**Telepractice in Speech-Language Pathology and Audiology: Prospects and Challenges**

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### Abstract

With the advancement in science and technology, the information and communication technology (ICT) mode has been put to best use in the health-care sectors. Unlike health, communication disorders pose special challenges to service delivery. The Discipline of Speech-Language Pathology and Audiology is an integrated health-care profession which is only about half-a-century old in India. The disproportion in the ratio of qualified service providers to service receivers is highly prevalent. In view of this, “Telepractice” (The term telepractice is used in this article to mean tele-rehabilitation for persons with communication disorders since the service comprises of multifaceted objectives such as rehabilitation in the Discipline of Speech-Language Pathology and Audiology) as a means of “reaching the unreached” fits well when the service delivery is provided across geographic, time, social, and cultural barriers using ICT mode. Telepractice is generally provided from a remote site using store-and-forward as well as real-time technology using ICT platforms. The platform for telepractice in India is well set, with a considerable number of people being “digitally literate.” Yet, there are several concerns such as development of professional skills for telepractice; development and validation of digital resources; empirical studies on face-to-face, virtual, or hybrid service delivery; revision of code of ethics for telepractice; and mechanism to protect client’s privacy on e-platforms that need to be addressed if telepractice has to be launched on a large scale in India. Insights gained from the work carried out at the Telecenter for Persons with Communication Disorders highlight on the advantages of telepractice from client/caregiver’s perspective besides reflections on the prospects and challenges of telepractice in India.

**Keywords:** Audiology, India, prospects and challenges, speech-language pathology, telepractice

### Introduction

Health care of citizens being the primary concern of any nation, various models and approaches have emerged to deliver services to persons with health problems including tele-health services. The availability of qualified workforce in health management system is “fairly adequate,” with a doctor-to-patient ratio of 1:1000[1] to face the demand versus supply challenge. With the advancement in science and technology, the information and communication technology (ICT) mode has been put to best use in the health-care sectors.

Communication disorders, on the other hand, pose special challenges to service delivery. Some of these challenges are that these disorders often require long-term “rehabilitation” (Rehabilitation includes every procedure that can help persons with impairments to successfully engage in activities that are rendered difficult by those impairments) and not “treatment” (Medical care given to a patient for illness or injury) as is being provided for physical ailments. Therefore, “Telepractice” sounds apt when the service delivery is provided to persons with communication disorders across geographic, time, social, and cultural barriers using ICT mode. Persons who cannot travel to a clinic or to a center due to constraints of disability or travel time can avail clinical consultation and assessment as well as intervention through either synchronous (Synchronous, i.e., client-interactive services are conducted with interactive audio and video connection in real time to create an in-person experience similar to that achieved in a

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Accordingly, the course structure and content are and/or implies the study considered (10). There are about 84 training to serve the needs of 4% population is (8). Thirty-one more than 50% of population show digital literacy (where ICT modes, population with digital literacy is not significantly lower than those who are traditionally literate, suggesting the benchmark for literacy is use of mobile phones and other ICT modes, population with digital literacy is traditionally defined as the ability to read and write) is 74.04%, (13) more than 50% of population show digital literacy that extends beyond the basic reading and writing. If the benchmark for literacy is use of mobile phones and other ICT modes, population with digital literacy is not significantly lower than those who are traditionally literate, suggesting that the platform for telepractice is already set in India. It is our priority now to tap the resources and choose virtual mode as one of the viable options to deliver rehabilitation services. However, before we initiate large-scale services through ICT modes (such as videconferencing, multimedia content, Google group, Skype, TeamViewer, e-mails, and other interactive dedicated software), there is a strong need to prepare the platform by addressing several concerns. Major concerns that are faced in India are addressed in the present article including the development of professional skills for telepractice, development and validation of digital resources, empirical studies on the mode of service delivery (face to face, virtual, or hybrid), revision of code of ethics for telepractice, and mechanism to protect privacy of both service provider and service receiver on e-platform, which are a few priorities that need immediate attention before launching telepractice on a large scale in India.

