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Digital technologies and Alzheimer's from the perspective of formal caregivers using an action-research methodology

Abstract

Alzheimer's dementia leads to a progressive decline in individual's cognitive ability with interference in daily living activities. Applying cognitive stimulation in the early stages is an added value in delaying cognitive decline. In this process, the use of digital technologies may contribute to avoiding, in a first phase, the use of drugs and delaying the institutionalization of Alzheimer's patients. Thus, the general objective was conducted to identify their perceptions on the use of new digital technologies in the cognitive stimulation of Alzheimer's patients with formal caregivers. To this end, an action-research methodology was applied to survey the state-of-the-art on the digital technologies and Alzheimer's from the perspective of formal caregivers. Sixty-two formal caregivers participated in this research, of whom 74.2% are female and the remaining (25.8%) are male. Regarding working with digital technologies with Alzheimer's dementia patients, a large percentage of respondents (73.6%) answered that they only use them sometimes, and 26.4% said they never use them. These results suggest that there is still resistance or lack of confidence in the use of digital technologies by formal caregivers working with Alzheimer's dementia patients. The results show that all the respondents can identify signs of Alzheimer's dementia in the patients. Consequently, this is understandable, even though they had never received specific training in this area, especially the cognitive stimulation.

Keywords: Alzheimer's dementia, formal caregivers, digital technologies

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Introduction

Dementia is defined as a progressive decline in an individual's cognitive ability, with interference in activities of daily living.[1,2] This decline may be associated with several pathophysiological processes, the most common being Alzheimer's disease. According to the World Health Organization (WHO), dementia is the fifth leading cause of death, representing a worrying public health problem worldwide.[3] Globally, about 50 million people suffer from dementia, with Alzheimer's dementia accounting for 60% to 70% of cases, a number that is likely to increase, as there are approximately 10 million new cases each year.[4,5] The European Collaboration on Dementia Project (Eurocode) estimated that 7.3 million European citizens were diagnosed with Alzheimer dementia.[6] In future, it is predicted that there are about 153,000 people with dementia, 90,000 with Alzheimer's disease.[6] In this sense, these data are considered alarming and that the warning signs should be known and recognized early and carefully examined, so that cognitive stimulation tools can be created.[7]

Alzheimer's dementia is understood as a disease of enormous complexity, not being possible to define it as a set of simple pathophysiological mechanisms, and it is from this multiplicity, both at the level of these mechanisms and predisposing factors, that the challenging research in the search for a treatment with curative capacity arises.[8] With regard to the pharmacological treatment of Alzheimer's dementia, it should be noted that, apart from drugs aimed at temporarily relieving symptoms, there is no effective curative treatment focused on its neurodegenerative processes.[7,9] Clinically, Alzheimer's dementia manifests with an initial impairment in memory capacity, which slowly progresses, and impairment in the performance of day-to-day activities.[9] Patients with dementia are those who have a persistent decline in their memory and cognitive abilities that is severe enough to interfere with everyday activities, has lasted at least six months, and is accompanied by a disruption of at least one of the following functions: language, appraisal, changed abstract thinking, praxis, agnosia, or alteration of personality.[9,10] Non-pharmacological strategies represent the first line, where the caregiver plays an extremely important role, and include aromatherapy, phototherapy, music therapy, animal therapy, and social activities, currently combined with new technologies.[11] Currently, one of the areas where technologies have an increasingly relevant contribution is health, where mental health stands out, more specifically Alzheimer's dementia.[11,12]

Cognitive stimulation has been described as a valid strategy to delay or prevent the decline of Alzheimer's dementia.[13,14] One of the strategies proposed by the WHO aims exactly to promote physical and cognitive stimulation associated with a healthy lifestyle and cognition.[15] In this context, cognition is a complex collection of mental functions that include attention, perception, understanding, learning, memory, problem solving and reasoning.[16] With regard to cognitive stimulation, the Clare & Woods[13] define as a technique whose main purpose is to improve cognitive and social functioning together with other techniques used for neuropsychological rehabilitation. Also, cognitive stimulation allows to a set of techniques and strategies aimed at optimizing the effectiveness of the individual's intellectual abilities and their particular psychological processes.[17] Applying interventions through these means for non-pharmacological control may prove useful in several situations of this dementia.[13,16]

