

Critical Review: Efficacy of Telepractice for Speech-Language Pathology Services

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The purpose of this article is to determine if telepractice delivered speech-language pathology interventions are as effective as traditional in-person delivery for school aged children with speech and/or language disorder. A critical review was conducted using 3 databases, resulting in the selection of 2 single group pre-post-test only studies, 1 between groups study with a historical context, 1 between groups study, 1 randomized clinical trial, and 1 systematic review. Results revealed that telepractice and in-person participants made similar improvements after completing therapy for speech and language impairments. The current research suggests telepractice is an effective model for delivery of SLP services to school aged children with speech and language disorders.

Introduction

The COVID-19 pandemic has accelerated virtualization of our social and work lives because of the sudden emergence of social distancing policies. Telepractice has emerged as a functional and fast-growing delivery model for Speech & Language pathology (SLP) services in the last year. Telepractice is the delivery of SLP professional services through telecommunication technology like Zoom. It has been used as a delivery model for underserved patients in rural communities without access to in-person delivery services for years with the benefits of convenience, cost-effectiveness, timeliness of care, and improved access for people in remote areas. Its uptake is growing rapidly and research into the efficacy of telepractice for SLP services is rare (Kaliya-Perumal et al., 2020) (Sicotte et al., 2003). Given the growing demand for telepractice services, the efficacy of alternatives to in-person therapy needs to be evaluated in depth.

Objectives

The objective of this paper is to review existing literature to evaluate the effectiveness of telepractice as a delivery model for SLP services for school aged children, compared to in-person therapy service models. The secondary objective of this paper is to propose clinical implications for clinicians providing school aged children with speech and language therapy via teletherapy.

Methods

Search Strategy

Computerized databases including ASHA publications, Western's Online Library, and google scholar were used to search for articles with the following key words: [(telepractice) OR (telemedicine) OR (telehealth) OR (teletherapy) AND (Speech-Language Pathology) AND (School-aged) OR (children) AND (Treatment) OR (Assessment)].

Selection Criteria

The studies included in the review were required to investigate the efficacy of telepractice as a delivery model for SLP

services for school aged children (ages 3-19) as their focus of investigation.

Data Collection

The literature search resulted in the selection of six articles for review. These articles consisted of 2 single group pre-post-test only studies, 1 between groups study with a historical context, 1 between groups study, 1 randomized clinical trial, and 1 systematic review.

Results

Coufal et al. (2018) conducted a between groups study comparing traditional in-person service delivery using the National Outcomes Measurement System (NOMS) to telepractice service delivery through the database of a private e-learning provider. Participants were selected from both databases who had participated in speech sound production therapy for 4 to 9 months, and were between 6 and 9.5 years old. The American Speech-Language Hearing Associations (ASHA) functional communication measures (FCM's), a seven-point rating scale used to describe change in an individual's functional communication, were used as a common outcome measure to compare both groups. The authors sought to establish comparability between both groups for the following: a) inclusion criteria, b) initial FCM scores, and c) median-based non-parametric statistics.

Appropriate statistical analyses revealed that both groups were similar in terms of both age range criteria, therapy length criteria, and initial FCM level. Lastly, the authors found that there were no significant differences in the change scores between the ASHA NOMS group and the teletherapy group, with both groups seeing improvements of 1-2 levels from initial to final scores.

Overall the data provide compelling evidence that telepractice service delivery is equivalent to in-person service delivery for school aged children with speech sound production deficits.

Fairweather et al. (2016) conducted a single group pre-posttest only study with 19 school aged children participants to evaluate the effectiveness, feasibility, and acceptability of teletherapy as a method of delivering SLP services. The study utilized both quantitative and qualitative outcome measures including goal attainment scaling (GAS), and semi-structured interviews involving the children's parents, which explored parents' perceptions regarding teletherapy. GAS is a criterion referenced measure of change, where child specific goals are quantified using a 5-point scale. Linguistic goals involved speech sound production, expressive language skills, receptive language skills, pragmatic language skills, phonological awareness, and speech fluency but varied based on the participant.

