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Analysis of the Duration of the Efficacy of Non-Pharmacological Therapies for Dementia

Álvaro Rodríguez Mora*

Department of Psychology, Cadiz University, Faculty of Education Sciences, Spain

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***Corresponding author:** Álvaro Rodríguez Mora, Department of Psychology, University Campus Río San Pedro, Faculty of Education Sciences, CP 11510 Puerto Real (Cádiz), Spain

Abstract

In recent years, there has been an increase in the use of non-pharmacological interventions for Alzheimer's Disease (AD). From early interventions such as Reality Orientation (RO), through reminiscence therapies to comprehensive cognitive stimulation programs. Its main objective is to intervene mainly in the cognitive capacity of the patient, maintaining and/or delaying cognitive deterioration. In different systematic reviews, we can find a multitude of programs. These intervene in different areas of AD and during different periods of intervention. However, the periods of application of these interventions do not exceed six-months. Even some cognitive stimulation programs are applied for a few weeks. The conclusions offered by these studies determine that these programs show good effectiveness in maintenance and/or delay of the cognitive function. However, here the difficulty arises to evaluate even when these interventions are effective beyond those six months. In the literature we can find some interventions beyond the six-months, usually applied for twelve-months. However, their effectiveness causes some controversy among the authors. Therefore, it is necessary to create intervention programs of at least twelve months and evaluate their effectiveness. And to be able to answer: how long are non-pharmacological therapies effective?

Keywords: Dementia; Alzheimer's disease; Non-pharmacological interventions; Cognitive stimulation therapy; Efficacy

Introduction

The increased use of non-pharmacological interventions for Alzheimer's disease (AD) emerged from the work of Woods and Britton [1] in the 1960s. These authors were based on the assumption that the elderly person with dementia would have learning abilities that would still be preserved and on the other hand, on the expectations of improvement after the intervention.

Interventions such as Reality Orientation (RO) proposed by Taulbee and Folsom [2], were among the first interventions to focus on improving cognitive functions. The classification of non-pharmacological interventions proposed by Clare and Woods [3] is widely known. These authors proposed Cognitive Stimulation which refers to the stimulation of all higher mental functions, focusing not only on the deteriorated functions but also on the preserved ones. This type of intervention provides us with the possibility of developing intervention programs. Its theoretical basis is based on the fact that mental functions do not act in isolation and therefore their intervention requires the integration of all of them [4], [5]. Cognitive rehabilitation aims to intervene in the context to improve overall cognitive performance. The purpose is to achieve an optimal level of performance at the physical, psychological and social levels. Cognitive rehabilitation also allows the development of individualized intervention programs, without time limitation [5,6]. Finally, Cognitive Training [6,7], is a guided practice of concrete and specific functions to work on, such as memory, attention, or language. It is indicated in mild phases and through individual sessions aims to reduce deterioration and delay progression. Reality Orientation (RO) or Reminiscence therapy [6,7].

These non-pharmacological interventions have been developed as an alternative and/or complement to pharmacological interventions [8,9]. We know that these interventions are effective. They are capable of delaying and/or improving cognitive status. But how long does the efficacy of these interventions last? The evidence of their efficacy to date is disputed by some authors, who determine that it is not consistent and presents some controversy [5,10]. When we analyze these interventions, we find that there is wide heterogeneity in their

planning and implementation. These programs often combine different activities without a defined structure, or we also find comprehensive programs where there are concrete planning and organization of cognitive rehabilitation. But one of the most striking characteristics that we find and that raises our reflection is the high variability in the time periods of application of these programs. Most of these treatments have a duration of six-months or less [11-13] ranging from weeks [14-16] to 12 months [17]. The problem we have is that we do not have enough explanation of how and why these benefits changed over time. Some of the explanations for these variations could be that patients with AD experience rapid improvement at the beginning of treatment, which subsequently peaks and then begins to deteriorate again [7]. Most interventions have reported that improvements are achieved in the early stages of the disease [15,18-21], but nevertheless, it is not concluded that there are benefits beyond six-months clearly. This makes us rethink whether the benefits of the intervention would go beyond six-months. This raises the need for more durable intervention programs. In the literature, we do find some studies such as that of Rodríguez-Mora [20]. Or the work of Muñiz et al. [22] where intervention was carried out up to the age of 3 years.