Professional skills for telepractice

Professional training courses in speech-language pathology and audiology are regulated by the Rehabilitation Council of India. (14) Accordingly, the course structure and content are revised periodically in consultation with the expert committee. Although the course structure has theory and clinical practicum, telepractice is an iota in theoretical curriculum that often is...
neither carried out nor documented (except one institution) in the clinical practicum certificate. If policies and mandates for telepractice are spelt out clearly by a statutory body in the near future, the qualified graduates may not be eligible to offer services through ICT mode unless they acquire the required certification. Since the skills for telepractice are not the same as that of face-to-face practice (traditional mode), it is necessary to include telepractice in the clinical practicum and also certify the graduates. In this direction, it is essential to develop Telepractice guidelines by the training institutions in India for training students in speech-language pathology and audiology. The Scope of Practice in Audiology and Speech Language Pathology document of the Rehabilitation Council of India[15] (S. Rep. No. 2-6/RCI/2015, 2015) has endorsed eligibility for telepractice in communication disorders that calls for guidelines, policies, and ethical principles for service delivery through ICT mode.

**Digital resources for telepractice**

Resources are the primary tools for rehabilitation right from primary through tertiary stages. Over the past five decades, several resources have been developed for the multilingual population of India, keeping in view the face-to-face services for persons with communication disorders. Although digital resources are available for the specific population in other countries (e.g., Constant therapy,[16] Aphasia Corner,[17] and Boardmaker® Online[18]), no concerted efforts are made in India to meet the requirement of the unique multilingual population of India except for a few documented tests and resources.[19–21] If we consider telepractice as a solution to reach the unreached across the country, we need to equip ourselves with need-based digital resources (Digital resources are therapy materials such as flash cards in the form of PowerPoint slides, activities with instructions and scoring designed on interactive software for individual client, and applications on the mobile phones or tablets designed to provide home training which are custom made to each individualized therapy plan with respect to the goal and activities planned for a specific skill that can be used in providing telepractice through videoconferencing).

For instance, a few digital resources may be used as self-tests in adult population, whereas a few others can be used by caregivers or allied health professionals for which strategies for skill training have to be planned. If systematic telepractice is launched at the national level, there is a need to evaluate the available resources and also expand the resources from telepractice perspective.

At the All India Institute of Speech and Hearing (AIISH), Mysore, digital resources are made available through two dedicated websites (Tele-center and Helpline) in the form of multimedia content, short videos on various disorders, checklists for self-evaluation, guidelines for home-based management, frequently asked questions, tele-orientation videos, and feedback in the form of success stories. Attempts have also been made in the recent years to develop resources for telepractice through Master’s dissertations and funded projects. However, we are still naive about the logistics of using online resources to provide accessibility, data protection and security, code of ethics for telepractice, client’s privacy, and many other issues suggesting that we need to address these concerns before telepractice is introduced on a large scale.

**Service delivery mode: Face to face, virtual, or hybrid?**

As communication is interpersonal, traditional (face to face or in person) mode of service delivery has been a rule of thumb over the years. With this strong conviction, virtual mode as an option for service delivery probably has not been much explored. However, there have been several reports in the literature comparing the face-to-face, ICT (virtual), and hybrid modes of service delivery,[22,23] emphasizing that ICT mode is as effective as face-to-face or hybrid mode in the West. In India, a single case study on intervention using Skype for a person with Broca’s aphasia was one of the first reported cases of delivering speech and language therapy services through tele-model.[24] The study focused on providing speech-language therapy to improve expression, repetition, naming, and memory. The study demonstrated significant improvement in the target skills and concluded that telepractice is effective in the Indian context and is an upcoming area in the field of speech-language pathology.

A few case studies have been carried out on people with Wernicke’s aphasia, children with dysfluency, and children with autism spectrum disorder and many other conditions at the AIISH Tele-center, which are promising in support of the hybrid as well as ICT mode service deliveries. The following summary of clients that availed services through ICT mode illustrates the above.

The infrastructure used to provide the services through ICT mode involved a desktop computer with broadband internet of 50–60 Mbps download and upload speed, a high-definition web camera (Logitech 920 HD), and a headset (Creative HS-150 with On-the-ear, Supra-aural Closed Headset, Behind-the-neck Design). The tele-services were delivered from a well-illuminated room with minimal auditory and visual distractions. The service receivers were instructed to avail tele-services through a personal desktop computer/laptop with broadband internet connection of minimum 3–10 Mbps. If laptops were used, an in-built web camera was utilized, and in case of a desktop computer, a separate web camera was recommended. It was also instructed that the services to be received from a well-illuminated room. It was mandatory for the caregiver to be present during all the sessions, and in-built speakers of the client’s system were used.

**Hybrid mode**

Hybrid mode of service delivery was rendered to a 63-year-old male with Wernicke’s aphasia with baseline assessment in the face-to-face mode followed by communication intervention through ICT mode[25] (Yashaswini, R., personal communication, June 7, 2017). For the delivery of services through ICT, the service provider used auditory comprehension which was facilitated through ICT mode using deblacking, semantic feature analysis, and context-based auditory...
stimulation techniques. Activities were designed at four levels of complexity with tasks for naming, response to Y/N questions, word-to-picture/orthography matching, following verbal commands for object manipulation, sentence completion, and responsive naming tasks. The average number of trials provided to the client through ICT mode to elicit correct response was noted [Figures 1 and 2].

