Osteoarticular and musculoskeletal disorders, chronic pain, quality of life and physical activity level distributed by age and gender in elderly people participating in a water aerobics program

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Abstract

The study aims to describe osteoarticular and musculoskeletal disorders, chronic pain, quality of life (QOL) and physical activity level (PAL) distributed by age group and gender in the elderly. The design was quantitative, descriptive and cross-sectional. The non-probabilistic sample, for convenience, comprised 101 elderly people, over 60 years old, who regularly participate in water aerobics activities in the municipality of Dois Irmãos, RS. The instruments used were: Multidimensional Pain Assessment Scale, Survey of Pain Attitudes, IPAQ and EUROHIS-QOL. Descriptive frequency analyzes were performed, which showed the predominance of women in water aerobics activities, most frequently in the age group of 70 years. Similarly, the presence of osteoarticular and musculoskeletal disorders and chronic pain intensity (moderate and severe) were more expressive in females and in the age group of 70 years. The distribution of QOL and pain intensity in relation to age, gender and PAL shows in the age group of 60 years, the male, irregularly active with higher average, with higher occurrence of pain (moderate) in the active elderly. Active females, on the other hand, show better QOL scores and higher pain intensity in irregularly active aspect. In conclusion, the actions promoted by the municipality have a positive impact on QOL. However, there is a need for greater involvement of participants to achieve more adequate levels of regular physical activity, taking into account the significant presence of pain complaints in females and in the age group of 70 years.

Keywords: elderly People; osteoarticular and musculoskeletal disorders; chronic pain.

1. Introduction

One of the greatest cultural achievements of a people, in its humanization process, is the aging of its population, reflecting an improvement in living conditions. It is a worldwide phenomenon that occurs at an accelerated rate, especially in developing countries, such as Brazil. Although the increase in life expectancy is an achievement of society, the elderly have a high prevalence of diseases that can compromise their quality of life (Pimentela et al., 2015).

Aging is a universal process that characterizes a stage of life permeated by social, psychological, environmental and biological changes, which make up the normal and integral development of the human beings.

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The aging of the Brazilian elderly population, on the other hand, is a recent phenomenon and is strongly linked to the improvement of quality of life, the tendency to decrease population growth, better control of health problems and the intense urbanization of this age group (IBGE, 2016).

The aging process is accompanied by changes that affect the components of musculoskeletal and osteoarticular function, causing declines that directly influence the ability to perform routine activities, with reflexes on health and physical functionality, associated with the independence and autonomy of the elderly person (Dias, 2009).

The musculoskeletal diseases and the resulting disabilities have always been considered a natural consequence of biological aging or the natural history of the process and little valued in terms of diagnosis, therapy and rehabilitation. The pains and disabilities related to these diseases were natural, irreversible and received symptomatic treatment. The human musculoskeletal system was made to perform movements and all structures work best when exercised properly. Lack of movement is highly detrimental to the physiology and normal biomechanics of the locomotor system. The individuals who manage to preserve their muscular function are likely to have less risk of disabilities and dependencies. Exercises contribute to pain improvement, delay the evolution of the pathological process, prevent disability and improve quality of life (Greve, 2013).

The increasing longevity of the human being leads to an ambiguous situation, experienced by many people through the desire to live more and more, and, at the same time, the fear of living in the midst of disabilities and dependence. However, if individuals age with autonomy and independence, in good physical health, playing social roles, remaining active and enjoying a sense of personal meaning, the quality of their life can be very good. The challenge that is proposed to individuals and societies is to achieve an increasing prolongation of life, with an ever better quality of life, so that the years lived in old age are full of meaning and dignity (Paschoal, 2018).

In view of the complexity that involves the functional capacity of the elderly, the practice of water aerobics represents a continuous body activity, which contributes to the maintenance of the elderlies' autonomy and health. It consists of specific exercises, based on the use of the natural resistance of water as an overload. It is a physical activity characterized by performing exercises that involve several muscle groups. Thus, the physiological responses of physical exercises performed in aquatic environments are dependent on the manipulation of the physical properties of water (Kruel, Pinto, & Alberton, 2013).

