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Quality of life in multiple sclerosis patients participating in therapeutic horseback riding

Qualidade de vida de pacientes com esclerose múltipla participantes de equoterapia

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Abstract

Introduction: Multiple Sclerosis (MS) is a disease that causes interferences in the quality of life (QoL) of affected individuals; for this reason, programs of activities that can improve quality of life are crucial. Objective: Investigate whether therapeutic horseback riding (THR) included in the routine activities of people with MS promotes changes in perceived QoL. **Methods:** Fourteen individuals with MS were divided into intervention group and control group and assessed for perceived QoL by means of the Functional Assessment of Multiple Sclerosis (FAMS) instrument, before and after an interval of four months. **Results:** No significant changes in the QoL of MS subjects were observed, either in intragroup or intergroup assessments. **Conclusion:** The intervention with THR included in the routine therapeutic activities of individuals with MS was not helpful to promote changes in the perceived QoL of the individuals studied.

Key words: Horseback riding therapy; Multiple sclerosis; Quality of life.

Resumo

Introdução: A Esclerose Múltipla (EM) é uma patologia capaz de gerar interferência na qualidade de vida (QV) de seus portadores, e neste sentido, a busca por programas ou atividades que possam melhorar a QV do paciente é fundamental. **Objetivo:** Investigar se a prática de equoterapia, incluída na rotina de atividades de pessoas com EM, promove alterações na percepção de QV. **Métodos:** Quatorze sujeitos com EM, divididos em grupo intervenção e grupo controle, foram avaliados quanto à percepção de QV por meio da Escala de Determinação Funcional de Qualidade de Vida (DEFU), antes e após um intervalo de quatro meses. **Resultados:** Não foram observadas alterações significativas na QV dos sujeitos, quando avaliados intra e intergrupos. **Conclusão:** A intervenção com equoterapia, incluída na rotina de atividades terapêuticas dos sujeitos com EM, não foi capaz de promover alterações na percepção de QV dos investigados.

Descritores: Esclerose múltipla; Qualidade de vida; Terapia assistida por cavalos.

Introduction

Multiple Sclerosis (MS) is one of the most common diseases of the central nervous system in young adults. It is often diagnosed between 20 and 40 years of age and has a higher incidence rate in females, by a ratio of 2:1[1,2]. It is a chronic and progressive disease leading to the rise of several neurological, signs and symptoms, probably a result of autoimmune inflammatory responses that cause focal damage to the myelin sheath of nervous system tissues. Symptoms present in the pathology may affect motor, sensory, vesical, intestinal, sexual, cognitive, and emotional areas[3]. Such multiplicity of symptoms–the fact that it is a chronic neurological disease of unpredictable course, often disabling and as yet having no cure– can impact significantly patients' lives, even in the initial stages, causing a negative interference in the quality of life (QoL) of people with MS[4,5].

QoL incorporates social, physical, and mental aspects relating to individuals' subjective perception of their condition or disease and subsequent treatment[6]. Such information has been included as indicators in the assessment of the impacts of pathologies, the effectiveness of treatments for groups of patients of diverse diseases, and in comparative procedures for the control of health problems[7].

QoL studies conducted with MS patients have shown that the disease causes a decrease in all dimensions that characterize it[8,9]. The results corroborate the concept that in the rehabilitation process, in addition to significant treatment with immunosuppressant drugs and immunomodulators[1,3,10], especial programs designed to maintain body functions and cognitive, emotional, and social needs of the patients are of vital importance[8,11].

Regarding specific rehabilitation interventions in subjects with MS, studies have investigated diverse therapeutic programs with emphasis on aerobic exercises[12-14] and exercises for improving muscle strength[15,16] and balance[17,18]. Such studies described improvements in physical capacity[12], depression and fadigue[14], muscle strength[15], functional ability[16], balance[17,18], walking, and QoL[12-14,18].

Among the existing methods of rehabilitation, therapeutic horseback riding (THR), which uses horses for therapeutic purposes, has increased considerably in the past decades and has shown positive effects in the rehabilitation of motor disorders and neurological diseases[19-23]. Even though it is not a new practice, the scientific interest in this therapy has risen recently and requires more in-depth studies[20].

We found three researches who submitted MS patients to interventions using THR. These studies found improved mobility and improved functional balance[19,21,24], in addition to benefits to the individuals' quality of life and functional activities[19].

Within this context, our study aims to investigate whether THR, included in the routine of activities of people with MS, promotes changes in perceived QoL with respect to mobility, symptoms, emotional well-being, general contentment, thinking, fatigue, and social and family well-being.