Figure 1 shows the average number of trials given to the client to elicit correct response to the word presented through the auditory mode. The task of the client was to identify the spoken word by pointing to the correct picture/written word. The stimuli were classified based on superordinate category that ranged from 5–10 stimuli per session. The trend line suggests that the average number of trials provided for eliciting correct responses significantly reduced across seven sessions.

Figure 2 shows the average number of trials given to the client to elicit correct response on responsive speech task. The client was familiarized with the topic/item/action on which the questions were asked. The trend line indicates that, although there is a reduction in the number of trials in the initial three sessions, the performance reached a plateau in the last four sessions. It is speculated from the results that there is a need to explore the type of skills that could be intervened through ICT and face-to-face modes, thus calling for hybrid mode of intervention.

Another client who availed service through hybrid mode was a 11-year-old male child who was enrolled for telepractice for dysfluency management over 4 months comprising 34 sessions of 45 min duration/session. The baseline assessment and initial three sessions were carried out via face-to-face mode followed by tele-sessions for intervention. Real-time analysis of stuttered words per minute (swpm) with a time sampling for 2 min across tele-sessions was carried out to track progress. Perceptual analysis of 10% of the sample was supervised and guided by a professional through ICT mode along with sharing e-resources developed specifically for the client. The progress made was documented as a single case study with A-B-A design. The communication matrix was used to profile the skills such as preintentional behavior, intentional behavior, unconventional communication, conventional communication, concrete symbols, abstract symbols, and language development in the child. The pretherapy, follow-up, and posttherapy skill matrix is depicted in Figure 6 that shows consistent improvement on all the domains targeted. The results suggest that ICT mode may also be employed to prepare and train parents and caregivers before initiating telepractice with the client by adapting a two-stage model of service delivery.

**Prospects and Challenges of Telepractice in India**

A few years of experience in offering service through ICT mode to persons with communication disorders gives a promising outlook at the prospects of this mode of service delivery. Apart from addressing the disproportion in the ratio of qualified speech-language pathologists and audiologists to clients with communication disorders which is unlikely to be solved in the near future, it helps to build up network of service providers with a multidisciplinary team of members to offer need-based services through ICT mode. Further, virtual self-help groups for person-to-person support anchored by a professional through Facebook, Twitter, technical blogs, and similar social media sites would also serve as a good prospect to build up network.
This mode of service delivery calls for multilingual resources for Indian population shared across centers and individuals, of course with terms and conditions that help to systematize our services.

Since ICT is the best mode to collect, store, retrieve, and transfer information electronically, a virtual database of diverse culture, languages, and disorders may be developed to establish National Consortium for Communication Disorders (NCCD). NCCD would serve to enhance research prospects that would further augment our services. Electronic records that provide real-time access to data, as well as a continuous longitudinal record for progress tracking of a person, would add quality to our services.

Telepractice for persons with communication disorders may also be viewed as advantageous from client/caregiver’s perspective as follows:

a. The client/caregiver can avail service at home, school, or hospital because commute to the place where rehabilitation services are available may be avoided, particularly for the elderly and persons with multiple disability
b. The client/caregiver can take breaks in between the sessions. These breaks could be for taking medications, use of washroom, a cup of coffee/tea, or a quick snack. For the elderly, these provisions would be required to make them feel comfortable
c. The client/caregiver can save their time and energy and expenses of travel, grooming to attend session, finding an escort, etc.

Despite many prospects, there are also challenges to be met by the professionals in telepractice. A few of the challenges that require immediate attention for ICT mode are service delivery policy, the unspelt ethical guidelines, privacy and confidentiality on e-platforms, cost–benefit and risk analyses, evidence-based practice measures, and data protection in addition to telepractice (clinical) service audit by a recognized governing body. There is an urgent need for the discipline of speech-language pathology and audiology to gear up for the challenges if the fruit of telepractice to be reaped in the forthcoming decades. When such a platform is completely set, we may expand our scope of service in association with the already launched services for health that are actively supported by the Department of Information Technology, ISRO, Apollo Hospitals, Asia Heart Foundation, state governments, and NEC Telemedicine program for northeastern states. This new beginning can reach greater heights with the concerted efforts of speech-language pathologists and audiologists in India.

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