Based on these premises, the objectives of the present study were established, aiming to describe osteoarticular and musculoskeletal disorders, the presence of chronic pain, quality of life and the level of physical activity distributed by age group and gender in elderly people participating in a program of water aerobics in the city of Dois Irmãos, Brazil.

2. Method

The present study has a quantitative, descriptive and cross-sectional design. The population of this study was composed of elderly people who participate in the water aerobics project offered by the Municipal

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Administration of Dois Irmãos, Rio Grande do Sul, Brazil, through the Health, Social Assistance and Environment Secretariat. The participation of the elderly in this project is free and occurs weekly, once a week, in a pre-established period of 8 months per year, from April to November. The activities are developed in two gyms in the city, distributed in different groups and schedules. On average, 370 people apply each year to participate in the project. The selection criteria prioritize older people. The others remain in a waiting list and are called to participate in the project if any of the selected participants can no longer take the water aerobics classes. The project provides 230 vacancies for elderly people, residents of the city, aged over 60 years.

The sample in this study was non-probabilistic for convenience and comprises 101 participants, of both sexes, over the age of 60 years, consisting of elderly people who regularly participate in the water aerobics activities of the Department of Health, Social Assistance and Environment of the city of Dois Irmãos. The inclusion criteria were to be over 60 years of age, not to be institutionalized or hospitalized, to have mental and health conditions to have independence and autonomy to participate in the study and to sign an informed consent form. The exclusion criteria determined by the research were to present dementia, frailty syndrome, to be hospitalized or institutionalized.

The data collection instruments used in this study refer to sociodemographic variables and the presence of osteoarticular and musculoskeletal disorders, quality of life (EUROHIS-QOL), body weight status and physical activity level (IPAQ - adapted long version).

The Feevale University Ethics Committee approved the project. The participants in this study were contacted in the water aerobics groups, in the city of Dois Irmãos. Initially, the schedules for data collection were made directly by the gyms where the elderly carry out the activities. Data collections were carried out inside the academy in appropriate places that guaranteed the comfort and privacy of the participants. Participants signed an informed consent form in accordance with resolutions 466/2012 and 510/2016 of the National Health Council of the Ministry of Health that deals with research involving human beings.

All data collections were performed in the place where the water aerobics activities take place. First, the informed consent form was presented. Subsequently, socio-demographic data were filled in and the other instruments were applied. For the descriptive statistical study was used the Statistical Package for the Social Sciences - SPSS IBM v. 28.0.

3. Results

The city of Dois Irmãos is located on the first steps of the southern slope of Rio Grande do Sul, Brazil, at an average altitude of 175 meters, a location that gave it the name of Gate to the Country (Portal da Serra). The city is part of Rio Feitoria Valley, a tributary of the Caí river. Its history is linked to the German colonization of the state, part of the old Colony of São Leopoldo, installed in 1824. Dois Irmãos received the first settlers in 1825, among them Pedro Baum and his family, farmer and shoemaker, from Honsruck (IBGE, 2019).

The city still preserves the original agricultural characteristic of the region, with the dominance of small properties focused on polyculture. As the 4th producer in the state and 5th in exports in Brazil, Dois

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Irmãos has the footwear industry as an important source of economic wealth, collaborating with the development of the state of Rio Grande do Sul. The city preserves its cultural identity in historic buildings, churches, parties, squares, camping and waterfalls (IBGE, 2019).

Based on this panorama, 101 elderly people make up the research scenario, 79 women and 22 men, represented by 78.2% and 21.8% respectively. In the distribution by age group, 61 (60.4%) are in the 70 to 79 age group, 26 (25.7%) in the 60 to 69 age group, 13 (12.9%) aged between 80 and 89 years old and one person (1%) over 90 years old. In regard to the time of participation in the project, 14 % practiced water aerobics for less than a year, 39 % for more than 1 year to 6 years and 48 % have been performing this activity for more than 7 years.

The prevalence of osteoarticular and musculoskeletal disorders was evidenced in this research with the presence of osteopenia (19.8%), osteoarthritis (18.8%), rheumatoid arthritis (14.9%), osteoporosis (10.9%) and fibromyalgia (3.0%). The presence of chronic pain was represented by 71.3% of the study sample. Considering the intensity rating, 33.7% referred to moderate pain, 23.8% to severe pain, 10.9% to unbearable pain and 3.0% to mild pain.

