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Considerations about cognitive communication deficits following COVID-19

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Cognitive communication abilities involve mental processes that enable humans to communicate and interact with each other successfully. These abilities involve orientation, attention, memory, problem-solving, executive functions, and language. During the COVID-19 period, due to risk factors such as weak interaction with family and, more critically, ventilator use for oxygen compensation, some patients have suffered from cognitive communication disorders.

Since early 2020, the world has faced a pandemic threat caused by the new coronavirus, COVID-19, which first began in Wuhan, China, in December 2019, and is considered a severe threat to public health.[1] One crucial but often overlooked feature of this virus is its deleterious effect on communication on various levels (ranging from restrictions in social life to direct consequences of the disease). Appropriate diagnosis of communication deficits and implementation of communication therapies in these patients to reduce respective symptoms are thus required. This also includes consideration of interventions focused on non-verbal communication, because a relevant number of COVID-19 patients suffer from pre-existing diseases affecting verbal communication skills, such as dementia.

A severe consequence of COVID-19 is acute respiratory distress syndrome (ARDS), which affects approximately 31% of COVID-19 patients admitted to hospital, according to an early study from China.[2] Patients who survive ARDS require adequate treatment after discharge from the intensive care unit (ICU)[3] and ARDS survivors show a high prevalence of cognitive impairment. Moreover, patients with pre-existing cognitive impairments have an increased likelihood of a more severe disease-related cognitive decline.[4] Post-ICU COVID-19 patients often suffer from voice problems and swallowing difficulties, as well as memory, attention, visuospatial, psychomotor, and executive function deficits, and thus cognitive problems.[5, 6] Major cognitive communication problems following ICU admission, including thinking and judgment deficits, can persist for 5–15 years after discharge. Delirium is present in 60–80% of all patients discharged from an ICU. Early evidence from COVID-19 patients suggests that when delirious symptoms are reduced, respective cognitive communication impairments may become more apparent, and some patients may require inpatient rehabilitation.[7] The recognition and treatment of respective symptoms is essential because cognitive communication impairments are associated with a significantly reduced quality of life and social isolation, as well as reduced social adjustment and stress reactions caused by their impact on interactions in daily activities.[8]

Due to the critical effect of cognitive impairments on communication (both verbal and non-verbal), we recommend a screening test, such as the Montreal Cognitive Assessment, and when possible a comprehensive assessment of cognitive abilities at admission and discharge from the ICU for COVID-19 survivors to avoid the oversight of such essential symptoms. Also, long-term consequences at the cognitive/central nervous system levels should not be ignored.

Treatment of cognitive communication skill deficiencies should be an essential component of rehabilitation programs, which should start as early as possible to enhance the quality of life in COVID-19 survivors. These rehabilitation activities may not be fully implemented in a subgroup of patients profoundly affected by COVID-19, that is, patients in long-term care facilities, due to social isolation because of restrictions on family caregivers, and the limited availability of care staff. Moreover, the use of masks and face shields as an essential precondition for rehabilitative activities in patients affected by COVID-19 interferes with natural communication involving facial expression. At the same time, residents in long-term care facilities do not always understand the use of masks, and natural communication treatment requires an average of at least 45 min per day, which is not available in this setting. In those cases, attention should be focused on training staff members to reduce communication barriers and encourage communication between family members and the affected individual using other methods. The use of emotion-based communication using personally meaningful materials (e.g., music, pictures) could be helpful.[9] Augmentative and alternative communication (AAC) has been shown to have a positive impact on the communication of individuals with dementia. Generally, AAC includes unaided and aided systems. Unaided systems do not require specific tools, such as gestures and facial expressions, while aided systems include technological (e.g., computer technology, such as digital life story aids) and non-technological (e.g., memory books and communication wallets) items. In COVID-19 patients admitted to the ICU who suffer from related problems, these rehabilitation techniques should be seriously considered. Furthermore, AAC can be used for a long time after discharge if survivors are not able to communicate well.[10]

Communication is central to human nature and equilibrium. The COVID-19 pandemic has shown that communication deficiencies can have a deleterious impact on patients who have suffered from the disease's acute stage, as well as those impacted by the extraordinary distancing and sanitary measures put in place to control virus propagation. Special attention should be paid to post-acute-stage cognitive communication abilities and communication-supporting conditions for those living in extreme social isolation conditions.