Methods

Participants

The target group of this study consists of individuals with MS, members of the Association of People with Multiple Sclerosis of Santa Maria and Vicinity, RS, Brazil, an organization that provides care and material, emotional, and informative support. This study was introduced to the patients in a lecture during one of the monthly meetings organized by the association. Forty-three subjects attended the meeting, and one week later they were contacted by phone to see whether they would be interested in participating in the study.

Fourteen individuals showed interest in participating and were included in the study, under the following criteria: neurological diagnosis of MS; ability to respond to questionnaire/

anamnesis; walking competency (with or without aiding devices); medical clearance to practice THR; and no previous contact with equestrian activities. It should be noted that, according to the neurological diagnosis, the subjects did not have a defined classification as to the type of MS.

According to the interest in participating in the intervention, they were divided into two groups of seven subjects each: the intervention group (IG) and the control group (CG). Three subjects of the CG attended the initial assessments, but did not complete the post-assessments and were excluded from the study.

The study was conducted with the approval of the Committee of Ethics and Research of the Federal University of Santa Maria, according to CAAE no. 0077.0.243.000-09. All subjects signed the Term of Free and Informed Consent before being included in the research.

Procedures

Initially we conducted an anamnesis session, collecting medical information on the clinical and demographic dada of the patients. To assess QoL, we employed the only instrument used in Brazil to evaluate QoL of MS patients, named "Escala de Determinação Funcional de Qualidade de Vida" (DEFU)[25] (Scale of Functional Determination of Quality of Life – DEFU), adapted and validated for the Portuguese language from the Functional Assessment of Multiple Sclerosis (FAMS)[26]. This questionnaire consists of five subscales (for rating mobility, symptoms, emotional well-being, general contentment, and social and family well-being), with seven items that allow scores from 0 to 28, and a subscale (thinking/fatigue) with nine items with scores varying from 0 to 36. The response format allows scores from 0 to 4 for each item, and an inverse score is considered for questions constructed negatively. Thus, the highest scores indicate the best QoL, the maximum being 176. This scale was applied before and after intervention.

Therapeutic horseback riding intervention

The stimulation activities offered to the IG were included in the subjects' routine activities, as a complementary therapeutic method, since they were already engaged in some type of therapeutic activity. The literature does not specify a period for THR interventions, but changes in the QoL are reported after ten sessions[19]. In this study, a total of 30 sessions were offered, occurring twice a week over a period of four months. Each session had a duration of 50 minutes. We began with a 10-minute ride at a slow gait, progressing to a maximum duration of 30 minutes. The sessions were organized in pairs, but the level of difficulty was gradually increased, respecting each individual's ability and according to the reports on regarding their symptoms, such as fatigue and/or pain, especially in the gluteal region and legs. Before and after riding, the subjects performed all-around stretching exercises, and, during riding, speed-related activities, with variations in the horses' gait, changes of direction, type of ground (sand, asphalt, and grass), and combinations of movements of the upper limbs, trunk and lower limbs. Protective helmets and stirrups were obligatory to ensure practitioners' safety. The horses were fitted with bridle, saddle, and belt. To facilitate the mounting process, a ramp was used. In the first sessions, still in the mounting adaptation stage, a blanket was used in place of saddle.

To check whether the THR was not causing any discomfort, fatigue or illness, the practitioners were frequently asked about these possible reactions during the intervention, as well as about perceived alterations in symptoms or in their daily living routine. In addition, we also monitored them for changes in their activity routine and medications, or for the appearance of psychotic episodes.

Statistical treatment

A descriptive analysis of the clinical and demographic data was performed. The results obtained from the application of FAMS to the groups were analyzed using the Shapiro-Wilk test to check data normality. A parity t-test was used in intragroup comparison of pre- and post-intervention assessments, and a paired t-test for independent samples in comparative intergroup assessment. The significance level was defined as $p<0.05$. The statistical software used was SPSS version 13.

Additionally, following recommendations of the Philadelpia Panel[27], which emphasize that isolated statistical analysis may be insufficient to detect clinically-significant changes from the empirical data obtained with a reliable instrument, the results from FAMS of each individual were analyzed descriptively, adopting a limit of 15% of positive or negative change as clinical significance, according to parameter already attained[19] with other instrument of QoL assessment in individuals with MS.

