



Functioning of active postmenopausal women with osteoporosis

Funcionalidade de mulheres ativas com osteoporose pós-menopausa

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Abstract

Introduction: The multiple aspects of disability in patients with osteoporosis require comprehensive tool for their assessment. The International Classification of Functioning, Disability and Health (ICF) is designed to describe the experience of such patients with their functioning. **Objective:** This study aimed to describe the functioning in a sample of active postmenopausal women with osteoporosis according to the brief ICF core set for osteoporosis. **Methods:** This cross-sectional study was conducted among active community-dwelling older adults in a southern Brazilian city. Participants were enrolled by convenience sampling from a group conducting supervised aquatic and land-based exercises. Active postmenopausal women with osteoporosis were included. Thirty-two women (mean age 68.0 ± 5.1 years old) participated in the evaluation. The brief ICF core set for osteoporosis was used to establish functional profiles. The categories were considered valid when $\geq 20\%$ of participants showed some disability (according to ICF qualifiers). **Results:** No category showed a high level of disability, as $>50\%$ of women rated by qualifiers .3 or .4. Only the category e580 was considered by all participants as a facilitator. **Conclusion:** The brief ICF core set for osteoporosis results demonstrated that this classification system is representative to describe the functional profile of the sample. Active postmenopausal women with osteoporosis presented few impairments related to body functions and structures, activities and participation and environmental factors.

Keywords: International Classification of Functioning, Disability and Health.
Postmenopausal Osteoporosis. Health evaluation.

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Resumo

Introdução: Os vários aspectos da incapacidade em pacientes com osteoporose requerem uma ferramenta completa para sua avaliação. A Classificação Internacional de Funcionalidade, Incapacidade e Saúde (CIF) considera os múltiplos aspectos da funcionalidade das pessoas. **Objetivo:** Este estudo objetivou descrever a funcionalidade de uma amostra de mulheres ativas com osteoporose pós-menopausa de acordo com a versão abreviada do core set da CIF para osteoporose. **Métodos:** Foi realizado um estudo transversal com mulheres com diagnóstico clínico de osteoporose e que participavam regularmente de um grupo de atividade física em solo e hidroginástica. Trinta e duas mulheres (idade média 68,0±5,1 anos) participaram da avaliação. Foi utilizada a versão abreviada do core set da CIF para osteoporose para estabelecer o perfil funcional da amostra. As categorias do core set foram consideradas válidas se ao menos 20% da amostra apresentassem algum grau de incapacidade (de acordo com os qualificadores da CIF). **Resultados:** Nenhuma categoria mostrou um alto grau de deficiência (>50% da amostra com qualificadores .3 ou .4). Apenas a categoria e380 foi considerada por todas as participantes como um facilitador. **Conclusão:** O uso da versão abreviada do core set da CIF para osteoporose demonstrou que este sistema de classificação é representativo para descrever a funcionalidade de mulheres ativas com osteoporose pós-menopausa, as quais apresentavam algumas deficiências relacionadas às funções e estruturas do corpo, atividade e participação e fatores ambientais.

Palavras-chave: Classificação Internacional de Funcionalidade, Incapacidade e Saúde. Osteoporose Pós-Menopausa. Avaliação em Saúde.

Introduction

Osteoporosis is a disease characterized by low bone mass and microarchitectural deterioration in bone tissues, leading to enhanced bone fragility and a consequent increase in fracture risk, and the diagnosis is based on the bone mineral density (1). The health and economic burden resulting from osteoporosis and its consequences is not only based on mortality and the financial costs of fractures, but also on significant disability ensuing with extensive limitations in functioning (2).

Thus, concepts, classifications and measurements of functioning and health in patients with osteoporosis are of crucial importance in clinical practice and research. In this context, the International Classification of Functioning, Disability and Health (ICF), developed by the World Health Organization, is a reference framework and classification system for measuring human functioning. The ICF is a tool that provides a comprehensive description of the wide spectrum of human functioning (3).

The acceptance and application of ICF as universal framework and classification has been facilitated by its development and consensus process in the world, with growing evidence of its validity (4). In

order to enhance the feasibility of its use, the core sets project began to be developed. The core set project aims to extract a tailored selection of ICF categories from the entire classification to represent the standards of specific groups for multidisciplinary approach (5).

The ICF core set for osteoporosis provides an excellent guide for multidisciplinary detailed assessment in patients with osteoporosis. The brief version includes 12 second-level categories, which was 4 categories of component body functions, 2 categories of component body structures, 3 categories of component activities and participation and 3 categories of component environmental factors (2).

The purpose of this study was to describe functioning in a sample of active postmenopausal women with osteoporosis.

Methods

The current study was a cross-sectional among active older community-dwelling in a south Brazilian city (Guarapuava/PR/Brazil). The women with osteoporosis were enrolled by a convenience sample from two groups of supervised aquatic and land-based

exercises. The study was conducted during the period of June 2014 to September 2014.

Eligibility criteria were postmenopausal women with bone densitometry diagnosis of osteoporosis, age 60 to 80 years old, physically active. Patients with fracture or surgery, or other rheumatic or neurological disease were excluded.