Considering the complaint of chronic pain present in 71.3% of the sample, with regard to location, 41.6% reported pain in the lumbar spine, 35.6% in the knees, 24.8% in the shoulders, 15.8% in the hip, 10.9% in the cervical spine, wrists and hands, 9.9% in the ankles and feet, 5.9% in the dorsal spine and 4% in the elbows.

Table 1. Distribution of the elderly participants by age group in relation to the prevalence of osteoarticular and musculoskeletal disorders and the presence of chronic pain (n=101)

			Age group				
			60 to 69	70 to 79	80 to 89	+ 90	Total
Osteopenia	No	N	20	48	12	1	81
		%	24.7%	59.3%	14.8%	1.2%	100.0%
	Yes	N	6	13	1	0	20
		%	30.0%	65.0%	5.0%	0.0%	100.0%
Osteoporosis	No	N	22	58	10	0	90
		%	24.4%	64.4%	11.1%	0.0%	100.0%
	Yes	N	4	3	3	1	11
		%	36.4%	27.3%	27.3%	9.1%	100.0%
Osteoarthritis	No	N	21	50	10	1	82
		%	25.6%	61.0%	12.2%	1.2%	100.0%
	Yes	N	5	11	3	0	19
		%	26.3%	57.9%	15.8%	0.0%	100.0%
Fibromyalgia	No	N	23	61	13	1	98
		%	23.5%	62.2%	13.3%	1.0%	100.0%

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	Yes	N	3	0	0	0	3
		%	100.0%	0.0%	0.0%	0.0%	100.0%
Rheumatoid arthri-tis	No	N	23	52	10	1	86
		%	26.7%	60.5%	11.6%	1.2%	100.0%
	Yes	N	3	9	3	0	15
		%	20.0%	60.0%	20.0%	0.0%	100.0%
Chronic pain	Absence	N	8	17	4	0	29
		%	27.6%	58.6%	13.8%	0.0%	100.0%
	Presence	N	18	44	9	1	72
		%	25.0%	61.1%	12.5%	1.4%	100.0%
Total		N	26	61	13	1	101
		%	25.7%	60.4%	12.9%	1.0%	100.0%

In regard to the distribution of elderly people by age group in relation to the prevalence of osteoarticular and musculoskeletal disorders and the presence of chronic pain (table 1), in the age group from 70 to 79 years old 13 (65.0%) elderly people were found to have osteopenia, 11 (57.9%) had osteoarthritis and 9 (60.0%) had rheumatoid arthritis. This numbers show the prevalence of these disorders in this age group. Likewise, the study reveals 61.1% of participants with chronic pain, represented by 44 elderly people, also within this age group, represented by 60.4% of the study sample, followed by 25.0% in the age group from 60 to 69 years of age.

Table 2: Distribution of the elderly participants by age group in relation to the intensity and location of chronic pain (n=101)

			Age group				
			60 to 69	70 to 79	80 to 89	+ 90	Total
Pain Intensity	Absence of pain	N	8	17	4	0	29
		%	27.6	58.6	13.8	0.0	100.0
	Mild	N	1	2	0	0	3
		%	33.3	66.7	0.0	0.0	100.0
	Moderate	N	8	21	5	0	34
		%	23.5	61.8	14.7	0.0	100.0
	Intense	N	6	15	2	1	24
		%	25.0	62.5	8.3	4.2	100.0
	Unbearable	N	3	6	2	0	11
		%	27.3	54.5	18.2	0.0	100.0
	Total	N	26	61	13	1	101
		%	25.7	60.4	12.9	1.0	100.0

