Telerehabilitation
speech and language pathology

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آموزش از راه دور

هر گونه یادگیری است که طی آن خدمات دهنده و خدمات گیرنده از نظر جغرافیایی دور از یکدیگر هستند.

TeleHealth

- **Telehealth** is the use of digital information and communication technologies, such as computers and mobile devices, to access health care services remotely and manage your health care.

- These may be technologies **you use from home** or that your **doctor uses** to improve or support health care services

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telehealth

The majority of applications are aimed at reaching out to **underserved populations in remote or rural areas** within a district, county, state, province, or country to evaluate and/or treat speech, language, cognitive–communication, and swallowing disorders

Virtual appointments

❑ **Some clinics may provide virtual appointments that enable you to see your doctor or a nurse via online videoconferencing.**

- These appointments enable you to receive ongoing care from your regular doctor when an in-person visit isn't required or possible.

❑ **Other virtual appointments include web-based "visits" with a doctor or nurse practitioner.**

- These services are generally for minor illnesses, similar to the services available at a drop-in clinic. Some large companies provide access to virtual doctors' offices as a part of their health care offerings.

- When you log into a web-based service, you are guided through a series of questions. The doctor or nurse practitioner can prescribe **medications,** suggest **home care strategies** or recommend **additional medical care.**

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Remote monitoring

A variety of technologies enable your doctor or health care team to monitor your health remotely. These technologies include:

- **Web-based or mobile apps** for uploading information, such as blood glucose readings, to your doctor or health care team

- **Devices that measure and wirelessly transmit information,** such as blood pressure, blood glucose or lung function

- **Wearable devices that automatically record and transmit information**, such as heart rate, blood glucose, gait, posture control, tremors, physical activity or sleep patterns

- **Home monitoring devices for older people or people with dementia** that detect changes in normal activities such as falls

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Personal health records

- **An electronic personal health record system** — often called a PHR system — is a collection of information about your health that you control and maintain.

- **A PHR app is accessible to you anytime via a web-enabled device**, such as your computer, laptop, tablet or smartphone.

- **In an emergency, a personal health record can quickly give emergency personnel vital information**, such as current diagnoses, medications, drug allergies and your doctor's contact information.

Example of the ways telehealth

- Use a mobile phone or other device to upload food logs, medications, dosing and blood sugar levels for review by a nurse who responds electronically.

- Watch a video on carbohydrate counting and download an app for it to your phone.

- Use an app to estimate, based on your diet and exercise level, how much insulin you need.

- Use an online patient portal to see your test results, schedule appointments, request prescription refills or email your doctor.

- Order testing supplies and medications online.

- Get a mobile retinal photo screening at your doctor's office rather than scheduling an appointment with a specialist.

- Get email, text or phone reminders when you need a flu shot, foot exam or other preventive care.

The potential of telehealth

- Technology has the potential <u>to improve the quality</u> of health care and to <u>make it accessible to more people.</u>

- Telehealth may provide opportunities to make health care more efficient, better coordinated and closer to home.

- Research about telehealth is still relatively new, but it's growing.

For example, studies have shown that both telephone-based support and telemonitoring of vital signs of people with heart failure reduced the risk of death and hospitalization for heart failure and improved quality of life.

Patient portal

A portal provides a more secure online tool to do the following:

- **Communicate with your doctor** or a nurse.

- Request **prescription refills**.

- **Review test results** and summaries of previous visits.

- **Schedule appointments or request** appointment reminders.

Doctors talking to doctors

- **Doctors can also take advantage of technology to provide better care for their patients**.

- One example is a virtual consultation that allows primary care doctors to get input from specialists **when they have questions about your diagnosis or treatment**.

- The primary care doctor sends exam notes, history, test results, X-rays or other images to the specialist to review. The specialist may respond electronically, conduct a virtual appointment with you at your doctor's office, or request a face-to-face meeting.

- **These virtual consultations may prevent unnecessary in-person referrals** to a specialist, reduce wait times for specialist input and eliminate unnecessary travel.

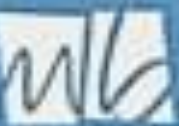TOP FIVE REASONS TO CONSIDER TELEMEDICINE

BETTER ACCESS · COST EFFECTIVE · CONVENIENCE · MILLENIAL DEMAND · REDUCED ABSENTEEISM

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While these services are convenient,
 they have drawbacks:

- Treatment may not be coordinated with your **regular doctor.**

- **Essential information** from your medical history may not be considered.

- The computer-driven decision-making model **may not be optimal** if you have a **complex**

 medical history.

- The virtual visit lacks an in-person evaluation, **which may hamper accurate diagnosis**.