The brief ICF core set for osteoporosis was used to establish the sample's functional profile (2). The evaluation was conducted by a physiotherapist, trained and experienced in ICF use.

To consider the representativeness of the ICF categories, we used the Jonsdottir et al. (6) recommendation, in which at least 20% of the sample had some disability in it. The result of the sum of older adults with qualifiers 1, 2, 3 and 4 should be equal to or greater than 20% of the sample for each category (7, 8).

The qualifiers 1, 2, 3 and 4, which represent progressive levels of disability, were grouped under the column "some disability". Qualifiers 0 and 9, which indicate "no problem" and "not applicable", respectively, were grouped under the column "no problem". The qualifier 8, "not specified" was used when the evaluation was not possible (3).

The body function, body structures and activities and participation categories were shown as frequencies and percentages of "no problem" versus "some disability". For environmental factors categories were shown as frequencies and percentages of "facilitator" and "neither a facilitator nor a barrier".

The study was approved by the Ethics Committee of the Universidade Estadual do Centro-Oeste (ruling number 101.689). It adhered to Brazilian laws and guidelines concerning research in humans. Subjects signed informed consent forms.

Results

A total of 93 older women were screened for this study. Sixty-one were excluded for not having a

clinical diagnosis of osteoporosis. The remaining 32 women were all evaluated. The characteristics of the participants are presented in Table 1.

Table 2 shows the frequency of body functions, categories of body structures and activities and participation categories, which can be observed that all of them were considered valid, because it showed more than 20% of the sample with some problem.

As for the environmental factors component, only the category e110 (products or substances for personal consumption) was not valid, because 37.5% (n = 12) of the sample did not need these facilitators, and 62.5% (n = 20) was not specified (Table 3).

In none of the categories it was observed higher levels of disability. Therefore, there were not more than 50% of women rated by 3 or 4 qualifiers.

Table 1 - Characteristics of study participants (n = 32)

Age, mean ± SD (min-max)	68.0 ± 5.1 (60-76)
Smoker, n (%)	1 (3.1)
Body mass index, n (%)	
Health weight (18.5-24.9 kg/m ²)	10 (31.3)
Overweight (25.0-29.9 kg/m ²)	18 (56.3)
Obese ≥30 kg/m ²	4 (12.4)
Daily pain medication use, n (%)	20 (62.5)
Previous fracture, n(%)	
Colles (wrist)	1 (3.1)
Hip	1 (3.1)
Education, n (%)	
Illiterate	15 (46.9)
Elementary	7 (21.9)
High school	6 (18.8)
College	4 (12.4)
Income, n (%)	
1-3 BRMW	28 (87.5)
4-6 BRMW	3 (9.4)
7-10 BRMW	-
>10 BRMW	1 (3.1)

Note: BRMW - Brazilian minimum wage.

Table 2 - Frequency of older women with body function, body structure and activities and participation disabilities (n = 32)

ICF Categories	ICF Qualifiers									
	Some disability					No problem			Not specified	
	.1	.2	.3	.4	%	.0	.9	%	.8	%
b152 Emotional functions	13	14	1	2	93.7	2	-	6.3	-	-
b280 Sensation of pain	4	15	4	7	93.7	2	-	6.3	-	-

(To be continued)

(Conclusion)

Table 2 - Frequency of older women with body function, body structure and activities and participation disabilities (n = 32)

ICF Categories	ICF Qualifiers									
	Some disability					No problem			Not specified	
	.1	.2	.3	.4	%	.0	.9	%	.8	%
b710 Mobility of joint functions	10	13	3	4	93.7	2	-	6.3	-	-
b730 Muscle power functions	13	12	3	2	93.7	2	-	6.3	-	-
s750 Structure of lower extremity	9	9	8	1	84.4	5	-	15.6	-	-
s760 Structure of trunk	1	12	7	3	71.9	5	-	15.6	4	12.5
d430 Lifting and carrying objects	10	6	4	4	75.0	8	-	25.0	-	-
d450 Walking	4	3	4	5	50.0	16	-	50.0	-	-
d920 Recreation and leisure	3	5	-	-	25.0	24	-	75.0	-	-

Table 3 - Frequency of older women with some facilitator for environmental factors (n = 32)

ICF Categories	ICF Qualifiers									
	Facilitator					Neither a facilitator nor a barrier			Not specified	
	.+1	.+2	.+3	.+4	%	.0	.9	%	.8	%
e110 Products or substances for personal consumption	-	-	-	-	-	12	-	37.5	20	62.5
e355 Health professionals	8	4	2	1	46.9	17	-	53.1	-	-
e580 Health services, systems and policies	15	12	-	5	100.0	-	-	-	-	-

Discussion

Currently, it has been demonstrated the importance of a physically active lifestyle for older people (9). Breaking-up sedentary time is associated with better physical function in older adults; and, it may have an important place in future guidelines on preserving older adults' physical function to support activities of daily living (10). The sedentary lifestyle accelerates the effects of aging in susceptible individuals inducing mechanisms which lead to risk factors of chronic diseases (11), as well as osteoporosis. For prevention, exercises appear to help reduce risk of osteoporosis by maximizing bone mass in the young adult, maintaining bone mass in the mature adult, and lessening bone loss in postmenopausal women (12 - 14).