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Cervical spine	Absence	N	22	55	12	1	90
		%	24.4	61.1	13.3	1.1	100.0
	Presence	N	4	6	1	0	11
		%	36.4	54.5	9.1	0.0	100.0
Dorsal column	Absence	N	23	58	13	1	95
		%	24.2	61.1	13.7	1.1	100.0
	Presence	N	3	3	0	0	6
		%	50.0	50.0	0.0	0.0	100.0
Lumbar spine	Absence	N	13	37	9	0	59
		%	22.0	*62.7*	15.3	0.0	100.0
	Presence	N	13	24	4	1	42
		%	31.0	57.1	9.5	2.4	100.0
Shoulders	Absence	N	18	46	11	1	76
		%	23.7	60.5	14.5	1.3	100.0
	Presence	N	8	15	2	0	25
		%	32.0	60.0	8.0	0.0	100.0
Elbows	Absence	N	24	59	13	1	97
		%	24.7	60.8	13.4	1.0	100.0
	Presence	N	2	2	0	0	4
		%	50.0	50.0	0.0	0.0	100.0
Fists and hands	Absence	N	23	53	13	1	90
		%	25.6	58.9	14.4	1.1	100.0
	Presence	N	3	8	0	0	11
		%	27.3	72.7	0.0	0.0	100.0
Hip	Absence	N	22	51	11	1	85
		%	25.9	60.0	12.9	1.2	100.0
	Presence	N	4	10	2	0	16
		%	25.0	62.5	12.5	0.0	100.0
Knees	Absence	N	16	41	7	1	65
		%	24.6	63.1	10.8	1.5	100.0
	Presence	N	10	20	6	0	36
		%	27.8	55.6	6.7	0.0	100.0
Ankles and feet	Absence	N	21	57	12	1	91
		%	23.1	62.6	13.2	1.1	100.0
	Presence	N	5	4	1	0	10
		%	50.0	40.0	10.0	0.0	100.0
Total		N	26	61	13	1	101
		%	25.7	60.4	12.9	1.0	100.0

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The distribution of elderly people in relation to the intensity of the chronic pain and its location, in the division by age group (table 2), moderate and intense levels predominates in the age group of 70 to 79 years. Regarding the location of pain, the same group was found to have a higher occurrence of pain complaints in the lumbar spine body segments, represented by 24 (57.1%) elderly people, followed by knee pain, reported by 20 (55.6%) participants, on the shoulders, wrists and hands and cervical spine, 15 (60.0%), 8 (72.7%) and 6 (54.5%) of the subjects reported complaints of these body segments successively. In the age group from 60 to 69 years old, represented by 26 (25.7%) elderly people, there was also a predominance in the lumbar spine, knees and shoulders, respectively in 13 (31.0%), 10 (27.85) and 8 (32.0%) participants.

Table 3: Distribution of the elderly participants by gender in relation to osteoarticular and musculoskeletal disorders and the presence of chronic pain (n=101)

			Gender		
			Male	Feminine	Total
Osteopenia	No	N	22	59	81
		%	27.2	72.8	100.0
	Yes	N	0	20	20
		%	0.0	100.0	100.0
Osteoporosis	No	N	21	69	90
		%	23.3	76.7	100.0
	Yes	N	1	10	11
		%	9.1	90.9	100.0
Osteoarthritis	No	N	21	61	82
		%	25.6	74.4	100.0
	Yes	N	1	18	19
		%	5.3	94.7	100.0
Fibromyalgia	No	N	22	76	98
		%	22.4	77.6	100.0
	Yes	N	0	3	3
		%	0.0	100.0	100.0
Rheumatoid arthritis	No	N	21	65	86
		%	24.4	75.6	100.0
	Yes	N	1	14	15
		%	6.7	93.3	100.0
Chronic pain	Absence	N	6	23	29
		%	20.7	79.3	100.0
	Presence	N	16	56	72

		22.2	77.8	100.0
Total	N	22	79	101
	%	21.8	78.2	100.0

Table 4 represents the distribution of elderly people in relation to osteoarticular and musculoskeletal disorders and the presence of chronic pain with the gender variable. In this context, the presence of osteoarticular and musculoskeletal disorders stood out in women, portrayed by 100.0% of elderly women with osteopenia, followed by 94.7% with osteoarthritis, 93.3% with rheumatoid arthritis and 90.9% with osteoporosis. Considering the presence of chronic pain in 72 elderly people, the proportion of elderly women with chronic pain represents 77.8% of this group, showing also expressiveness in the female population.