- The service doesn't easily allow for shared doctor-patient decision-making about treatments

 or making a **plan B if an initial treatment doesn't work.**

The limitations of telehealth

- While telehealth has potential for better coordinated care, it also runs the risk of fragmenting health care.

- Fragmented care may lead to: gaps in care, overuse of medical care, inappropriate use of medications, or unnecessary or overlapping care.

The limitations of telehealth

- **The potential benefits of telehealth services may be limited by other factors,**

  such as:
  - the **ability to pay** for them.

  - **Insurance reimbursement** for telehealth still varies by state and type of insurance.

  - Also, some people who would benefit most from improved access to care may be limited because of **regional internet availability** or the **cost of mobile devices**

Importance of TeleMedicine

Benefits for Patients:

1.**No travel expenses and no time spent waiting** around for appointments

2.**Less interference with childcare** or eldercare responsibilities

3.**Reduced medical costs** provide value to the patient

4.**Extended access** to consultations with specialist doctors

Benefits for Providers:

1.**Increased revenue**

2.**Fewer missed appointments** and cancellations

3.**The ability to treat more patients** over time

4.**Better patient follow-up** and improved health outcomes

Telerehabilitation

- It is estimated that **10% of the world's population**, approximately **650 million people**, have some form of **disability.**

- Population growth aging, and medical advances that preserve and prolong life have **increased demands for health and rehabilitation services**.

- Recent predictions indicate a **shortage of speech–language pathologists and other rehabilitation specialists to provide care** for individuals with disabilities.

- The application of telemedicine and telehealth technologies offers effective solutions to this challenge

What is Telerehabilitation?

- Assessment (client and environmental status)
- Intervention (treatment, management)
- Consultation and peer support of other clinicians
- Patient education, supervision

Examples - PT

- Wheelchair seating clinics
  - Minnesota → American Samoa
  - NYC (pressure pad mapping)
- Diagnosis & consultation (Washington DC → American Samoa and Guam)
- Pre-surgical exercise (Norway)

Examples - SLP

- Speech therapy
  - National Rehabilitation Hospital (stroke rehab)
  - Voice rehab (Hawaii → military bases)
  - Queensland, Australia (assessment)
  - Nova Scotia, Canada (swallowing)
- Audiology
  - Utah State; Mayo Clinic; Santa Rosa, CA

Telehealth Activities in Speech–Language Pathology

The term telepractice is defined as **using technology to deliver speech-language evaluations and treatment.**

You may also hear telepractice referred to as **"telemedicine speech therapy"**, **"teletherapy"**, **"remote speech therapy"** and **"online speech therapy"**.

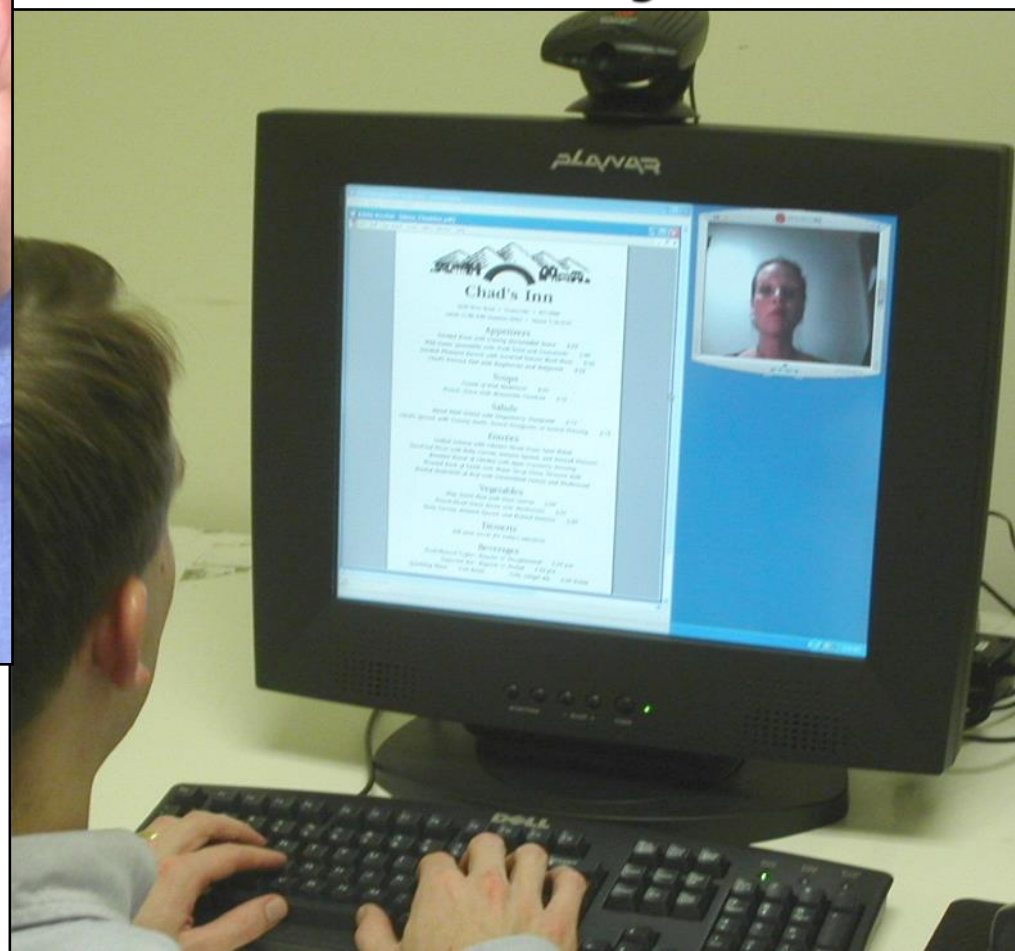# REmote SPEech-language and Cognitive Treatment

