

## Short Commentary

# Virtual Reality to Help Older People in Nursing Homes: A New Way to Reduce Psychological Symptoms?

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Older people living in nursing homes often present with psychological symptoms such as depression, anxiety and apathy. Numerous studies focused on the effects of Virtual Reality (VR) in the older population. This innovative approach could lead to a significant reduction in psychological disorders in older adults and improve their quality of life.

**Keywords:** Older people; Nursing homes; Virtual reality; Psychological symptoms

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According to the study of Chia Pin Yu et al. [1] Virtual Reality (VR) is defined as a virtual environment that provides one or more sensory stimulations directly related to the participants' observable behaviour. Older people describe virtual reality exposure to natural environments as "calm", "relaxing" and "comfortable" [1]. Virtual reality creates a new interface between man and machine with the help of a virtual reality helmet [2]. A recent review of the literature [3] showed VR as a non-pharmacologic approach to daily care. These therapeutic effects include a reduction in stress and pain while increasing cognitive reserve and "positive" emotions in older people.

There are different uses of virtual reality through diverse types of environment. The "natural" contents help to reduce blood pressure, anxiety. Mood disorders and stimulate the cognitive activity of Persons with Dementia (PWD). In addition, VR can be used for cognitive training in seniors [4], for fall prevention [5], muscle strengthening and functional re-education [6].

Few studies conducted on virtual reality have focused on psychological disorders frequently found in older people (anxiety, apathy and depression). However, a Canadian study evaluated the impact of virtual reality on the mental health of 63 seniors in retirement homes. Participants were exposed to a virtual travel on their TV screen. After two weeks of VR exposure, there was no significant difference between the overall level of well-being or happiness before and after the intervention [7]. Yet, another study including 66 older people has demonstrated the benefits of virtual reality with a 360-degree view (exposure time of 6 minutes). Pre and post 'Sessions Rating Scale' (SRS) found significant difference with the increase in positive valence emotions and a concomitant decrease in negative emotions.

A study by Michel Benoit [8] on 18 healthy volunteers (mean age 68.2 years) with cognitive complaints demonstrated the feasibility of the device. Participants were asked to perform cognitive tasks under four different conditions (neutral screen, known picture of their own city, familiar environment in VR and unknown environment in VR).

The VR condition did not lead to a state of fatigue compared to the "picture" condition and no participant dropped out of the study.

Emotions were more intense among participants in "virtual familiar environment" compared to other test conditions. However, these studies [1] show limitations as they did not include all physiological markers and were not double-blind.

Yet, several studies have shown a positive emotional impact of virtual reality and could offer a moment of escape for older people in care homes. In addition, personalized VR device could improve the quality of life as well as memory of each resident (reminiscence therapy). This device generates cognitive and emotional stimulation adapted to the life experience of each participant and provides a specific approach to elderly care.

However, special precautions have to be taken to prevent cyber-sickness, which can result in vertiginous sensations, or nausea (a questionnaire will be useful to rule out any risks). This approach can be relevant for elderly people living in nursing homes with impaired motor skills [9,10]. The use of familiar pictures and videos will help to reduce mood disorders. The use of a mirror on computers (additional monitor) is also required for carers in order to assist older persons in the best safety conditions.

In the context of the CoV-19 crisis, virtual reality could be a non-drug approach adapted to elderly people living in nursing homes to reduce the consequences of restrictive measures (loneliness, solitude, missing their loved ones). Virtual reality sessions would also enable the creation of a new communication medium.

Personalized virtual content could reduce apathetic behaviour, depressive and anxiety symptoms and a way to "escape" during lockdown periods. Virtual reality could prevent cognitive decline, prevent loneliness and provide a sense of security in times of health crisis. Only future research will be able to validate this hypothesis.

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