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Profile of physical therapy in the rehabilitation of individuals with Alzheimer's disease: a cross-sectional study

Perfil da fisioterapia na reabilitação de indivíduos com doença de Alzheimer: um estudo transversal

Perfil de la fisioterapia en la rehabilitación de personas con enfermedad de Alzheimer: un estudio transversal

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ABSTRACT | This study analyzes the working profile of physical therapists from the states of Rio de Janeiro (RJ) and Rio Grande do Sul (RS) in the management of people with Alzheimer's disease (AD). A total of 256 responses were obtained to a questionnaire sent via the electronic address of the Regional Councils of Physical Therapy and Occupational Therapy (CREFITOS) 2 (RJ) and 5 (RS), from March to December 2020. The questionnaire comprises 36 closed questions, the variables of which were grouped into: (1) sample characterization; (2) specific data on the profession of physical therapist; and (3) issues related to AD. In this article, only issues related to AD will be analyzed. All questions were multiple choice with 2 to 15 options of answer. Most respondents (88.3%) had already treated patients with AD, but 50.8% needed to review the literature to assist these patients. The main objective reported in the management of the individual with AD was to "delay the progression of motor losses." The practices were significantly different according to the stage of the disease ($p<0.001$). More than 85% of the participants cited as a benefit that physical therapy "delays physical dependence." This study shows the need for further studies that specifically address the intermediate and advanced stages of AD since the current literature is inconclusive and with little evidence regarding physical therapy in the management of this population, making it impossible to create manuals and /or standardization of specific practices for each stage.

Keywords | Alzheimer Disease; Physical Therapy Modalities; Problems and Exercises; Recovery of Function; Cognition.

RESUMO | O estudo analisou o perfil de atuação dos fisioterapeutas do Rio de Janeiro (RJ) e do Rio Grande do Sul (RS) no manejo da pessoa com doença de Alzheimer (DA). Foram obtidas 256 respostas a um questionário enviado via endereço eletrônico dos Conselhos Regionais de Fisioterapia e Terapia Ocupacional das regiões 2 (RJ) e 5 (RS) – CREFITOS 2 e 5 –, entre março e dezembro de 2020. O questionário tinha 36 perguntas fechadas, cujas variáveis foram agrupadas em: (1) caracterização da amostra; (2) dados específicos sobre a profissão de fisioterapeuta; e (3) questões relacionadas à DA. Neste artigo serão analisadas apenas as questões relacionadas à DA. Todas as questões eram de múltipla escolha, com 2 até 15 opções de resposta. A maioria dos respondentes (88,3%) já atendeu paciente com DA, mas 50,8% fariam uma revisão de literatura para atender novamente esses pacientes. O principal objetivo relatado no manejo do indivíduo com DA foi "retardar a progressão das perdas motoras". As condutas foram significativamente diferentes conforme a fase da doença ($p<0,001$). Mais de 85% citaram como benefício que a fisioterapia "retarda a dependência física". Este estudo deixa evidente a necessidade de mais pesquisas que abordem especificamente as fases intermediária e avançada da DA, pois, até o momento, a literatura se mostra

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inconclusiva e com pouca evidência em relação à fisioterapia no manejo dessas pessoas, impossibilitando a criação de manuais e/ou padronização de condutas específicas a cada estágio da doença.
Descritores | Doença de Alzheimer; Modalidades de Fisioterapia; Problemas e Exercícios; Recuperação de Função Fisiológica; Cognição.

RESUMEN | Este estudio analizó el perfil de actuación de los fisioterapeutas de Rio de Janeiro (RJ) y de Rio Grande do Sul (RS) en el manejo de personas con enfermedad de Alzheimer (EA). Un total de 256 respuestas se obtuvo de un cuestionario enviado electrónicamente a los Consejos Regionales de Fisioterapia y Terapia Ocupacional de las regiones 2 (RJ) y 5 (RS) –CREFITOS 2 y 5–, en el período de marzo a diciembre de 2020. El cuestionario constaba de 36 preguntas cerradas, con variables que se agruparon en: (1) caracterización de la muestra; (2) datos específicos sobre la profesión de fisioterapeuta; y (3) preguntas relacionadas con EA. Este artículo solo analizó los problemas relacionados con la EA. Todas las preguntas eran de opción múltiple, con 2 a 15 opciones de respuesta. La mayoría de los encuestados (88,3%) ya había asistido a pacientes con EA, pero el 50,8% haría una revisión de la literatura para asistir nuevamente a estos pacientes. El principal objetivo informado en el manejo del individuo con EA fue "retrasar la progresión de las pérdidas motoras". Las conductas fueron significativamente diferentes según el estadio de la enfermedad (p<0,001). Más del 85% citó como beneficio que la fisioterapia "retrasa la dependencia física". Este estudio apunta la necesidad de más investigaciones que aborden específicamente las etapas intermedias y avanzadas de la EA, ya que la literatura existente es poco concluyente y con poca evidencia respecto a la fisioterapia en el manejo de estas personas con la enfermedad, lo que impide la elaboración de manuales y/o estandarización de conductas específicas para cada estadio de la enfermedad.
Palabras clave | Enfermedad de Alzheimer; Modalidades de Fisioterapia; Problemas y Ejercicios; Recuperación de la Función; Cognición.