Table 4: Distribution of the elderly participants by gender in relation to the intensity and location of chronic pain (n=72)

			Gender		Total
			Male	Feminine	
Pain Intensity	Absence of Pain	N	6	23	29
		%	20.7	79.3	100.0
	Mild Pain	N	1	2	3
		%	33.3	66.7	100.0
	Moderate Pain	N	10	24	34
		%	29.4	70.6	100.0
	Severe Pain	N	4	20	24
		%	16.7	83.3	100.0
	Unbearable pain	N	1	10	11
		%	9.1	90.9	100.0
	Total	N	16	79	101
		%	21.8	78.2	100.0
Cervical spine	Absence	N	22	68	90
		%	24.4	75.6	100.0
	Presence	N	0	11	11
		%	0.0	100.0	100.0
Dorsal column	Absence	N	19	76	95
		%	20.0	80.0	100.0
	Presence	N	3	3	6
		%	50.0	50.0	100.0
Lumbar spine	Absence	N	13	46	59
		%	22.0	78.0	100.0

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	Presence	N	9	33	42
		%	21.4	78.6	100.0
Shoulders	Absence	N	16	60	76
		%	21.1	78.9	100.0
	Presence	N	6	19	25
		%	24.0	76.0	100.0
Elbows	Absence	N	21	76	97
		%	21.6	78.4	100.0
	Presence	N	1	3	4
		%	25.0	75.0	100.0
Fists and hands	Absence	N	18	72	90
		%	20.0	80.0	100.0
	Presence	N	4	7	11
		%	36.4	63.6	100.0
Hip	Absence	N	19	66	85
		%	22.4	77.6	100.0
	Presence	N	3	13	16
		%	18.8	81.3	100.0
Knees	Absence	N	18	47	65
		%	27.7	72.3	100.0
	Presence	N	4	32	36
		%	11.1	88.9	100.0
Ankles and feet	Absence	N	19	72	91
		%	20.9	79.1	100.0
	Presence	N	3	7	10
		%	30.0	70.0	100.0
	Total	N	22	79	101
		%	21.8	78.2	100.0

In regard to the intensity and location of pain, represented by 71.3% of the study sample, in the distribution by gender, there was a predominance of pain complaints in women, with a predominance of moderate (66.7%) and intense (70, 6%) levels, with the lumbar spine body segments present in 33 elderly women (78.6%), followed by 32 (88.9%) elderly women with complaints of knee pain, 19 (76.0%) with shoulder pain, 13 (81.3%) with pain in the hip and 11 (100.0%) in the cervical spine. Among men, there was a higher incidence of pain complaints in the lumbar spine and shoulders, represented respectively by 9 (21.4%) and 6 (24.0%) elderly people.

Table 5: Distribution of the elderly participants by age group, gender and physical activity level in relation to

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				quality of life and chronic pain intensity (n=101)				
Age group	Gender	IPAQ		N	Min	Max	Average	Standard deviation
60 to 69	Male	Irreg Active	EUROHIS	1	34.00	34.00	34.00	.
			Intensity	1	4	4	4.00	.
			N	1				
		Active	EUROHIS	4	29.00	35.00	31.50	3.00
			Intensity	4	0	9	5.00	3.74
			N	4				
	Female	Irreg Active	EUROHIS	6	29.00	33.00	30.33	1.75
			Intensity	6	0	10	5.83	3.48
			N	6				
		Active	EUROHIS	15	23.00	39.00	32.40	3.96
			Intensity	15	0	10	4.20	4.03
			N	15				
70 to 79	Male	Irreg Active	EUROHIS	3	26.00	35.00	29.66	4.72
			Intensity	3	0	8	4.67	4.16
			N	3				
		Active	EUROHIS	12	26.00	38.00	32.33	3.96
			Intensity	12	0	10	4.58	3.26
			N	12				
	Female	Irreg Active	EUROHIS	19	26.00	38.00	31.63	3.21
			Intensity	19	0	10	5.68	3.80
			N	19				
		Active	EUROHIS	27	29.00	38.00	32.55	2.13
			Intensity	27	0	10	4.59	3.41
			N	27				
80 to 89	Male	Active	EUROHIS	2	29.00	36.00	32.50	4.94
			Intensity	2	0	5	2.50	3.53
			N	2				
	Female	Irreg Active	EUROHIS	4	29.00	34.00	31.25	2.06
			Intensity	4	0	8	4.50	3.41
			N	4				
		Active	EUROHIS	7	24.00	34.00	31.14	3.38
			Intensity	7	0	10	5.57	4.23
			N	7				
+ 90	Female	Irreg Active	EUROHIS	1	31.00	31.00	31.00	.

