

Rehabilitation With Virtual Reality for Leukemic Children During the Fourth COVID-19 Wave

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Dear Editor,

Aside from its high prevalence in children under the age of 15 years old, leukemia causes a significant deconditioning in cancer patient as a result of the disease, its medical implications, or treatment options. Cachexia (massive weight loss), nausea, fatigue, and anemia (all of which are common side effects of chemotherapy), myopathy (caused by steroids or critical care), and peripheral neuropathy (caused by chemotherapy or critical care) are all common leukemia treatment side effects.¹

Inpatient rehabilitation or exercise in leukemic patients is matter of urgency needed for a variety of reasons, including (1) reasonably good functional and psychological status may increase survival rates, (2) treatment candidacy is based on the patient's functional state, (3) good rehabilitation affects life quality, and (4) quick departure from the hospital.

Following the end of the third COVID-19 wave, the expected fourth wave of pandemic will start in Egypt in September 2021. To decrease the danger of infection for both health care staff and patients, long-term care therapies, such as face-to-face rehabilitation, have been stopped or avoided in in-patient institutions or facilities. The same degree of rehabilitation in in-patient healthcare settings as before the COVID-19 outbreak is no longer achievable.²

With a promising therapeutic tool in rehabilitation of chronic diseases, interactive video-gaming and virtual reality (VR) rehabilitation may be used as an alternative to face-to-face inpatient rehabilitation. VR scenario is a 3-dimensional computer-generated model of reality that can be comparable to or entirely distinct from the real world, and in which the person, as if he/she is a part of the scene, can move freely while getting multisensory stimulation.

Besides the simplicity, low-cost, and self-training advantages, the existence of VR-based exercise in in-patient cancer centers can help to compensate for a scarcity of rehabilitation therapists. Also, it can reduce risk of fear that may be developed in parents of child cancer patients during face-to-face applied rehabilitation sessions during strong COVID-19 waves. It can potentially improve cognitive and psychological status, add a sense of fun during training,

engage the child in programmed physical activity that is generally is higher than his/her usual sedentary level, improve adherence to exercise increase motivation during chemotherapy or radiotherapy, lower distress levels or gamify the feeling of pain distraction during chemotherapy infusions, increase pain tolerance percentages as a result of illness or its therapy, improve functional and physical condition, and improve leukemic children's survival rates. However, more clinical research is needed in the domain of VR for pediatric cancer patients.

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