



Prevalence of musculoskeletal pain and impact on physical function and health care services in Belterra/PA

Prevalência de dor musculoesquelética, impacto na funcionalidade e implicações no serviço de saúde de Belterra/PA

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Abstract

Introduction: Musculoskeletal pain worth being investigated for being a multidimensional prevalent phenomenon, difficult to be understood which may have as main factors: tissue injury as well as emotional, social and environmental aspects. It is essential to know the specificity of the pain to define strategies for disease prevention and health promotion of the population. **Objective:** To estimate the prevalence of musculoskeletal pain, describing its features and functional implications in population from Belterra/Pará. **Method:** In a descriptive study, there were evaluated subjects who participated in activities of the project Bandeira Científica. Prevalence of pain was estimated with a confidence interval of 95%. Descriptive measures were used to characterize pain and consequences for functionality. **Results:** 453 subjects were interviewed, the mean age was 44.3 years old (SD = 18.0) and 69.6% were women. Prevalence of chronic pain was 62.5% and of back pain was 55.0%. Almost daily pain was felt by 67.9% and by 69.6% the intensity was strong or unbearable during crisis. Individuals with unbearable intensity and daily frequency of symptoms reported

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difficulty to perform heavy activities (91.5%) and to remain in the same position (82.9%). **Conclusion:** The prevalence of pain was high, of chronic feature, with high intensity and high frequency, long duration, most frequently in the vertebral column. The pain had interference in the performance of heavy activities and maintaining the same posture in people with greater intensity and frequency of pain.

Keywords: Pain. Epidemiology. Health services.

Resumo

Introdução: A dor musculoesquelética merece ser investigada por ser um fenômeno prevalente, multidimensional e de difícil compreensão, podendo ter como fatores principais: lesões teciduais, aspectos emocionais, socioculturais e ambientais. Assim, conhecer a especificidade da dor é essencial para definir estratégias de prevenção da doença e de promoção de saúde da população. **Objetivos:** estimar a prevalência de dor musculoesquelética e descrever as características da dor, o impacto na funcionalidade na população de Belterra/Pará e suas implicações no serviço de saúde municipal. **Método:** Em estudo descritivo foram avaliados indivíduos que participaram das atividades desenvolvidas pelo projeto Bandeira Científica. A prevalência de dor foi estimada com intervalo de confiança de 95% e medidas descritivas foram usadas para caracterizar a dor e as consequências para funcionalidade. **Resultados:** Foram entrevistados 453 indivíduos, a idade média foi de $44,3 \pm 18,0$ anos, 69,6% eram mulheres. A prevalência de dor crônica foi de 62,5% e de dor na coluna 55,0%. A dor era sentida quase diariamente por 67,9% dos indivíduos e em 69,6% a intensidade era forte ou insuportável na crise. Indivíduos com intensidade insuportável e frequência diária do sintoma relataram maior dificuldade para atividades pesadas (91,5%) e para manter-se na mesma posição (82,9%). **Conclusão:** A prevalência de dor foi alta, de caráter crônico, com elevada intensidade e frequência, longa duração e maior frequência na coluna. A dor teve interferência na realização de atividades pesadas e manutenção da mesma postura em pessoas com maior intensidade e frequência de dor.

Palavras-chave: Dor. Epidemiologia. Serviços de saúde.

Introduction

Musculoskeletal pain is a prevalent multidimensional phenomenon which has difficulty understanding. Tissue injury as well as emotional, social and environmental aspects might be involved in this problem (1). Several diseases may result in chronic pain, defined as those occurring during a period greater than three months (2, 3, 4). Chronic pain may be caused by intense mechanical injury, short and repeated overloads, joint immobilization, as well as inflammatory, degenerative and neoplastic diseases, birth defects, muscular weakness, rheumatic predisposition and others (5, 6). The prevalence of chronic pain in the population is around 20% (7). It may be considered a public health problem due to frequent absences from work, temporary or permanent disability and high healthcare costs (8). However, it has been reported that the cost-efficacy of pain care is highly favorable when complementary resources and therapies are used, with intervention and follow-up by a pain care multidisciplinary team (9). Therefore, it is essential

to know the pain specificity to define strategies for disease prevention and health promotion.

The prevalence of musculoskeletal pain varies depending on the age and specificity of the population. In the SABE study, a cohort of elderly people in the city of São Paulo, chronic pain (especially musculoskeletal pain) was reported by 29.7% of the elderly (11). For nurses, the prevalence of musculoskeletal pain in the limbs was 65.6% (11) and for truck drivers the referred pain was 53.5% (12). Specifically, low back pain is the most common musculoskeletal disorder in industrialized societies, affecting 70% to 80% of adults at some point in life. It has predilection for young adults in economically active phase, being one of the most common reasons for total or partial disability retirement (13).

The pain may have important implications for people's lives, as it is related to factors such as depression, physical and functional disability, dependency, social withdrawal, changes in family dynamics and economic imbalance. It starts to direct and to limit the decisions and behaviors of the person, being that, many times, the inability to control it brings physical and mental

suffering (14). Sardá Junior et al. (7) point out that there is no direct and linear relationship between lesion location, pain intensity and disability levels or suffering. Thus, it is necessary to increase the understanding of this process beyond the pain pathophysiology to fully understand this disability.