INTRODUCTION

Alzheimer's disease (AD)—a neurodegenerative disease that affects the central nervous system (CNS)[1]—affects around 10% of individuals aged over 65 year and 40% of those aged over 80 years. Moreover, AD represents more than 50% of dementia cases[2], which makes it paramount that healthcare providers know how to act assertively and effectively in the management of patients with AD.

Currently there is no cure for AD, however, symptoms can be treated by pharmacological and non-pharmacological interventions. Physical exercise is one of the non-pharmacological interventions indicated to improve or delay AD symptoms[3]. Pharmacological treatment basically consists of using acetylcholinesterase inhibitors[4], which aims to delay the natural evolution of the disease or stabilize behavioral and cognitive impairments[5].

Physical therapy is usually composed of physical exercises aimed at maintaining physical independence and reducing the risk of falls, by promoting motor and cognitive stimulation. These objectives should be constantly reevaluated according to the stage of AD in which the patient is in[6].

We can find within the literature the most varied physical therapy modalities since each stage has its peculiarities and different management needs; aerobic exercises, tai chi, and dance are some of the modalities being studied[7,8]. Therapeutic exercises such as stretching and isotonic, isometric, and isokinetic exercises are also widely used, generally recommended according to the kinetic-functional evaluation[9].

To date, studies addressing physical therapy for people with AD are still quite inconclusive. More research is needed with better delineated and controlled protocols focused on the different stages of the disease since each stage requires a specific approach according to the patient's limitations.

The literature presents several studies on the profile of physical therapists in the states of São Paulo[10], Santa Catarina[11], and Paraná[12], in the city of Tubarão in Santa Catarina[13], as well as on the undergraduates of the Federal University of Minas Gerais (UFMG)[14], the physical therapist of the Family Health Support Center (NASF)[15], and researchers in the field of Physical Therapy and Occupational Therapy from the National Council for Scientific and Technological Development (CNPq)[16], and on cardiac rehabilitation[17]. However, we found no study regarding the practices adopted by the physical therapist toward the patient with Alzheimer, as well as regarding the objectives and benefits that they believe physical therapy can provide to the patient.

Understanding the profile of physical therapists working in the rehabilitation of individuals with AD

can provide subsidies and can stimulate the production of future research, improving the work of this professional and, possibly, providing means of creating physical therapeutic care guidelines aimed at these patients. Thus, this study aims to understand the working profile of the physical therapists that care of individuals with Alzheimer's disease.

METHODOLOGY

This cross-sectional study had the participation of 104 physical therapists from the state of Rio de Janeiro (RJ) and 152 from the state of Rio Grande do Sul (RS). The professionals received invitations to participate in the study via electronic messages from their respective Regional Councils of Physical Therapy and Occupational Therapy (*Conselho Regional de Fisioterapia e Terapia Ocupacional*) – CREFITO 2 (RJ) and 5 (RS). The messages contained the access link to the online survey, generated by Google®. This questionnaire was available from March to December 2020 to all physical therapists duly registered in their respective councils.

The questionnaire presented 36 closed questions, the variables of which were grouped into three categories: (1) sample characterization (age group, gender, year, type of institution and stage of education, whether or not they are active in the field and if they have graduated); (2) specific data regarding the occupation of physical therapist; and (3) questions related to AD, for example, practice model for the three stages, objectives in the management of these patients, and probable benefits of physical therapy for individuals with AD. In this study, however, the issues related to AD were specifically addressed. All questions were multiple choice and had 2 to 15 options of answer, and in some of them more than one alternative could be selected. After the end of the research, the questionnaire model remained available via email, favoring its reproducibility.

The collected data were converted to Excel® software spreadsheets and statistical analysis was subsequently performed. The variables were described by absolute and/or relative frequencies (%) and associated using Pearson's chi-square test. To compare the practices according to the stage of the disease, Cochran's Q test was applied. A 5% significance level was adopted ($p \leq 0.05$) and the analyses were performed with the software SPSS 21.0 version.