Recently, a survey review was conducted with formal caregivers was raised the issue about digital technologies and their use in the exercise of their professional skills to promote cognitive stimulation in Alzheimer's disease.[18] Training for these caregivers in the use

of digital technologies in their work.[19] Thus, it is fundamental to identifiable digital skills that formal caregivers of patients with Alzheimer's disease have and the importance of these skills in the exercise of their activity.[17] It is also expected to contribute to literacy in the area and especially to raising awareness for the importance of digital training and empowerment of these professionals. The general objective of this research study was to identify the perception of formal caregivers of patients with Alzheimer's dementia about the use of new technologies in the cognitive stimulation of these patients. Additionally, the specific objectives were formulated for guiding the research, namely:

1) To use digital technologies for the exercise of professional skills of formal caregivers;
2) To establish digital technologies as an important tool for cognitive stimulation of patients with Alzheimer's dementia;
3) To make formal caregivers aware of the need for training in the use of digital technologies for the exercise of their activity.

Material and methods

Research design

This research is supported by action-research methodology, which is framed within the quantitative and qualitative paradigms. To apply the survey, ethical and deontological principles of confidentiality were followed. Through the information provided at the beginning of each questionnaire, all participants were informed about the purpose of the research, the anonymity of the answers, the importance of collaboration, and the need for sincerity and confidentiality, while being assured that the data collected would only be used for the intended purpose. For its application, it was necessary to use the convenience procedure, through the dissemination in social networks and sending letters to Residential Structures for the Elderly (ERPI), Continuing Care Unit, Hospitals, Specialized Clinics and Day Centers.

Participants

Sixty-two formal caregivers participated in this research, of whom 74.2% are female and the remaining (25.8%) are male. As can be seen in the Table 1, their ages ranged from 18 to 59 years old. The professional profiles they occupy are diverse and 29.0% are social educators, 21.0% direct action assistants, 17.7% gerontologists, and the remaining 32.3% are included in professions such as psychologist, sociologist, sociocultural animator, social worker, professional fireman, general services, among others. The places of work are also diversified, including day care centers, home support services, residential structures, hospitals, specialized clinics, long-term care units, firefighters, and special education centers, among others. They practice their profession in the different regions of the country (north, center, and south) and islands.

Table 1 Professional profiles in sample

Professional profile	Participants	
	n	(%)
Social Educators	18	29%
Immediate action Assistants	13	21%
Gerontologists	11	17,7%
Other	20	32,3%

Procedures

The convenience method has the advantage of being quick, cheap and easy. Nine participants were used to pre-test the administered survey with the purpose of detecting any possible error or difficulty, having subsequently made some adjustments. The questionnaire was applied in two phases: the pre-test questionnaires were applied in January 2022. Subsequently, between February and April 2022, all the questionnaires were applied and the data obtained were analyzed using the SPSS program, version 24.0, and then described and discussed.

The results of the study were obtained through the use of a survey developed by its authors and are focused on four dimensions: first, to know the sociodemographic data in order to define the intervening population; second, to obtain data on the work of formal caregivers with Alzheimer's patients; third, to collect the information on digital technologies in Alzheimer's dementia; and, finally, to listen to the respondents' opinion on the training oriented towards the use of digital technologies in the context of Alzheimer's dementia. It should be noted that the questions were formulated with the utmost care to be clear and relevant, with adequate vocabulary for the participants.

Results

Formal caregivers' work with Alzheimer's dementia patients

After analyzing the data collected it was found that all the respondents have had the opportunity of working, or work, with patients with Alzheimer's dementia ensuring that they can identify signs of this dementia in patients, although they have never had specific training in the area and more specifically on cognitive stimulation identifying, however, a set of resources (proverbs, music, photographs/images, among others) to promote this stimulation.

Digital technologies in Alzheimer's dementia

Regarding the use of technologies, the graph of the Figure 1 show that 77.3% of the respondents considered that using digital technologies can contribute to the prevention of Alzheimer's dementia. However, 17.4% are not sure about this, and the remaining 5.3% prefer not to answer or consider that technologies are not important for the prevention of Alzheimer's dementia.