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Disclosure statement

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Ahmad Reza Khatoonabadi [1,2] Yves Joanette,[3,4] Michael Andreas Nitsche[5,6] and Ana Ines Ansaldo[7,8]

[1]Speech Therapy Department, School of Rehabilitation, [2]Geriatric Medicine Department, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, [3]Research Center, University Institute of

Geriatrics of Montreal, [4]Faculty of Medicine, University of Montreal, Quebec, Canada, [5]Department Psychology and Neurosciences, Leibniz Research Centre for Working Environment and Human Factors, Dortmund, [6]Department of Neurology, University Medical Hospital Bergmannsheil, Bochum, Germany, [7]Centre De Recherche De l'Institut Universitaire De Gériatrie De Montréal, and [8]Ecole D'orthophonie Et D'audiologie, Faculté De Médecine, Université De Montréal, Montreal, Canada
Email: nitsche@ifado.de
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COVID-19 pandemic-onset anorexia nervosa: Three adolescent cases

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The world has faced a growing global health crisis caused by the COVID-19 outbreak. All nations have implemented measures to control the spread of COVID-19, including curfews, lockdowns, and restrictions on persons' movements with social distancing. The first case diagnosed with COVID-19 in Turkey was reported on 11 March 2020. As the world focused on measures to mitigate transmission of COVID-19, the Turkish government ordered a nationwide school closure by 13 March and, by 1 April, a lockdown for people younger than 20 years. This quick action was taken to slow and prevent the infection's spread; however, school closure and home confinement might have adverse effects on children's physical health and psychological well-being. When children are at home and reduce their outdoor activity, they may become less physically active; become socially withdrawn from their usual environment and devoid of peer relations; spend much more time viewing screens; have irregular sleep patterns; and have less favorable diets.[1]

Additionally, in all age groups, reactive psychiatric symptoms have been described as secondary effects of social isolation and quarantine.[2] Some of these symptoms are associated with changes in eating and exercise behavior. A study conducted in the general population reported both increased restricting and binge eating behaviors during the COVID-19 pandemic; however, respondents also reported less exercise relative to before the pandemic.[3] Another study that evaluated the early impact of COVID-19 on people with eating disorders showed that participants with anorexia nervosa reported increased restriction, fears about being able to find foods consistent with their meal plan, and concerns about relapse related to COVID-19 circumstances.[4] These two studies included adult participants and there have been no reports on pandemic-onset eating disorders or anorexia nervosa in adolescents.

In this case series, we present three adolescent girls of similar ages and similar psychiatric symptoms. The onset of their anorexia nervosa symptoms occurred suddenly in April 2020 when curfews were imposed because of the COVID-19 pandemic. The three girls had initially fasted during Ramadan, the holy month of fasting, from 23 April to 24 May 2020. For healthy adolescent and adult Muslims, Ramadan fasting and prolonged hunger have a spiritual factor. All patients fasted during Ramadan by eating a single meal per day; however, after the month of Ramadan, they each continued to eat just one meal per day and excessive sports behavior began due to the excessive fear of gaining weight. One-meal eating turned into restricted eating, fast weight loss, thoughts about

Table 1. Summary of each case's background characteristics and clinical findings

	Case 1	Case 2	Case 3
Age (years)/sex/diagnosis	13/female/anorexia nervosa	16/female/anorexia nervosa	16/female/anorexia nervosa
Bodyweight (kg)	40	37	40
Body mass index (kg/m^2)	14.3	14.1	15.2
Disease duration	8 weeks	6 weeks	8 weeks
Weight loss	20 kg in 4 weeks	10 kg in 4 weeks	15 kg in 8 weeks
Premorbid psychiatric history	None	None	None
Follow-up in inpatient unit	1 day in pediatric emergency unit	10 days in pediatric inpatient unit	2 days in pediatric emergency unit
Comorbid psychiatric disease	Major depressive disorder	Major depressive disorder	Anxiety disorder
Amenorrhea	+	+	+
Psychiatric medication	Olanzapine 10 mg/day + fluoxetine 20 mg/day	Olanzapine 5 mg/day + fluoxetine 20 mg/day	Olanzapine 5 mg/day + sertraline 50 mg/day
Laboratory values on admission			
Fasting blood glucose (mg/dL)	62	65	53
Na/K (mEq/L)	138/4.4	135/4.0	135/4.4
AST/ALT (U/L)	24/18	32/20	41/21
BUN/Cr (mg/dL)	6/0.76	8/0.80	14/0.84
WBC ($\times 10^3/\mu L$)	3.6	5.0	4.6
Hgb (g/dL)	13.9	12.5	15.1
Plt ($\times 10^3/\mu L$)	214	270	224
Heart rate (b.p.m.)	60	62	45

Laboratory reference values: fasting blood glucose, 65–110 mg/dL; ALT, 10–40 U/L; AST, 10–37 U/L; BUN, 5–18 mg/dL; Cr, 0–1.2 mg/dL; Hgb, 12.0–17.0 g/dL; K, 3.5–5.3 mEq/L; Na, 136–146 mEq/L; Plt, 150.0–440.0 $\times 10^3/\mu L$; WBC, 4.0–10.0 $\times 10^3/\mu L$; heart rate, 60–100 b.p.m.
ALT, alanine aminotransferase; AST, aspartate aminotransferase; BUN, blood urea nitrogen; Cr, creatinine; Hgb, hemoglobin; K, potassium; Na, sodium; Plt, platelets; WBC, white blood cells.