Client User Interface

Following directions task (shared whiteboard) with video window

Functional reading task with video window

Telehealth Activities in Speech–Language Pathology

speech and language disorders affect one's ability to talk, understand, read, and write, and may range from a few speech sound errors to a total loss of the ability to use speech to communicate effectively.

The American Speech-Language-Hearing Association (ASHA):

A significant problem in many geographical areas is a shortage of SLPs.

An example

- In Australia, over 17% of children are considered to be vulnerable (<10th percentile) or at-risk (10-25th percentile) for developing impairments in language and literacy

- Another 25% of children are vulnerable or at-risk for developing impaired communication skills

- The **majority of these children are located in rural communities** across Australia.

- **Health Workforce Australia [HWA], 2014:**

- **less than 24% of all employed speech-language pathologists in Australia work within these regions**.

- 0.9 and 1.69 speech-language pathologists are available per 10,000 people in very remote and outer regional areas of Australia, compared to 2.59 speech-language pathologists per 10,000 people in the major cities (HWA, 2014).

As a solution to the inequity of access to SLP services in rural areas, some practices/practitioners have begun to make use of an innovative service delivery approach, commonly referred to as telehealth.

Telehealth Activities in
Speech–Language Pathology
Patient Candidacy

Patient candidacy for the telehealth model of service delivery in SLP is typically

determined on a case-by-case basis utilizing careful selection criteria.

**Telehealth Activities in
Speech–Language Pathology**

Patient Candidacy

While not exclusionary, the following factors are typically considered:

(1) **ability to sit** in front of a monitor and attend to the clinician;

(2) **ability to see** material on a computer monitor;

(3) **Ability to follow directions** to operate the equipment;

(4) ability to sit in front of a camera and **minimize extraneous movements** to avoid compromising the image resolution;

(5) **manual dexterity to operate a keyboard** if needed;

Patient Candidacy

**While not exclusionary, the following factors are typically considered:**

(6) hearing acuity;

(7) cognitive ability;

(8) speech intelligibility;

(9) **comfort level with technology**;

(10) **willingness of patient or family**/caregiver to participate;

(11) **cultural/linguistic considerations** such as the availability of an **interpreter** if needed;

(12) **access to and availability of technical resources** if needed.

Telehealth Activities in
Speech–Language Pathology
challenges

Challenges for SLP consults in their early experience with telemedicine:

(1) The inability to assess muscle strength and musculoskeletal tension and to physically manipulate speech structures may result in omission of important information in patients with motor speech disorders;

(2) **Eliciting sensitive case history information** at-a-distance may be difficult when assessing patients with psychogenic speech disorders;

(3) **patients with significant language or cognitive impairment** may have difficulty grasping the interactive process over television monitors.

