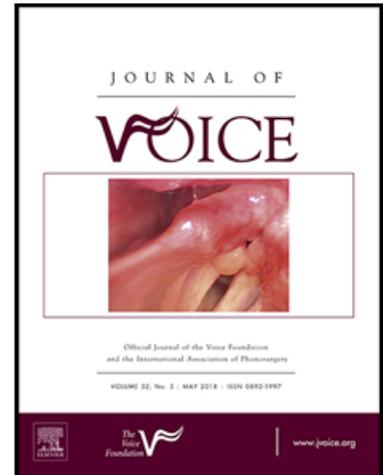


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The Challenge of Virtual Voice Therapy During the COVID-19 Pandemic.

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Voice disorders are a significant public health issue; their lifetime prevalence is as high as 30% in the general population but much higher in professional voice users.^{1,2} Severe dysphonia is a very fatiguing condition with a negative impact on the social and professional life. In the era of the coronavirus disease 2019 (COVID-19) pandemic, lock-down and social restrictions have caused an abrupt interruption of voice therapy programs. This lack of care may impact the possibility of reestablishing a socially acceptable voice in a reasonable time, having a possible negative impact on professional careers and emotional life. At the time of writing this paper, in Western Europe, we are facing a progressive reduction in the number of people infected by the novel coronavirus. Nevertheless, the projection of the virus circulation in the post-pandemic period is predicting the possibility of several future clusters.³ Therefore we cannot imagine that the most vulnerable patients would still be regularly coming into a busy office to undergo voice therapy sessions.

Currently, telemedicine has made incredible progress in a matter of a few weeks and can be valuable not only for the health of patients, but also to help them build and strengthen their resilience in such a difficult time of isolation and loneliness. Previous studies found that telemedicine may be useful in voice therapy.⁴ Telemedicine can be practiced on several platforms easily accessed with an electronic device. Currently, in Italy and France, we are facing several impediments regarding the wide use of remote voice therapy. We identified four main obstacles.

First, in most hospitals the basic equipment is still unavailable. Many departments have no high-quality camera or software allowing the use of Telemedicine. Second, some voice therapists do not feel confident with the new technologies. Third, elderly individuals or patients who have a low income may not have easy access to electronic devices. However, in Western Europe, most patients own at least a smartphone. Four, the social health system and private insurance companies in many European countries do not recognize remote voice therapy sessions as reimbursable procedures. This is the main barrier that explains why the procedure is still underused.

Due to the COVID-19 outbreak, speech therapists should be aware that most voice rehabilitative exercises are aerosol-generating procedures, such as breathing exercises and the widely used “*semi-*

occluded voice therapy exercises” (SOVTEs).^{5,6} They are based on narrowing of the cross-sectional area of the vocal tract obtained to improve voice resonance by enhancing the interaction between the vocal folds and the vocal tract.⁵ SOVTEs can generate an aerosol generated by the turbulent flow occurring at the site of vocal tract narrowing. The most popular SOVTEs include lip and tongue trills and phonation into a straw or a tube into the air or water.⁷ Spreading in the room of contaminated droplets may cause the risk of viral aerosol inhalation for both the voice therapist and for the patient when the therapist is demonstrating it. The voice therapist should use personal protective equipment, such as facemasks and shields, considering that any patient might be an asymptomatic carrier of the novel coronavirus. However, the availability of protective equipment is limited in Europe, which may hinder access to a regular daily supply for the voice therapist. Another important question is: “*could a voice therapy session be effective if the therapist is wearing a mask ?*” The sound of him/her voice would be muffled and distorted, articulatory movements would be not visible, and the speech therapist could not demonstrate exercises such as phonating into a tube or a straw or doing lip or tongue trills. Moreover, the patient might be unable to perform vocal exercises if wearing any type of facemask, and the therapist might have trouble assuring that the exercises were being done correctly.

A different way to perform voice therapy is highly desirable in the context of the COVID-19 pandemic, and its development may also be valuable for potential future pandemics as well as for future routine care. Telemedicine offers the opportunity for this change and may allow patients to receive care in their home, without exposure to risk of infection.

The voice therapist may demonstrate the exercises being seen and heard on a screen and, at the same time, may check how the patient is performing the exercises. Virtual voice therapy offers a great opportunity for all patients to have easy access to rehabilitation and can be valuable for those affected by mobility impairment or living a long distance away from the facility. Furthermore, the ability to invite a guest or observer to the encounter is another valuable opportunity to offer further support to the patient, considering that, currently, the patient cannot be accompanied in the medical

unit by anyone due to the risk of contamination and the distancing measures required by the governments. The COVID-19 pandemic may change some speech therapy practices for the better, and it is time to overcome resistance to new technologies.

For this reason, both private insurance companies and public healthcare systems have to work to recognize the opportunities related to ‘telespeech therapy’, ensuring efficient and effective healthcare continuity.

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