Moderate or high intensity physical activity appears to exert site-specific beneficial effects on bone density. Individually tailored, intense, high impact exercise programs may be most effective to maximize the goals of public health to prevent osteoporosis and consecutive adverse outcomes. However, high cost, low practicability, and limited applicability in routine prevention and care may limit the appropriateness of this approach. Popular

and more easily applicable existing programs (e.g. aerobic classes, Tai Chi, and walking) seem less effective in the prevention of osteoporotic fractures in postmenopausal women (15). Our sample was enrolled from two groups of supervised aquatic and land-based exercises, and only 2 women (6.2%) report previous fracture, but active life-style cannot be related to the fractures prevention in the other women in the sample.

Despite of the ICF use be incipient, there is a growing interest in its using (16, 17), associating it with validated instruments (18 - 22) or in short forms (core sets) (23 - 25). Such use is in the process of consolidation the understanding of full human functioning, showing possible relationships and interactions between conditions and their determinants, which may result in disability (26). Moreover, the growth potential of the ICF is compatible with the demand of knowledge generated by the same in public and private sectors by involving the relationships between health, environment and functionality, especially in health indicators (17), fully factors related to aging. For physical therapy practice and research, the use of the ICF is promising and continues to evolve. Such use has been more prominent

in using the ICF as a conceptual framework rather than as a classification system (27).

The assessment of functioning is a key element in rehabilitation of people with osteoporosis. Functional tests are essential to evaluate risks of falling in an attempt to plan an effective rehabilitation program for fall prevention. These include the assessment of ambulation, postural control, and physical performance (28). The proposed ICF's use is not to replace others frameworks, but to provide a common standardized language for all health professions (29). Besides, the ICF can advance physiotherapy practice and research by enabling data sharing and reuse by electronic health records (30).

The comprehensive ICF core set for osteoporosis provide an excellent guide for multidisciplinary detailed assessment in patients with osteoporosis (2) and it will have a number of potential areas of application and great potential for further developments (29). As our evaluation was conducted only by physiotherapists, we decided to use the brief version. Our results showed that the physiotherapists are supposed to assess not only body functions and body structures, but also activities and participation and environmental factors and the need for assistive technology.

To consider the representativeness of the ICF categories, the frequency of 20% of individuals with some disability was chosen which was a similar percentage used in others studies (6 – 8, 25).

Regarding the sample of older women of this study, the brief core set for osteoporosis was able to assess the functioning including body functions and structures, activities and participation and environmental factors, because 91.7% of the categories were considered representative of the sample.

Only the category e110 (products or substances for personal consumption) was not valid. The e110 is described as "products or substances for personal consumption any natural or human-made object or substance gathered, processed or manufactured for ingestion, which includes food and drugs" (3). In this study, 37.5% (n = 12) of the sample related no using drugs (applied the qualifier 0) and the others 62.5% (n = 20) related using some drugs; however, a relationship between number and/or types of drugs with the qualifiers had not been established. That category was only considered if they used painkillers or not, so the qualifier 8 was applied because was not sufficient information to classify as a specific qualifier.

The category e580 (health services, systems and policies) was considered by all women as a facilitator. The sample emphasized the importance of access to public and private health services.

In the present study no category showed a high level of disability, differently it was seen on another study (25), which considered a high level of disability in wheelchair basketball athletes with spinal cord injury, with more than 50% of participants rated by qualifiers 3 or 4. This low level of disability in present study can be interpreted as supervised aquatic and land-based exercises increase the abilities, or these limitations do not affect the practice of regular physical activity. To establish this conclusion or propose another one further evaluation would be required.

Similar to another study (25), the ICF considers not only the dysfunctions and disabilities of the person, but also the impact of these factors on social activities, as well as the influence of the environment, either as a facilitator or barrier to functional independence.

The present results may contribute to the osteoporosis functioning profile and used to document interventions and used as a reference for follow-up.

This study was limited to a sample of active postmenopausal women with osteoporosis, belonging to a group of active older community-dwelling, and the postmenopausal period was not considered. In addition, a convenience sample does not include all women with osteoporosis, which does not allow generalization of the results. The frequency, intensity and duration of developed exercises were not identified; we suggest that these variables can be considered in future studies. On the other hand, the results show clearly that the ICF's use could be implemented in similar researches, and it can be used in physiotherapy practice and research as a framework or a classification system, and provides a common standardized language between physiotherapists and others health professionals.

Conclusion

The results demonstrated that this classification system is representative to describe the functional profile of the sample. Active postmenopausal women with osteoporosis presented few impairments related to body functions and structures, activities and participation and environmental factors, however, these do not support a sedentary lifestyle because these limitations do not affect the practice of regular physical activity.

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