Appropriate statistical analyses revealed that 73.68% of the participants reached or exceeded the expected level after a block of teletherapy sessions. Four themes emerged from the Semi-structured interviews: (1) Teletherapy as having improved practicality and convenience, (2) Teletherapy had a positive impact on their child's and their own learning, (3) technological difficulties and limitations of teletherapy services, and (4) a need for improved communication between members of the program.

A second experienced SLP blinded to the child's performance during the initial assessment assessed participant progress, reviewed methods and materials for targeting skills in therapy, and verified the

accuracy of post-treatment GAS ratings. Parent interviews were conducted by an individual not involved in program delivery. This study was limited by the lack of a control group, as well as a relatively small sample size. While parent interviews were conducted, other stakeholders (eg. Teachers, SLP's, ECE's, etc.) perceptions regarding teletherapy were not considered.

Overall, the data provide suggestive evidence that teletherapy service delivery is a feasible method for delivery of SLP services to school aged children with speech and language disorders.

Gabel et al. (2013) conducted a between groups study with a historical context involving 71 school aged students who were identified under the Individuals with Disabilities Education Improvement Act (IDEA) of 2004 (US) as having a speech or language impairment. These participants were compared to the National Outcomes Measurement System (NOMS) from ASHA, which contains intervention data from students receiving in-person speech and language therapy. Intervention was individualized for the child's Individual Education Plan (IEP), therefore goals, procedures, as well as the number and length of interventions sessions differed between participants. Intelligibility, speech sound production, spoken language comprehension, and spoken language production were the most common disorders among participants and the children in the NOMS database. These four functional communication measures were used as the basis of comparison between participants and the database. Each measure was evaluated by an SLP using a 7-point rating scale, ranging from 1 (nonfunctional) to 7 (normal functioning) following intervention.

Results indicated that when compared with the NOMS data, children receiving teletherapy saw similar degrees of student progress across the four functional communication measures of interest. However, the researchers did not use statistical measures to compare participant measures and NOMS database limiting the strength of their results. Three trained SLP's with over 10 years of experience providing intervention for children with communication disorders delivered the teletherapy. All SLP's using the NOMS database were required to pass a rater reliability test, strengthening the reliability of the data obtained from the NOMS database. In addition, teletherapy was delivered individually while NOMS data was mainly obtained from small group intervention sessions. This difference in delivery method may serve as a confounding variable in this study.

Overall, the data provide suggestive evidence that students with communication disorders can make similar progress in a teletherapy service delivery model when compared to in-person therapy.

Grogan-Johnson et al. (2010) conducted a randomized clinical trial (mixed: within & between groups), using 34 school aged children with either articulation, language, or fluency disorders to determine the efficacy of speech language therapy provided by telepractice. 17 children received telepractice treatment for 4 months, followed by 4 months of in-person treatment, while the other 17 children received 4 months of in-person therapy, followed by 4 months of telepractice treatment. Outcome measures were collected between treatment periods, which included student progress, participant satisfaction as well as any interruptions to service delivery.

Appropriate statistical analysis revealed that following the first treatment period, adequate progress or mastery was achieved for 75% of the student progress objectives by both groups. After the second treatment, the authors found that 88% of the objectives were achieved for the telepractice group, and 84% of the objectives were achieved for the in-person group. In addition, there was no statistically significant differences in Goldman Fristoe Test of Articulation-second edition (GFTA-2) scores between the two groups after the first and second treatment periods.

This study is strengthened by the presence of a randomized control group, as well as requiring all SLP's to pass the ASHA inter-rater reliability test. However, weaknesses were also present; Several SLP's provided assessment, developed IEP goals, and implemented therapy for students. In addition, teletherapy was delivered individually while NOMS data was mainly obtained from small group intervention sessions. Lastly, there is reduced statistical power due to the limited number of participants.

Overall, the data provide compelling evidence that students with communication disorders can make similar progress in a teletherapy service delivery model when compared to in-person therapy.