There are several studies that support the benefits of non-pharmacological intervention in short periods of time. Spector, Orrell, and Woods [23] applied Cognitive Stimulation Therapy (CST) during 14 sessions to 115 patients diagnosed with dementia. The therapy was composed of reality orientation activities, reminiscence techniques, sensory stimulation, and implicit learning. Its results offered an improvement in language productivity. With respect to the control group, they found significant differences in memory, new learning, praxis and language. This same study was later replicated by Caposto et al [15], were 39 older adults diagnosed with mild and moderate dementia were given 14 intervention sessions over 7 weeks. Their results compared to the control group confirmed the at least short-term efficacy of CST in maintaining cognitive function. Therefore, the efficacy of CST after the application of non-pharmacological intervention for a short period of time seems to be demonstrated. Focusing on studies that applied long-term intervention, in a recent study by López, Sánchez, and Martín [24], they applied cognitive stimulation for six months to a sample of 20 Alzheimer's patients. They concluded that the intervention maintained the cognitive performance of patients with mild-moderate AD with respect to reasoning, constructive praxis and word list recognition, while the control group showed a deterioration of these functions over a 6-month period. Graessel et al. [17] implemented a cognitive intervention in 61 patients with dementia. These were compared with a control group receiving usual care. The patients undergoing cognitive treatment showed a significant improvement in personal functioning compared to the control group. Similar research has found that working on cognitive functioning also had a positive influence on neuropsychiatric symptoms of AD in its mild stages [25], lower depression symptoms [7,26] and better autonomous personal functioning [7,16], [22,27]. Therefore, the literature on cognitive intervention in AD has presented empirical evidence that a program lasting at least six months improves AD outcomes such as cognitive and behavioral functioning and ADLs [6,28]. It should be noted that many studies also report one within the first three months of intervention and continue for some time thereafter [12, 20,29-31]. However, as we have pointed out, these studies have not exceeded six months and even if we obtain improvements in cognitive performance [12,13,23,32,33], the question arises, would it be advisable to compare the functioning of AEs with the annual rate of deterioration and not just with a control group? To what extent does individual variability affect the potential benefits of non-pharmacological intervention?

We can assume that cognitive intervention provides benefits for patients with AD at least in the short term. It is clearly important for patients with AD and their families to know to what extent the level of autonomy and quality of life of the AD patient can be extended. In fact, several studies have argued that it is necessary to evaluate the effectiveness of longer comprehensive programs [12,17,34]. Although most of the studies cited above have intervened in a period of six months or less, we did find in the literature non-pharmacological interventions of more than six months of intervention. Specifically, the program called MAKS (Cognitive Motor Stimulation Activities), developed by Luttenberg et al. [27] conducted 12-month Randomized Controlled Trials (RCTs) with similar characteristics of the participants (symptoms of moderate dementia). With respect to the control group, patients in the experimental group showed delayed cognitive decline and the ability to perform activities of daily living. However, the authors did not include information about the initial assessments or prior to the interventions. Therefore, it is not possible to draw conclusions on the effect of the MAKS on patients with respect to its baseline. For this reason, they recommended a longer follow-up period (six months) to determine whether there is any stabilization of the effects of an overall intervention in patients with dementia (including AD). In order to find out the long-term influence of the MAKS effect, Luttenberger, Hofner, and Graessel (2012) evaluated ten months after the end of the MAKS program. Sixty-one patients with primary degenerative dementia were examined (the final sample was reduced to fifty-two). The MAKS group (n=30) was treated for two hours, six days a week for 12 months and the control group (CG, n=22) received standard nursing home care. During the intervention, the MAKS group maintained its ADL capabilities and cognitive functioning. However, after the end of the MAKS program, both groups deteriorated both ADLs and cognitive functioning, but the MAKS group remained significantly higher on ADL measures than CG patients even ten months after the end of the MAKS program. They concluded that the prevention of functional impairment "for as long as possible" should be pursued through multimodal therapies for dementia until the benefits of the end of the intervention. The authors also recommended further studies to confirm their findings.

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On the other hand, in 84 non-institutionalized AD participants, Muñiz et al. [22] conducted a randomized study to test the long-term outcomes (three-year evaluations) of a Cognitive-Motor Stimulation Intervention in AD. The treatment group received a multimodal intervention for patients with AD and the control group received standard support. Participants in the treatment group had better functional benefits over the control group. Despite these promising effects (cognitive, ADLs, mood and motor improvements), the authors raised questions and concerns regarding the long-term appropriateness of the intervention in terms of cognition (p. 302), especially in Mild Cognitive Impairment (MCI) and AD. Therefore, to test the benefits of comprehensive long-term non-pharmacological treatment for patients with AD, it would be necessary to conduct an intervention program over a period of at least 12 months and compare the results with the expected rate of deterioration [17,27].

Conclusion

It seems to be confirmed from the literature that non-pharmacological interventions are effective. However, few studies have intervened beyond six months with certain guarantees of efficacy. Other works analyzed to measure their effect only immediately after the intervention and in comparison, with the control group. Here we have evidence that the efficacy of these interventions is accredited. However, we lack data to inform us what happens if we continue to implement these intervention programs. In them, we see how the effectiveness is losing power, mainly accredited by those intervention programs that carry out follow-ups after the end of the interventions. We would, therefore, be faced with the doubt of continuing to implement the intervention programs on an ongoing basis in order to further delay the disease process. However, the doubt arises, and it is a future line of research, to analyze when would the non-pharmacological intervention cease to be effective? After analysis of the different interventions, whether we can determine that non-pharmacological interventions are effective in delaying the progression of dementia, at least for six months. We have shown that there is an improvement in the quality of life that can have a positive impact on family members and caregivers. But even so, the literature continues to offer us very heterogeneous studies with a wide diversity in times of application, activities, and areas of intervention. Even though the efficacy of non-pharmacological interventions has been demonstrated after six months of application, is it sufficient to offer an intervention that only guarantees six months of efficacy? It would be interesting to answer this question in the future and to direct programs towards longer periods of intervention.

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