RESULTS

In total, 256 physical therapists answered the questionnaire, 152 belonging to CREFITO-5 (RS) and 104 to CREFITO-2 (RJ).

Table 1 shows that most physical therapists (88.3%) have already cared for individuals with AD and 50.8% reported that they would care for again but would have to consult the literature.

Table 1. Specific data on the feeling of the physical therapist in relation to the care of patients with Alzheimer's disease

Responses	n=256
Has cared for a patient with Alzheimer's disease – n (%)	
No	30 (11.7)
Yes	226 (88.3)
How would you feel if you were caring for a patient with AD – n (%)	
Would care for easily, but would have to review the literature	130 (50.8)
Very confident, I already have experience with this type of service	106 (41.4)
I wouldn't care for them, I don't work in this field of Physical Therapy.	11 (4.3)
I would be very insecure because I never cared for a patient with AD	8 (3.1)

We asked what their objectives would be in the physical therapy management of a patient with AD, and the most cited alternative was to "delay the progression of motor losses" (71.9%), followed by "maintaining and/or improving balance, stability, motor coordination, and transfers." Table 2 shows all the alternatives indicated.

Table 2. Objectives that the professional would have with the treatment of patients with AD

Objectives*	n=256 n (%)
Delay the progression of motor losses	184 (71.9)
Maintain and/or improve balance, stability, motor coordination, and transfers	178 (69.5)
Decrease the risk of falls	174 (68.0)
Prevent and alleviate complications, such as loss of muscle strength, pain due to muscular shortening, immobility and deformities, and appearance of bedsores	172 (67.2)

(continues)

Table 2. Continuation

Objectives*	n=256
	n (%)
Avoid muscular shortening and deformities	168 (65.6)
Encourage patient independence	163 (63.7)
Maintaining and/or improving mobility and flexibility	159 (62.1)
Work on breathing	153 (59.8)
Work toward patient independence	118 (46.1)
Improve posture	101 (39.5)
Realign the gait	76 (29.7)
Interrupt the evolution of the disease and its motor consequences	46 (18.0)
Reduce lower limb edema	43 (16.8)
Reduce pain	24 (9.4)

* Multiple answer question.

Table 3 shows us which practices were specifically used by physical therapists in each of the three stages of AD. As expected, the practices were significantly different (p<0.001) according to the stage of the disease. However, the most remembered practice was physical exercises to improve mobility, which was the option selected by 82% of physical therapists for the initial stage, 98% in the intermediate stage, and 55.9% in the advanced stage.

Table 3. Practices that the professional would use on a patient with AD

Practices*	Initial stage	Intermediate stage	Advanced stage	p
	n (%)	n (%)	n (%)	
Aerobic training to improve mental functions	108 (42.2)	62 (24.2)	30 (11.7)	<0.001
Combined exercises to train motor coordination	197 (77.0)	136 (53.1)	75 (29.3)	<0.001
Neural mobilization to improve flexibility	51 (19.9)	55 (21.5)	91 (35.5)	<0.001
Stretching to improve joint flexibility	183 (71.5)	0 (0.0)	0 (0.0)	<0.001
Pilates	50 (19.5)	0 (0.0)	0 (0.0)	<0.001
Gait training	158 (61.7)	126 (49.2)	47 (18.4)	<0.001
TENS to reduce pain and stimulate muscle strengthening	13 (5.1)	22 (8.6)	69 (27.0)	<0.001
Bobath Concept	41 (16.0)	58 (22.7)	66 (25.8)	<0.001
Stationary bike	117 (45.7)	92 (35.9)	40 (15.6)	<0.001
Exercise to improve mobility	210 (82.0)	251 (98.0)	143 (55.9)	<0.001

* Multiple answer question; TENS: transcutaneous electrical nerve stimulation.

Regarding the benefits that physical therapists believe that physical therapy can provide to patients with AD, more than 85% answered that it delays physical dependence and 53.9% that prevents the progression of the disease and its motor sequelae. Table 4 shows these data.

Table 4. Benefits that physical therapy brings to patients with AD

Benefits*	n=256
	n (%)
Delays physical dependence	218 (85.2)
Improves blood circulation	178 (69.5)
Improves retention of motor skills	168 (65.6)
Prevents some orthopedic injuries	164 (64.1)
Prevents the progression of the disease and its motor sequelae	138 (53.9)
Improves sleep quality	117 (45.7)

* Multiple answer question; TENS: transcutaneous electrical nerve stimulation.