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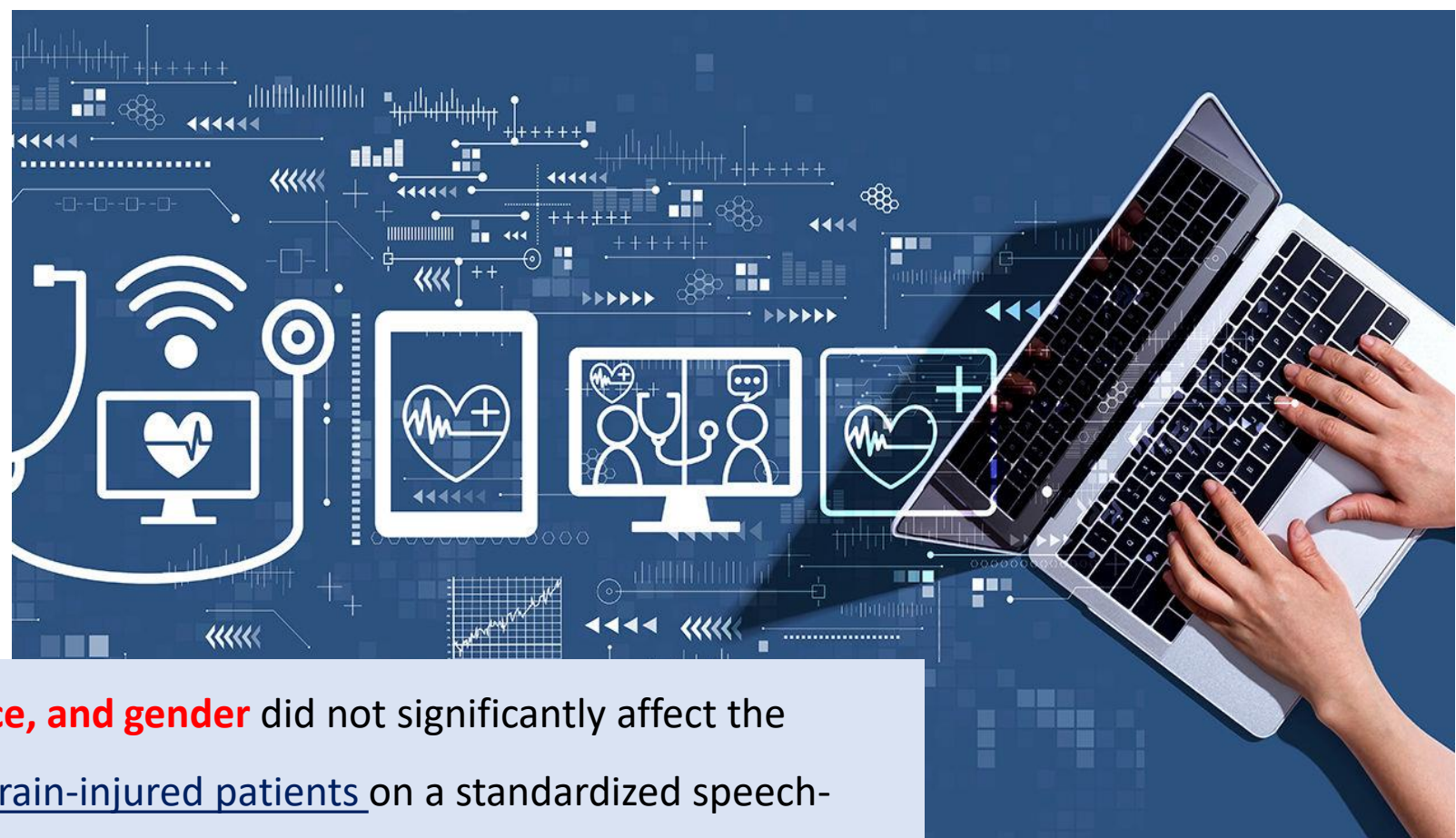
age, education, technology experience, and gender did not significantly affect the

difference between performance of <u>brain-injured patients</u> on a standardized speech-

language evaluation conducted face-to-face versus via videoconference.

Stroke-related symptoms such as **poor attention, severely impaired comprehension, poor vision, and motor impairment** may adversely affect a patient's ability to participate in a telehealth session.

A SYSTEMATIC REVIEW

efficacy of telehealth-delivered SLP services

when compared to traditional in-person delivery

- Interestingly, **all of the reviewed studies** utilised **real-time videoconferencing facilities**, allowing the clinician and client to visualise each other. This finding is consistent with results from previous reviews

SLP practice primarily consists of **auditory, verbal and visual** interactions, therefore allowing services to be **easily translated into technology-based environments**

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A SYSTEMATIC REVIEW

efficacy of telehealth-delivered SLP services

when compared to traditional in-person delivery

Two studies (Fairweather et al., 2016; Isaki & Farrell, 2015) used goal achievement to determine outcomes, with one study using **Goal Attainment Scaling (GAS),** a criterion-referenced measure of change rated on a five-point scale, to evaluate the telehealth program (Fairweather et al., 2016).

This study **revealed that 68.9% of the established goals were achieved** at either an expected or greater than expected level

A SYSTEMATIC REVIEW

efficacy of telehealth-delivered SLP services

when compared to traditional in-person delivery

- Overall, the findings of the review showed that there is some evidence to **support the use of telehealth when delivering SLP intervention services to school-age children**

- **many of the studies noted that telehealth** **was not a complete replacement for in-person services but may be appropriate for combined practices**

- However, it also demonstrated that the amount of research into speech and language intervention for children via the telehealth service delivery model is **limited and of variable quality**

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The four principles of bioethics

- Beneficence

- non-maleficence

- respect for autonomy

- justice

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