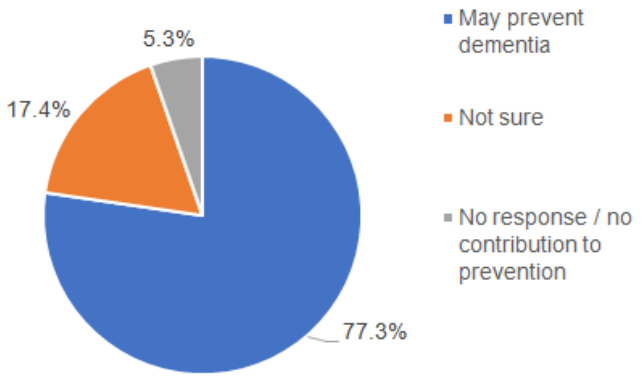

Figure 1 Contribution of digital technologies in the prevention of Alzheimer's disease.

Regarding the type of contribution that technologies may offer to the prevention of Alzheimer's dementia, the respondents consider that there are several, namely: cognitive stimulation (proverbs, songs, photos/images...) interactivity, relaxation, greater openness of users because it is something different from the usual and something new that they like to explore, greater attention, ease of use, new learning, delaying the evolution of the disease, improving the user's self-esteem, fun, creation of a diary to help the patient remember moments, creation of resources and memory games. With regard to working with

digital technologies with patients with Alzheimer's dementia, 73.6% of respondents said that they only use the technologies sometimes and 26.4% said they never use them, as illustrated in the Figure 2.

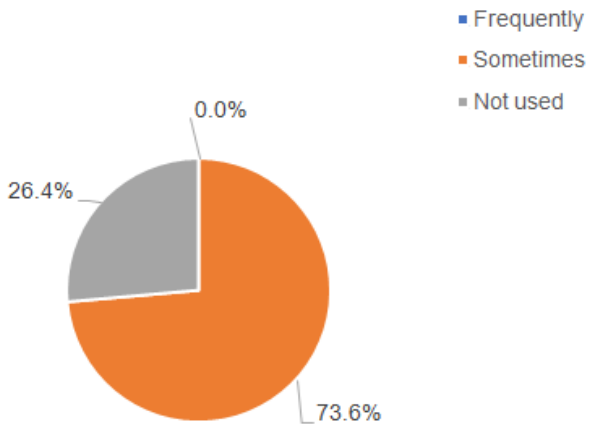

Figure 2 Use of digital technologies in professional activities.

As the results show, there is a large majority of participants (77.3%) who consider the use of digital technologies a way of preventing Alzheimer's dementia, which confirms the first specific objective of the study. It is still a point of analysis that regarding the use of technologies, the average of participants who frequently use them is similar (73.6%), which leads to the conclusion that there is a clear acceptance of the importance of digital technologies as prevention. Likewise, those who do not use digital technologies have similar results to those who do not answer or do not consider technologies to be important.

Training in the use of digital technologies for the exercise of the activity

Regarding training promoted by employers in the use of digital technologies in the context of Alzheimer's dementia, 74.6% of respondents claimed they had never had training in this area, and only 8.5% had that opportunity. The remaining respondents have no knowledge of this type of training. It should be noted that most respondents who have never had training believe that it would be beneficial to invest more in education and training on digital technologies in Alzheimer's dementia.

Discussion

The general objective of this research study was to identify the perception of formal caregivers of patients with Alzheimer's dementia about the use of new technologies in the cognitive stimulation of these patients. The results show that all the respondents are able to identify signs of Alzheimer's dementia in the patients. Considering that this is a progressive disease, this is understandable, even though they had never received specific training in this area, especially regarding cognitive stimulation.