DISCUSSION

This study provides essential information about the knowledge and working model of physical therapists in the different stages of AD.

Regarding the objectives that physical therapists would have toward a patient with AD, more than 71% answered "to delay the progression of motor losses," followed by "maintaining and/or improving balance, stability, motor coordination, and transfers" (69.5%) and "reducing the risk of falls" (68%). According to Cendón, Ribeiro, and Chaves[18] the main objective in physical therapeutic care of individuals with AD should be to improve quality of life. This goal is only achieved when we devise a physical therapy plan focused on the prevention of falls, the treatment of depression, and the increase of participation in daily activities. Thus, for achieving these objectives, we must seek the reduction or delay of physical

losses, which are irreversible, such as range of motion, muscle strength, balance and gait, and functional and cognitive losses.

Regarding the practices used by physical therapists, specifically in each of the three phases of AD, we found that, in the initial stages, the most cited practice was "physical exercises to improve mobility" (82%), followed by "combined exercises to train motor coordination" (77%). In the intermediate stage, these same practices obtained 98% and 53% of responses, respectively, and in the advanced stage they obtained 55.9% and 29.3%. All practices were statistically significant when the choices between stages were compared, reinforcing the knowledge that each stage of AD implies differentiated conducts, which are dependent on kinetic-functional evaluation.

A meta-analysis[19] evaluated 25 randomized clinical trials conducted with individuals with AD in the initial stage and tested protocols for aerobic and/or resistance exercises versus no exercises in their controls. Their results showed improvement of executive function, cognition, and memory. However, significant changes were found only in two studies, which aimed to improve reasoning and performed aerobic training versus stretching, with a total of 135 participants[20].

Four studies[21-24] that specifically included individuals with AD in the intermediate or advanced stages found improvement in functional capacity and improvement or alleviation in the decline of executive functions, attention, and language (variables related to cognition). In these studies, the protocols included walking (two protocols associated it with conversation), aerobic activity in cycle ergometer or treadmill, flexibility and balance exercises, and weight training. However, such protocols are questionable in relation to the treatment of individuals with AD in the advanced stage since they are usually bedridden and are not able to perform such exercises. In our study, only 24.2% and 11.7% of physical therapists answered that they would use aerobic exercises in the intermediate and advanced stages, respectively. Gait training was chosen by 49.2% and 18.4%, respectively, demonstrating that most physical therapists would not perform these practices with individuals with AD in the advanced stage.

When asked about the benefits of physical therapy for individuals with AD, most physical therapists (85.2%) answered that it delays physical dependence, 65.6% that improves the retention of motor skills, and 53.9% that prevents the progression of the disease and its motor sequelae. This last answer raised the question of whether the respondents were ignorant of the impossibility of effectively avoiding the disease progression or if they misinterpreted the question. According to Kelly et al.[25], physical therapy improves the motor function—contributing to maintain balance, strength, and cognition— and benefits individuals with AD.

This study has limitations related to the fact that the questionnaires were sent via email. This type of email often goes to the junk mail, so it rarely reaches the respondent or it ends up being ignored. Thus, this may have contributed to the limited number of respondents to represent the physical therapists of RS and RJ. Additionally, the questionnaire had several questions in which it was possible to mark more than one alternative, which may have contributed to the respondents having indicated several options when they were in doubt between one or the other.

This study made it clear that physical therapists resort to scientific literature when facing a new challenge. However, regarding AD, the literature is scarce and inconclusive on the physical therapeutic management of patients with AD in the intermediate and advanced stages. In this context, further studies and, specially, manuals are needed to standardize conducts specific to each stage of AD. Many studies explore physical therapy in individuals with AD in the initial stage, and others do not even mention the stage of AD studied. It is known, however, that each stage presents its specificities, which require completely differentiated practices. In this study, the physical therapists responded in line with the literature regarding the practices used with individual in the initial and intermediate stages of AD, but the same did not occur in relation to the advanced stage.

CONCLUSION

Most physical therapists have already cared for individuals with AD and would be confident about attending again but would need to review the literature. This position reinforces the importance of new studies addressing this theme, since, despite being sought by professionals, it is still scarce. Physical therapy plays an important role in the management of the individual in any of the three stages of AD. However, the intermediate and advanced stages lack more controlled studies, with more homogeneous samples and well-described and defined protocols since the current literature is inconclusive and with poor evidence regarding physical therapy in the

management of this population, making it impossible to create manuals and/or standardize specific conducts at each stage of AD.

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