations, usually demonstrated through a student-led research project, is a requirement for accredited audiology programs (CFCC, 2012). However, clinical doctorate degrees in the field of speech-language pathology are in their infancy without clear research requirements. Therefore, SLPs are at a distinct disadvantage in research training as compared to their peer disciplines. These professional

doctorates are far less likely than PhDs to spur careers as independent researchers. Nevertheless, it is possible that individuals with professional doctorates will be more likely to serve as contributors to clinical practice research teams.

Implications

The clinically relevant research that is necessary when making evidence-based clinical decisions is a significant barrier to EBP for SLPs because of the paucity of clinical practice research articles published in our professional association's journals. This lack of easily accessible clinical practice research presents the field with an immediate problem that has direct implications in the way SLPs approach EBP. Certainly, it is unrealistic to expect SLPs to successfully use EBP in their clinical decision-making process without one of the three primary pillars (clinical practice research).

Consequently, SLPs have limited choices when integrating research with clinical expertise and informed patient preference. One avenue that SLPs may take is to base clinical decisions on the more abundant supply of basic research findings as opposed to clinical practice research evidence in our field. When relevant research does not exist, SLPs also may use practice-based evidence. Although practice-based evidence has a place in models of EBP, such as Dollaghan's (2008) E³BP model, caution should be taken when there is no source of external verification (Kamhi, 2011). However, increased research training may allow SLPs to apply a greater degree of experimental control to practice-based research and thus add to the body of clinical practice research available to other clinicians.

Other avenues to making clinical decisions in the absence of clinical practice research are more problematic. The findings of this study provide one possible explanation as to why SLPs report accessing traditional non-evidence-based information as opposed to research articles.

Pseudoscientific practices or unproven programs may be more common than evidence-based approaches. The ease of finding and subsequently using these types of practices is understandable, given the small number of articles relevant to clinical cases or a particular content area. However, the use of pseudoscientific, unconventional, or unproven strategies to treat patients results in a lower quality of care. These approaches are detrimental to the individuals SLPs serve because they reduce the time and funds available for evidence-based interventions. The results of this study underscore the need for the field of speech-language pathology to increase clinical practice research and decrease the barriers SLPs face when implementing EBP.

Limitations and Future Directions

These results should be interpreted in the context of the limitations of this study. First, this study only considered the quantity of clinical practice research published in ASHA journals, but not the quality. Levels of evidence and validity of studies are important considerations for SLPs, but these factors were not addressed in the present analysis. Next, although it is likely that clinician-scientists may have a positive impact on the field, this study does not directly assess how many clinically certified SLPs author articles in ASHA journals. Finally, this study was specific to the field of speech-language pathology, and thus did not include studies from the field of audiology, which represents a sizeable portion of ASHA's primary journals. Because audiologists may have more research training than SLPs, comparing the amount of clinical practice research between fields may help to understand if clinical doctorate degrees are related to the production of clinical practice research. In light of these limitations, more work is needed that includes practicing clinicians. Future studies should investigate EBP in the context of

clinician-researcher partnerships and increasing the capacity of clinicians to conduct clinical practice research.

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Figure 1. Coding Scheme

Figure 2. Eleven Year Trends in Clinical Practice Research in Speech-Language Pathology