Sicotte et al. (2003) conducted a single group pre-posttest only study involving 6 children who stutter to assess the feasibility and efficacy of delivering SLP services through telepractice to children who stutter. Participants included 4 children between 3 and 12 years old, and 2 adolescents aged 17 and 19 years. All participants received 12 weekly, 1 hour individual telepractice sessions, as well as 5, 1 hour maintenance sessions across 6 months. Outcome

measures included subjective measures from the point of view of the participant as well as objectively measuring the percentage of syllables stuttered.

All participants showed improved fluency, with rates of stuttering decreasing from 13-36% to 2-26% following telepractice treatment. All patients indicated a perceived reduction in stuttering, with 5 of 6 participants giving the highest score for the reduction in stuttering. This study was strengthened using a single clinician for delivery of all SLP services, whom also specialized in stuttering therapy. However, this study lacked a control group, and had a very limited sample size.

Overall, the data provide suggestive evidence that telepractice is an effective delivery model for stuttering therapy with school aged children.

Wales et al. (2017) conducted a systematic review to determine if telepractice delivered SLP services are as effective as in-person services for school aged children with speech and language disorders. 7 articles were utilized in the review, with most studies (71%) focusing on school aged children between 4 and 12 years of age. 6 different outcome measures were used across the studies: The GFTA-2, Functional Communication Measures (FCM's), goal achievement, informal probes, comparison of pre-intervention baselines with post-intervention production levels, and change reported on quarterly progress reports.

Analysis of the studies revealed participants receiving telepractice and in-person SLP services demonstrated significant and similar improvements across 5 of 6 outcome measures, with the only outcome measure demonstrating inconsistent findings being FCM's. There was strong evidence that

telepractice for speech sound intervention with primary school children is just as effective as in-person therapy. However, this review was limited due to a lack of quality research on the topic.

Overall, the data provide highly suggestive evidence that telepractice is just as effective as in-person therapy for delivery of SLP services to school aged children with speech and language disorders.

Discussion

Findings from the critical analyses of these 6 studies are suggestive that telepractice is an effective service delivery method for SLP services for school aged children with speech and/or language disorders. Studies that compared intervention delivered at a distance to in-person intervention (Grogan-Johnson et al., 2010; Gabel et al., 2013; Coufal et al., 2018) revealed no significant differences in speech/language outcome measures between the two methods of service delivery. Studies without a control group (Sicotte et al., 2003; Fairweather et al., 2016) revealed that school aged children saw improvements to their speech and/or language abilities after receiving SLP services through telepractice.

While necessary to mitigate confounding variables, 5 of the studies (Sicotte et al., 2003; Wales et al., 2017; Grogan-Johnson et al., 2010; Gabel et al., 2013; Coufal et al., 2018) excluded participants with comorbidities (autism, cognitive impairment, cerebral palsy, cleft lip/palate, neurological impairment, apraxia of speech), which questions the generalizability of the results. Given that children with comorbidities represent a prominent population of people that an SLP services, this is an important consideration for

clinicians when deciding on a service delivery model that best suits your client.

It should be considered that the success of telepractice is somewhat dependent on parental engagement. Many of the studies included telepractice assistants or parental support to deliver therapy at a distance, as well as to assist in set up and troubleshooting of any technology malfunctions. However, this inherent need for more parental support may be an overall benefit to both the clinician and child, with the parent perhaps more well equipped to implement speech and language strategies outside of therapy time due to their engagement during therapy.

To summarize, evidence from this literature review provides suggestive evidence that telepractice is an effective service delivery model for SLP services for school aged children with speech and/or language disorders.

Clinical Implications

Speech-language pathologists working with school aged children with speech and language disorders can use these findings when making decisions about which type of service delivery model they will provide. Clinicians can feel reasonably confident that telepractice is an effective method of service delivery. Factors such as cost effectiveness, timeliness, and accessibility can be considered because both telepractice and in-person therapy are shown to produce beneficial outcomes.

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