Intensity	1	8	8	8.00		.
N	1					

The distribution of quality of life and pain intensity in relation to the age group, gender and physical activity level (table 5) shows, in the age group of 60 to 69 years of age, irregularly active men with a higher average, corresponding to 34 points. This shows, however, the occurrence of greater pain intensity (moderate pain) in the active elderly. The active women shows better scores on quality of life and greater pain intensity in the irregularly active aspect. Regarding the age group of 70 to 79 years, both the active male and female participants have better scores on quality of life and greater pain intensity on the level of irregularly active physical activity. The age group of 80 to 89 years old has male representativeness, with an active level of physical activity, quality of life with 32.5 points and mild pain intensity. In this age group, considering the female participants, both irregularly active and active presented a similar quality of life score, and reveal greater pain intensity in the level of active physical activity. The elderly woman, over 90 years old, is irregularly active and reports intense pain.

4. Discussion

In the scope of this research, women are expressively in greater number. This occurrence has been shown to be frequent in studies in the field of aging, characterized by different factors. Among them are greater longevity, greater care and awareness regarding their health, as well as the growth in the number of elderly women who are part of the economically active population (Mazo, Lopes, & Benedetti, 2009). This occurrence was also equivalent in the study by Kostadinovic et al. (2019), carried out in 2013, with 3540 individuals over 65 years of age, from the Republic of Serbia, in which 56.8% of the study sample was composed of women.

The distribution of elderly people in relation to the intensity of chronic pain in the division by age group demonstrated that moderate and severe intensity predominates in the age group of 70 to 79 years old and in the distribution by gender showed a predominance of complaints of pain in females. Similarly, in the study by Kostadinovic et al. (2019), the presence of pain perception was present, in varying degrees, in 66.4% of the elderly (19.4% mild pain, 24.5% moderate pain and 22.5% severe pain).

Regarding the presence of chronic pain, this study revealed a prevalence of 71.3%, with its representation being significantly higher in females, with 77.8%. In the study by Lima et al. (2018) 268 elderly people who reported chronic pain were analyzed, with a 67.5% female response. When pain was compared to the gender variable, women felt more pain, which was classified as severe pain (M = 7.08). The age group of 60 to 65 years was the most prevalent (38.0%) and the one that also referred to severe pain intensity (M$\geq$ 7.1) along with the age group of 81 to 85 years.

Very similar results were found in the study by Santos et al. (2015), in which women had an 82% higher prevalence of chronic pain compared to men. Therefore, an association between the female gender and a higher prevalence of chronic pain is evident, as in the study by Silva et al. (2018), consisting of 385 elderly people, of which 259 were women. In relation to chronic pain, 224 elderly people reported the presence of

pain, of which 74.5% were female. When the pain intensity was verified, the highest frequency was concentrated on moderate pain (grading from four to seven); followed by severe pain (grading from eight to 10) and mild pain (grading from one to three). The most prevalent pain in elderly women was severe, recorded in 82.4% of the group.

In accordance with what is demonstrated in other researches, the outcomes in this study can still be explained by the fact that there are a significantly larger number of women who integrate water aerobics activities. Likewise, the prevalence of elderly women practicing water aerobics can be associated with characteristics related to the physical properties of the aquatic environment, which produces physiological and biomechanical responses different from those of the terrestrial environment. The buoyancy of the water reduces the pressure on the joints and in combination with the pleasant temperature of this medium, it releases the movements, providing greater amplitude, allowing smooth and pain-free movements. The risk of joint pain is reduced and existing pain can be relieved when the muscles and joints are free of tension. Water-based exercises help keep joints in motion, restore and preserve flexibility and strength, protect against further damage, help improve coordination, endurance and mobility, lead to a sense of well-being and stimulate ability to perform more tasks (Kruel, Pinto, & Alberton, 2013; Baun, 2010).