Results

The results from the clinical and demographic data of the subjects under study are described in Table 1. The ages ranged between 35 and 58 years (44±9.09) for the IG, and between 43 and 54 years (47.25±5.31) for the CG. The average time since the subjects in the IG had been diagnosed with MS was 8.57±9.5 years, and 7.75±7.22 years for the subjects in the CG. The groups were statistically similar in age and average time since diagnosis ($p<0.05$).

During the treatment, there were two incidents in the IG, one relating to a change of medication for subjects 4 and 5 (28.57%), and the other a relapse in subjects 3, 4 and 7 (42.86%).

The mean and standard deviation of the scores from FAMS and its subscales, as well as pre- and post-intervention statistical results, are described in Table 2.

When the total scores of the IG and CG groups were compared in pre-intervention they did not show statistical differences ($p=0.12$), nor in post-intervention ($p= 0.20$).

The analysis of the subjects, which was performed according to the Philadelphia Panel recommendations (2001), is described in Table 3.

The results analyzed according to the Philadelphia Panel[27] showed both positive and negative changes in the two groups. In the total score and in the subscale of emotional well-being there was no change in either group.

Table 1: Clinical and demographic characteristics

ID	Sex/ Age (years)	Time from diagnosis (years)	Medication/ times per week	Associated diseases	Therapeutic activities / times per week	Intervention frequency (%)
Intervention group						
1	F/35	14	Rebif ®/3		Yoga/2	86.67
2	F/58	28	Betaferon®/2, Bacoflen		Physiotherapy/1	77.41
3	M/40	6	Rebif ®/2			76.67
4	F/51	3	Avonex®/1		Physiotherapy/2	56.67
5	F/47	1	Avonex®/1	Diabetes II	Physiotherapy/2	56.67
6	F/32	4	Rebif ®/2	Hypothyroidism	Physiotherapy/2	63.33
7	F/45	4	Avonex®/1	Hypertension		70.00
Control group						
1	F/49	18			Swimming/2 Resistance Training/3	-
2	M/43	6	Avonex®/1	Hypertension	-	-
3	F/54	6	Rebif®/2		-	-
4	M/43	1	Betaferon®/2		Pilates/2	-

Table 2: Scores from FAMS subscales

		Pre-intervention		Post-intervention		
	Subscales	$\bar{X}$	DP	$\bar{X}$	DP	p value*
IG	Mobility	17.42	4.68	18.28	4.64	0.35
	Symptoms	17.71	5.93	17.85	5.58	0.93
	Emotional well-being	20.71	4.02	20.00	4.89	0.44
	General contentment	15.14	5.66	16.00	4.65	0.66
	Thinking and fatigue	16.71	6.10	16.14	4.67	0.68
	Social and family well-being	17.57	4.79	17.85	5.30	0.84
	Total scores	105.28	22.00	106.14	22.50	0.75
CG	Mobility	20.75	5.67	21.25	6.89	0.73
	Symptoms	20.75	4.92	18.50	6.13	0.18
	Emotional well-being	25.25	2.98	24.50	5.06	0.59
	General contentment	22.50	5.74	21.25	6.80	0.31
	Thinking and fatigue	19.25	7.41	18.50	5.74	0.72
	Social and family well-being	22.75	4.50	24.00	2.30	0.36
	Total scores	131.25	28.19	128.00	30.12	0.48

*paired t-test.

Table 3: Overall score and subscales scores comparing pre- and post assessment from the FAMS results

		FAMS subscales						
	ID	MB	ST	EW	GC	TF	SFW	Total
IG	1-pre	11	19	15	14	12	14	85
	1-post	13	14	12	16	11	12	78
	2-pre	25	23	25	24	24	26	147
	2-post	24	28	23	25	22	26	148
	3-pre	15	24	23	8	26	21	117
	3-post	12	20	25	18	21	18	114
	4-pre	17	18	22	16	17	16	106
	4-post	21	19	24	12	13	24	113
	5-pre	21	20	18	11	15	12	97
	5-post	22	19	19	11	20	14	105
	6-pre	19	13	25	21	10	15	103
	6-post	20	11	22	16	12	14	95
	7-pre	14	7	17	12	13	19	82
	7-post	16	14	15	14	14	17	90
CG	1-pre	25	25	26	27	21	25	149
	1-post	24	24	28	28	18	26	148
	2-pre	13	17	21	15	14	19	99
	2-post	11	11	17	14	12	22	87
	3-pre	20	16	28	21	13	19	117
	3-post	24	16	27	17	18	22	124
	4-pre	25	25	26	27	29	28	160
	4-post	26	23	26	26	26	26	153

Positive change: Overall score ≥ 31; thinking and fatigue subscale ≥ 5, and other subscales ≥ 4.