In relation to the latter, the opinion formulated by several researchers is that it is of extreme importance and, therefore, and contrary to what was inferred from the results of this study, where it is evident that institutions undervalue training in this area, it is increasingly studied and valued, as it is considered that it may delay or prevent the decline of Alzheimer's dementia[5,13] opinion shared by the WHO when promoting physical and cognitive stimulation associated with a healthy lifestyle.[3] However, even with this gap, they identified several resources to promote such stimulation, such as proverbs, songs, photographs/images, among others.[8,12] Regarding the use of digital technologies, the vast majority of respondents (77.3%) believe that these can contribute to the prevention of Alzheimer's dementia. However, a significant percentage (17.4%) is not sure about this, and the remaining 5.3% prefer not to answer or consider that technologies are not important for the prevention of this disease. These results suggest that there is still some lack of knowledge and uncertainty regarding the role of digital technologies in preventing Alzheimer's dementia among formal caregivers.[20] Regarding the type of contribution that technologies can offer to the prevention of Alzheimer's dementia, the respondents consider that there are several, namely: cognitive stimulation, interactivity, relaxation, greater openness of users because it is something different from usual and something new that they like to explore, greater attention, ease of use, new learning, delayed disease progression, improved self-esteem of the user, fun, creation of a diary to help the patient remember moments, creation of resources and memory games.[7,18] Regarding working with digital technologies with Alzheimer's dementia patients, a large percentage of respondents (73.6%) answered that they only use them sometimes, and 26.4% said they never use them. These results suggest that there is still resistance or lack of confidence in the use of digital technologies by formal caregivers working with Alzheimer's dementia patients. However, the study participants recognize the potential benefits that they can bring to the prevention and treatment of the disease (cognitive stimulation, interactivity, fun, and the creation of memory games), among which the vast majority of formal caregivers believe that digital technologies can contribute to the prevention of Alzheimer's dementia.[11,17] It is important to mention that the majority of formal caregivers who participated in the study have never received specific training on the use of digital technologies in the context of Alzheimer's dementia.[13] This suggests the need for investment in training programs for formal caregivers to increase confidence and effectiveness in using these technologies for the benefit of the users.[18,21] In another study, Talbot & Briggs[22] also provide a positive outlook on the use of digital technologies by people with dementia during the COVID-19 pandemic. According to the authors, digital technologies can provide opportunities for communication, entertainment and social connection, helping to improve the quality of life of users.[14,17] Therefore, it is necessary for healthcare professionals, including formal caregivers, to be empowered and trained regarding the use of digital technologies for the prevention and treatment of Alzheimer's dementia.[10,13,15] In this way, it will be possible to better exploit the potential of these technologies and provide more effective and personalized care for patients with Alzheimer's dementia. Regarding the literature, it is considered that the chosen themes were duly and sufficiently explored.[8,15] In this sense, it is concluded that Alzheimer's dementia is the most common and increasingly feared by everyone today. Alzheimer's is a degenerative disease that destroys memory and compromises the performance of daily activities, which makes the patient dependent on others.[11] Of the various symptoms that this dementia presents, psychological symptoms are the main cause of institutionalization.[12] As it is an incurable disease, there are no solutions for the difficulties it causes in interpersonal relationships, therefore, it is essential to develop new strategies and identify innovative targets that prevent its evolution.[11] Although they are not used to using new technologies in their work in the context of cognitive stimulation of patients with this dementia, most respondents assume the importance of these technologies and of the existence of actions promoted by institutions to acquire more skills and knowledge to allow them to deal with the issues inherent to their professional activity and, more specifically, Alzheimer's dementia.[15,23]

Conclusion

Cognitive stimulation performed continuously and associated with drug treatment may help to improve early and moderate cognitive and functional deficits in patients with Alzheimer's dementia, but they do not recognize new technologies as the preferred choice for this purpose, although the use of these technologies may contribute to its prevention, cognitive stimulation, interactivity, relaxation, greater attention, new learning, delaying the progression of the disease, fun, among others, so they consider it advantageous for employers to invest more in education and training on digital technologies in their daily lives as caregivers and more specifically in Alzheimer's dementia. Through the collected data it was possible to conclude that most of the formal caregivers consider that the use of digital technologies in the cognitive stimulation of Alzheimer's demented patients is important and can contribute to the prevention of this dementia, which answered the general objective of this work.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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