According to a survey by the Brazilian Institute of Geography and Statistics (IBGE - 2016), with regard to the increase in life expectancy, the number of people aged 60 or over in the period ranging from 2005 to 2015 increased, in all age groups, which rose from 9.8% to 14.3% of the Brazilian population. Considering this phenomenon, in this study, it was possible to verify, in the distribution by age group, a higher prevalence of elderly people in the age group of 70 to 79 years, with 60.4%. This occurrence may be associated with the time of participation in the water aerobics project, since 48% of the elderly people have been carrying out the activity for more than 7 years. Another aspect that seems to be relevant refers to the dynamics involving the criteria for participation in the project, since the subscribers are classified from the highest to the lowest age group. Therefore, the program seeks to reach the elderly population with more advanced ages.

Dellaroza et al. (2008), in a study carried out in the city of Londrina, in the state of Paraná, estimated the prevalence of chronic pain among the elderly (60 to 69 years old) to be 58%, and in individuals aged 80 years or older this diagnosis reached 100%. As a public health problem, pain generates direct and indirect costs, directing and limiting the decisions and behaviors of those who live with it.

The prevalence of osteoarticular and musculoskeletal disorders was evidenced in this research with the presence of osteopenia, osteoarthritis, rheumatoid arthritis, osteoporosis and fibromyalgia. Osteopenia, osteoarthritis and rheumatoid arthritis stood out in the age group of 70 to 79 years. In women, osteopenia, followed by osteoarthritis, rheumatoid arthritis and osteoporosis, showed a relative predominance.

In the studies by Bettiol et al. (2017), Melo et al. (2017), Lini et al. (2016), Santos et al. (2015) and Dellaroza et al. (2014), the diseases most frequently associated with chronic pain were spinal disorders, rheumatoid arthritis, osteoporosis, arthrosis and tendinopathies. Given these evidences, the findings corroborate the most prevalent osteoarticular and musculoskeletal diseases in the elderly, highlighted by Cunha and Mayrink (2011) with the presence of spinal disorders, rheumatoid arthritis, osteoporosis, arthrosis and tendinopathies, as well as Dias (2009), making reference to osteoporosis, rheumatoid arthritis and osteoarthritis.

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The data from this study still reveal compliance with the study by Ascef et al. (2017), since among the most prevalent conditions, arthritis and rheumatism were present in 19.6%. More intensely, in the study by Kostadinovic et al. (2019), diseases of the musculoskeletal system were reported in 46.1%. In the study by Ulbricht et al. (2018), women made up 68.3% of the sample, being older than men and a greater proportions of women had a potentially painful musculoskeletal condition, such as arthritis (37.7%), osteoporosis (19.1%) or fracture (22.3%).

The presence of chronic pain was represented by 71.3% of the sample in this study, with a higher incidence in the age group of 70 to 79 years (61.1%) and in women, with 77.8%. In the study by Ferretti et al. (2019) the presence of chronic pain in the sample studied was 58.2%, with a higher incidence in the age group of 60 to 69 years. However, with an equal predominance of females, represented by 67.3%.

Studies indicate that the prevalence of chronic pain in the general population has been higher in women than men. This fact is confirmed in the study by Santos et al. (2015) and Lini et al. (2016), in which women had a prevalence of 82% and 64.8%, respectively. Data that can also be verified in the study by Celich and Galon (2009), since pain complaints were present in 56.25% of the elderly, with a predominance of females. As for the location of pain, the most prevalent was the lumbar spine (44.4%), followed by the leg region (40.7%), knee joint (25.9%) and cervical spine, upper limbs (14, 8%).

Results of this study and similar findings from the study by Kreling, Cruz and Pimenta (2006), demonstrate that women's complaints about perceiving the pain event more frequently and severely have been identified for many years, a fact that may be associated with multiple responsibilities and roles that they exercise throughout their lives.

Regarding the characterization and location of pain, in the study by Almeida et al. (2019), local (71.4%), anterior (60.7%), and continuous (60.7%) pain predominates, being more frequent in the right knee or bilateral (35.7%). In regard to the intensity of pain, 39.3% of the participants had significant pain, a level 4 on a scale from zero to 6. In the study by Silva Sobrinho et al. (2019) most participants reported feeling pain (89.22%). Lower limb pain was reported by 21.43% of women, with the knee being the most mentioned structure. Upper limb pain was reported by 67.87% of participants and the shoulder was the most referred region.