Negative change: Overall score ≤ 31; thinking and fatigue subscale ≤ 5, and other subscales ≤ 4.

No change: total score < 31; thinking and fatigue subscale < 5, and other subscales < 4.

ID= identification; MB= mobility; ST= symptoms; EW= emotional well-being; GC= general contentment; TF= thinking and fatigue; SFS= social and family well-being

Discussion

Assessment of QoL is important to define the impact of the disease on the patient[6]. Therapeutic programs that show potential to improve QoL of MS patients need to be understood as to their ability to contribute effectively to the life of these people. Given this, the goal of this study was to investigate whether THR intervention would be able to promote positive changes in perceived QoL with respect to mobility, symptoms, emotional well-being, general contentment, thinking, fatigue, and social and family well-being, when included in the everyday activities of people with MS.

In a critical review on QoL, Moons[28] observed in recent years a growing attention focused on this variable, resulting in an increasing number of publications in biomedical, psychological and social fields. Despite such increase, when we examined the publications associating QoL with MS, we noticed that the FAMS questionnaire, specific for MS and validated for the Portuguese language (DEFU), was used only in three articles[5,18,29]. Although it represents an important advancement in the health field, QoL assessment is complex and characterized by many problems waiting to be solved. Among them, one that is worth mentioning deals with the multidimensionality of the construct, which makes it difficult to define what exactly is being evaluated and, therefore, to attribute a significance to the total QoL score[28].

The clinical and demographic data found in the investigated group were similar to those from the study conducted by Finkelsztejn[30] on groups of MS patients in southern Brazil when compared to other national groups. The findings were similar with respect to the prevalence of females and average age. The difference was in the average time from diagnosis (11.5± 6.7 years) in those groups, whereas in our group it was more recent (8.71±9.45 years).

The THR intervention has no significant effect on QoL, when comparing pre- and post-intervention conditions. The same occurred when Romberg15 assessed QoL using the MSQOL-54 instrument in a group after undergoing a physical exercise program, and also did not find a significant effect when comparing the intervention and control groups or analyzing the data for clinical significance. On the other hand, the effects of THR in MS patients, as reported by Hammer19, were pain reduction, muscle tension reduction, changes in the daily life activities, improved balance and improved QoL. Improved QoL, when analyzed as to the clinical significance differs from our findings. However, the author emphasized that the QoL values may be different for each MS patient, without there being a specific behavior responsible for the difference, as in our study.

Notably, Hammer's[19] study has methodological differences in relation to our research, such as the use of other instrument, SF-36, and the fact that FAMS is a specific instrument for MS. Those differences have not been used yet in research with THR. Moreover, in the study[19] there were no relapses or change in the medication used by the subjects, and the patients were not engaged in any other therapeutic activity during the study. In our study, however, THR was included in the everyday lives of the patients as a complementary activity. Additionally, subjects S3, S4, and S5 had relapses, and there were changes in medication for patients S4 and S5. Such incidents may be seen as a limitation in this study, even though they did not interfere with the intervention.

One factor that may have influenced our results was that the subjects in this study already had a higher average QoL when compared to the study by Quintanilha[29] and Vasconcelos[5]. Such high average can be found in all subscales, as well as in the assessment overall score, which can be explained by the participation of our subjects in a support group, which for Costa[11] is the moderator of a significant impact on QoL.

Furthermore, the possible benefits from a therapeutic program that does not alter the progression of the disease are difficult to be determined because of the difficulty of distinguishing between the effects of the intervention and the changes caused by the disease progression[13]. Also[13], even if a control group is assessed, the subjects may have individual progression patterns that may or may not coincide with those of the experimental group. These are the difficulties present in MS, which have great variability.

This study has limitations: the number of patients who were under regular use of different medications, as well as the change of such medication during the intervention; groups of patients with different levels of participation in other activities or treatments; and progression of the disease. Participation in a specific MS support group and high level of QoL may also have hampered the perceived improvement of the QoL indicators. However, this does not invalidate the results of the study, but rather reveals difficulties in identifying different kinds of responses on QoL in patients with MS.

Conclusion

In conclusion, THR, included in the routine therapeutic activities of subjects with MS, was not able to promote changes in their perceived QoL concerning mobility, symptoms, emotional well-being, general contentment, thinking and fatigue, and social and family well-being.

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