March 25, 2023

STATE OF THE PANDEMIC: HOW HAS COVID-19 AFFECTED SLP SERVICE DELIVERY?

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1. WHO AM I? WHY AM I HERE?

I am a professor and speech-language pathologist who found investigating COVID during COVID to be a great way to pass the time.

2. LEARNING OUTCOMES:

A. Participants will obtain a working knowledge of the wide-ranging effects of the COVID-19 pandemic on the field of speech-language pathology.

B. Participants will critique the innovations in service delivery during the pandemic for their success and potential utility in their practice.

C. Participants will assemble lists of issues that need to be addressed in SLP practice because of the pandemic.

D. Participants will devise plans for how they may address COVID-related challenges in their practice.

3. COVID-19, CRITICAL CARE, AND COGNITION

I. Treating COVID-19: Why SLPs?
II. Evidence of cognitive impairment since the beginning of the pandemic
III. What were the symptoms?
IV. How might COVID-19 affect the central nervous system?
    a. Hypoxia
    b. Inflammation and the “cytokine storm”
    c. Hypercoagulation
V. Similar effects of intensive/critical care = delirium
VI. Risks factors for delirium in COVID
VII. Post-ICU syndrome (PICS)
VIII. Comorbid psychiatric conditions and long-term outcomes of PICS

4. "LONG COVID"

A. Long-COVID, or "post-acute sequelae of COVID-19" (PASC) –

i. symptoms persist or newly develop 4 weeks after a confirmed COVID-19 infection (National Institute for Health Care Excellence).

ii. must be present 3 months after infection and must last at least 2 months (Soriano et al., 2022).

iii. present in ~60% of COVID-19 infection survivors (though there is considerable disagreement on the rates, e.g., (Antonelli et al., 2022; Hellmuth et al., 2021).

iv. slightly lower prevalence in those who receive at least one vaccine (Antonelli et al., 2022).

B. Commonly reported symptoms:

i. Fatigue, Myalgia, Dyspnea, Chest pain, Low grade fever, Cognitive problems, Headaches, Sleep problems, Anxiety, Brain fog

ii. Brain Fog: "inability to concentrate and thought slowness" or "thinking/focusing difficulty" and psychopathological symptoms (particularly depressive and anxious symptoms) (Azcue et al., 2022).

iii. Most common cognitive complaints (Bungenberg et al., 2022; Krishnan et al., 2022):

1. *Difficulty with attention and concentration*
2. *Memory*
3. *Word finding (18% of the sample)*

iv. COVID-19 diagnosis also appears to increase likelihood of a neuropsychiatric diagnosis (Taquet et al., 2021)

v. Global Cognitive Impairment

1. *Assessed with Montreal Cognitive Assessment (MoCA) or Mini-mental Status Examination (MMSE)*

vi. Attention

vii. Executive Function (Gutierrez-Martinez et al., 2022)

a. *100 patients (mean age = 40) following-up at a post-COVID clinic, most with confirmed infection 33-357 days prior*
b. *More than 50% endorsed prior psychiatric history (current 35% with anxiety, 23% with depression)*
c. *80% reported executive dysfunction (characterized as brain fog)*
d. *Identified 4 subgroups:*

i. Predominant executive function – brain fog, apathy, severe fatigue

ii. Amnestic – trouble with encoding and retrieval

iii. Worsening of pre-existing symptoms (e.g., migraine, mood disorder, sleep disorder)

iv. Unmasked unknown underlying disorder (e.g., seizure, HTN)

viii. Memory ((Shan et al., 2022); reviewed in (Perrottelli et al., 2022))

1. *Working memory*
2. *Visuospatial memory*
3. *Episodic memory*
4. *Verbal Learning*

ix. Neuroimaging (reviewed in (Perrottelli et al., 2022))

1. *Electroencephalography – 8 studies but only 1 found aberrance (slow, sharp waves in temporal cortex, n=2)*
2. *Magnetic Resonance Imaging (MRI) – 10 studies with only 2 finding microvascular events, which correlated with memory scores. White matter hyperintensities generally improved over time (1- to 2-years) and correlated with logical memory scores (Huang et al., 2023).*
3. *Positron Emission Tomography (PET) – 1 study reports decreased frontoparietal hypometabolism that correlated with lower MoCA scores.*

x. Effects on Return-to-work or productivity

1. *In a study of 100 post-COVID patients (Gutierrez-Martinez et al., 2022), 77 were non-retired but only 55 of those returned to work after a mean symptom duration of 186 days.*
2. *Fatigue and neurocognitive symptoms are reported as the most debilitating affecting reduced working capacity (Peter et al., 2022) in a survey study of 11,710 post-COVID patients.*

5. SLP SERVICE DELIVERY

A. Post-extubation dysphagia and dysphonia – (Bolton et al., 2020; Regan et al., 2021; Watson et al., 2021) – dysphagia assessment as an aerosol generating procedure.

B. Acquired stuttering (Furlanis et al., 2023)

C. Dementia – new onset of behavioral and psychological symptoms of dementia during the social isolation during COVID pandemic (Prommas et al., 2022)

D. Telehealth (for aphasia, (Cassarino et al., 2022); for dysphagia, (Malandraki et al., 2021); for attention or executive function impairment, (Jeffay et al., 2023; Ponsford et al., 2023)

E. Masks – (Truong et al., 2021) – processing speech of a person with a mask on increases cognitive load.

F. Socialization

6. PLANNING

A. Assessment tools that are sensitive enough to detect the subtle alterations in attention, speed of processing, and memory.

B. Screening for fatigue and mood to evaluate how they may be influencing cognitive performance.

C. Consider how to vary in person and tele-health sessions to account for differences in cognitive load (particularly if your setting requires masks) and socialization.

D. …

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