Regarding the location, the results of the study by Lini et al. (2016) similarly, indicated a higher prevalence of chronic pain in the lower limbs, followed by the lower back and upper limbs. The occurrence of pain in these regions seems likely, considering that it is a common symptom in chronic diseases related to the locomotor system, a condition referred to in the elderly population. In reference to the pain intensity, 8.79% reported it as severe, 9.91% as very strong, 21.97% as moderate pain, 26.37% reported mild pain and 32.96% reported almost no intensity.

In the study by Ascef et al. (2017), the factors significantly associated with worse quality of life were: female gender and the presence of arthritis, osteoarthritis or rheumatism. Likewise, the factors associated with a poorer quality of life, in this study, were present in females and in irregularly active participants. Regarding the intensity of pain reported by the elderly people in this study, there was a variation of 2.5 to 8.0 points, with a prevalence between 4 and 5 points, characterized by moderate pain, distributed in the condition of irregularly

active and active.

In the study by Santos et al. (2015), in regard to the level of leisure-time physical activity, 68.5% of the participants were classified as insufficiently active during this period. These findings are similar to those found in this study, in which 33.6 % of the elderly participants in the activities are in the condition of being irregularly active. Such occurrence may be associated with the opportunity to participate in the water aerobics project, free of charge, with a once-a-week frequency, for 45 minutes. The commitment of the elderly is necessary to perform the activity more frequently and/or to combine other types of exercises in order to achieve the levels recommended by the American Heart Association (AHA) and the American College of Sports Medicine (ACSM) to maintain physical fitness and reduce the risk of chronic diseases. The guidelines are based on the individuals understanding the benefits of physical activity when 150 to 300 minutes a week of moderate physical activity are performed or 75 to 150 minutes a week of vigorous physical activity, or some combination of these two strategies (Mendes et al., 2011).

Therefore, the participation in water aerobics activities seems to reach good levels of quality of life. This is a phenomenon of wide complexity and multidimensional construct, which concerns the resources that a person, a group and a population have to satisfy their needs and expectations, involving participation in activities that allow the development of their potential and self-realization. They are essential elements for adaptation and development, which define the desirability of a good or worthy life, in order to achieve levels of subjective well-being, health and autonomy in the different stages of life (Neri, Borin, Lemos, & Ribeiro, 2019). In this context, it is important to refer to empirical studies, which show strong associations between perceived quality of life and coping strategies about a set of competencies that are expressed in the way of dealing with stressors, in the problem-solving ability and by maintaining social activities (Paschoal, 2018).

5. Conclusion

In view of the initial purpose of this study, the outcomes reveal the predominance of women participating in water aerobics activities, with a higher prevalence in the age group of 70 to 79 years of age. Likewise, the presence of osteoarticular and musculoskeletal disorders and the presence and intensity of chronic pain (moderate and severe) were more expressive in females and in this age group.

The distribution of quality of life and pain intensity in relation to age group, gender and level of physical activity has a higher average in the age group of 60 to 69 years, male, irregularly active, with the occurrence of greater pain intensity (moderate pain) in the active elderly. The active women show better scores on quality of life and greater pain intensity in the irregularly active aspect. Regarding the age group of 70 to 79 years, both active male and female perform better in quality of life and present greater pain intensity in the level of irregularly active physical activity. The age group of 80 to 89 years has male representation, with active physical activity level, quality of life with 32.5 points and mild pain intensity. In this age group, irregularly active and active female participants scored similarly in terms of quality of life and a greater intensity of pain is revealed in the level of active physical activity.

Therefore, in conclusion, the actions promoted by the municipality of Dois Irmãos have a positive impact on quality of life, however, there is a need for greater involvement of the elderly in order to achieve

more adequate levels of regular physical activity, taking into account of the significant presence of pain complaints in females and in the age group of 70 to 79 years. Thus, it is important to maintain and expand water aerobics activities, with attention to the female participants and over 70 years of age.

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