A systematic review of the use of telehealth in Speech, Language and Hearing Sciences

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Abstract

We conducted a systematic review to investigate telehealth applications in Speech-Language and Hearing Sciences (SLHS). Most of 103 studies selected concluded that the telehealth procedure had advantages over the non-telehealth alternative approach (85.5%).

The results revealed that telehealth improved the quality of care, resulting in a good level of satisfaction from the users. Parents felt comfortable or as comfortable as they did with face to face (FTF) situations when discussing matters with the therapist online, and they were satisfied with their level and their child's level of interaction/rapport with the therapist. Adults described remote treatment as convenient and that would make life easier. Telehealth was also considered similar to the FTF approach in most cases. The therapists determined that telehealth applications as safe as FTF for the recipient, are comparable to a FTF session and are easy to use.

The main barriers cited were the need of more data to improve the software used; the acceptance of a new proposal for health care; internet speed; and other technological limitations. It is important to point out that 25.24% of the studies did not mention barriers to the implementation of telehealth.

Future studies should be conducted to provide more evidence for establishing best practices in SLHS Sciences telehealth.

Summary
Advances in telehealth have resulted in a substantial increase in the use of technological resources for remote screening, assessment, intervention and health education in Speech-Language and Hearing Sciences (SLHS). Previous literature reviews reported that although the use of telecommunication technologies has been growing, as well as the number of studies about telehealth, it is still necessary to expand its application to SLHS services and further evaluate its use. As telehealth becomes a standard means of conducting diagnostic and treatment services in speech-language and hearing disorders (SLHD), it is essential to assure that research supports its use. The aim of this study was to provide a systematic review about telehealth applications in SLHS.

We conducted a systematic review following the guidelines outlined by the Cochrane Handbook. The selected keywords were: Teleaudiology, Teleaudiometry, Telehealth, E-health, Telemedicine, Teleducation, Speech-language and Hearing Sciences, Hearing, Language, Speech, Voice and Swallowing. The databases used were: Web of Knowledge, Pubmed, Scopus, Embase and Scielo. The inclusion criteria consisted of: papers in English or Portuguese, published before August 2014, with abstract and full text available, and related to telehealth applications in SLHS.

Four reviewers formed two pairs and each pair independently examined the data. If the two pairs’ opinions differed, a discussion was conducted to reach a consensus. Duplicate publications and literature reviews were excluded. Data related to the following factors were obtained: (1) the study’s country of origin/year of publication; (2) the research specialty area (hearing, language, speech, voice, multiple areas - more than one area simultaneously - and other); (3) methodological characteristics (screening, assessment, intervention, education, and other); (4) population characteristics (sample size, gender, and diseases/conditions); (5) telehealth modes and means of telecommunication; (6) whether a speech-language pathologist (SLP) or audiologist participated in data collection; (7) conclusions regarding the use of telehealth; (8) the object of the study; (9) main findings: improved quality of care (i.e., the validity and reliability of assessment and diagnosis; user and clinician
satisfaction), improved access to care, cost-effectiveness, management changes, policy issues and (10) barriers to telehealth.

A total of 103 papers were selected. The countries with the largest number of published studies were the United States of America (32.03%) and Australia (29.12%). Most of the studies were published between 2008 and 2014 (73.7%), with the highest concentration published in 2010 (19.4%).

Most of the studies focused on hearing (32.1%), followed by speech (19.4%), language (16.5%), voice (8.7%), swallowing (5.8%), multiple areas (hearing and/or language and/or speech and/or voice: 13.6%) and others (3.9%). The majority of the studies focused on assessment (36.9%) or intervention (36.9%). The other studies focused on screening (8.7%), education (1%), various methodologies (including screening, assessment, intervention, monitoring and/or education: 11.6%) and others (4.9%).

The number of subjects ranged from 1 to 3830 (mean 104.69, SD = 441.1). Four of the studies (3.8%) did not involve subjects because they concerned the development of telehealth proposals that were not being applied to people at the time. Most of the studies used both genders (75.7%), but 3.8% investigated only men;16.5% did not mention the gender of the participants. 54.4% of the studies focused on adults and the elderly, 26.2% focused on children and adolescents, and 5.8% focused on all age groups simultaneously; other studies (9.7%) did not mention the ages of the participants.

Most of the studies employed a synchronous mode interaction (54.3%), followed by hybrid (26.2%) and non-synchronous modes. We found that the vast majority used the internet alone (74.8%) or combined with an additional internet-based device (14.6%), followed by a phone only (7.9%). For most of the studies, SLPs or audiologists participated in the data collection (82.5%).

Most of the studies concluded that the telehealth offered advantages over the non-telehealth procedures (85.5%), and 13.6% reported that it was unclear whether the telehealth procedure offered advantages. Only 0.9% of the selected studies concluded that the non-telehealth alternative approach offered advantages over the telehealth.
Improved access to care was the main benefit mentioned (80.6%). The use of telehealth can reduce patients’ driving time, make health care more accessible for patients who live in communities with few specialists, and can promote patient-centred care.

Only 12.6% of the 103 studies mentioned cost-effectiveness. The full social benefits of these initiatives are therefore unknown, making it difficult for decision-makers to compare different programs and make informed decisions about which are worth implementing from a social perspective. Telehealth reduces the time required for health care, missed work, costly transports and unnecessary home visits. In addition, home monitoring programs can reduce expensive hospital visits.

The results revealed that telehealth improved the quality of care, resulting in a good level of satisfaction from the users. Parents felt comfortable or as comfortable as they did with FTF situations when discussing matters with the therapist online, and they were satisfied with their level and their child's level of interaction/rapport with the therapist. Adults described remote treatment as convenient and that would make life easier. Telehealth was also considered similar to the FTF approach in most cases. The therapists determined that telehealth applications as safe as FTF for the recipient, are comparable to a FTF session and are easy to use.

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Most of the studies reviewed positively evaluated the use of telehealth in SLHS and examined cost minimization when considering the aspects related to access and quality of care. However, the studies also provide evidence of the need for additional investigations for the generalization of results. Future studies, particularly randomized controlled trials, should be conducted to provide more evidence for establishing best practices in SLHD telehealth considering procedures related to remote
screening, assessment and intervention. Moreover, cost-effectiveness analyses are needed to justify telehealth applications and reimbursement.

References