The application of technologies in dementia diagnosis and intervention: A literature review

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In recent years, there has been a growing interest in incorporating technology into dementia behavioural treatments and interventions in order to support patients in their everyday life activities, improve their temporal, personal, and spatial orientation, and foster social interaction\textsuperscript{1}. For instance, the use of assistive technology (AT) as well as information and communication technologies (ICTs) have been proposed as a relevant aid for the everyday life of dementia patients in several aspects such as behaviour, cognition, and functionality. Some types of AT have been included in the treatment of dementia patients as a support tool intended to facilitate complex activities such as cooking or hand washing\textsuperscript{2,3}.

Furthermore, technology makes it easier to provide personalized and effective interventions in terms of cost and time, which promote health and allow professionals to meet the needs of patients with progressive diseases such as dementias\textsuperscript{4}. Technology also offers the possibility of adapting the parameters of a task according to the patients’ performance, which improves their motivation by reducing frustration and boredom\textsuperscript{4}. On the other hand, the use of technology in cognitive interventions makes it possible to treat patients remotely, which fosters work with rural populations who lack access to rehabilitation specialists.

Several software packages have been used as non-pharmacological alternatives in dementia treatment; for example, existing video games. Others have been specially created upon the basis of specialized guidelines; also, video games have been generated as reproductions of existing pen and paper interventions\textsuperscript{5-7}.

Virtual reality-based technology (VR) has been also included in dementia intervention programs. In fact, several studies highlight that VR intervention programs foster ecological validity, because they create fictional contexts based on real situations that make it possible for patients to transfer the learning acquired during the intervention to their everyday life\textsuperscript{7-9}.

Technology has also been incorporated into the process of evaluation and detection of cognitive decline through the design of digital platforms, generally for personal computers or tablets, which allow professionals to obtain an overview of a person’s cognitive functioning\textsuperscript{10,11}. The use of technology facilitates access to instruments for assessing neurocognitive disorders, because most of them do not require the participation of a specialist and provide a first snapshot of cognitive alterations, thus contributing to early detection\textsuperscript{12}.

Technology is not limited to the patient’s treatment but also to caregivers’ interventions\textsuperscript{13}. Multiple studies have focused on the creation of psy-