Functional capacity is related to autonomy and independence of the individual in performance of daily activities. Functional incapacity is understood as the presence of difficulty or impossibility in the performance of certain gestures and certain daily activities (15).

In Brazil, the care of chronic pain is described in the Clinical Protocol and Therapeutic Guidelines for Chronic Pain (16), which considers diagnosis, treatment criteria and control of service flows established in the health care system under responsibility of states and municipalities. Musculoskeletal pain is a type of pain referred in that protocol, though it is still necessary to know its demand to structure the offer of actions and services in the Brazilian Health System.

Nowadays, one of the strategies for population assistance for musculoskeletal pain could occur through a line of care in healthcare network. Given the chronic nature of the pain, networks need to be established through the integration of health care in a continuous and coordinated manner for a given population, considering time, cost, quality and adequate location (17, 18). Being so, it is necessary to understand the epidemiology of musculoskeletal pain and its implications in people's everyday lives.

Therefore, the purpose of this study was to estimate the prevalence of musculoskeletal pain, to describe the characteristics of the pain and its impact on functionality in the population of Belterra/Pará, as well as the implications for the municipal health service.

Materials and Methods

This descriptive study was conducted in the context of actions of a university extension project from the Faculty of Medicine/University of São Paulo — Bandeira Científica — in the city of Belterra, state of Pará, North Brazil, in December 2011. The city was selected due to its size in number of inhabitants (16.318 according to the Instituto Brasileiro e Geografia e Estatística (IBGE, 2010) (9), its low Human Development Index of 0.647 (PNUD, 2000),

and the coverage by the Family Health greater than 70% of the population. Six municipal strategic locations were selected to conduct data collection, considering the number of inhabitants and facility of access for the residents: two points in the urban area, two in the highlands (rural area), and two on the banks of Tapajós River. Data collection was previous to any activity performed by the subjects within the Project.

Historically, a high prevalence of musculoskeletal complaints has been reported in the appointments made by the extension project Bandeira Científica, from the University of São Paulo. Therefore, the physiotherapy team conducted a screening on musculoskeletal pain in this expedition to Belterra/Pará, in 2011.

Two aspects were considered as eligibility criteria in this study: demand for participation in any activity of the project in joint action with the Secretariat of Health and individual's ability to answer, independently, the questionnaire. Data from the individuals who refused to participate in the study were not included in the analysis presented herein. Therefore, we investigated the reports of musculoskeletal pain and its consequences. All participants or their legal guardians, when minors, signed an informed consent.

Convenience sampling was used, i.e., study participants were those individuals who looked for the activities of the Project Bandeira Científica as they were interested in taking care of their own health.

Thus, 453 individuals were investigated, number enough to meet the proposed objectives, considering the lower prevalence of musculoskeletal symptoms in the population (36.5%) (19) with a margin of error of 0.04 in 95% of the possible samples.

This study was authorized by the Department of Municipal Health of Belterra/PA and approved by the Ethics Committee of the Faculty of Medicine, University of São Paulo (Process nº 461/11).

The authors recognize some limitations of this study. Considering its cross-sectional design, it is not possible to make causal inference between pain and functionality. To avoid errors, validated questionnaires, supplemented with important information to describe the pain such as duration and frequency, were used. However, a number of interviewers were involved in data collection, which could potentially lead to bias. To minimize this risk, the interviewers were thoroughly trained prior to fieldwork. Despite the convenience sampling being a limitation of the study, care was taken in selecting six strategic locations in the city. This allowed the sampling

distribution regarding socio-demographic variables being close to that of the total population, as seen mainly in the distribution of age and household income. However, we cannot discard the possibility of having overestimated the prevalence.

Dependent variable

The presence of musculoskeletal pain was investigated through an adapted Nordic Questionnaire, containing the report of the respondent on the site of pain (body, upper limbs and lower limbs) (14) and with questions about the pain characteristics: intensity - verified by using the visual analogue scale of pain in crisis and at the moment of the interview (20); the frequency - indicated by the number of days with pain in a month; and duration - how long they report having musculoskeletal pain. Complaints lasting for more than three months were considered as chronic pain (2 - 4).

Independent variables

Besides investigating the reason for seeking the assistance of the *Bandeira Científica*, the individuals were asked about age, gender, place of residence, income, education, receiving *Bolsa Família* (government financial assistance), visit of community health-care agent, physical activity and use of integrative and complementary practices. Questions related to labor activity as: current work, hours of work per day and sick leave due to referred pain were also made. Finally, it was used an adaptation of the Roland Morris Disability Questionnaire (8) to check the functional capacity, by using questions about daily activities such as: heavy, moderate and light activities; climbing stairs; kneel down; walk less and more than five minutes; take a shower; remain in the same position; sleep; carry out transfer and stay in the standing posture. The possible answers for these questions were: not difficult, little difficulty, much difficulty or lack of performance because of the pain.

Data analysis

Data were analyzed using Stata Program, version 11.0. The prevalence of musculoskeletal pain was

estimated with the respective confidence interval of 95% and descriptive measures of central tendency and dispersion were used for pain characteristics and consequence to the functionality.

Results

Table 1 describes the sociodemographic characteristics of people with and without pain who sought the “*Bandeira Científica*” program in the city of Belterra/PA and of the city's population informed by the Brazilian Institute for Geography and Statistics. 453 individuals aged 13-84 years old were interviewed, with mean age of 44.3 ± 18.0 years, being that 69.6% were women. Almost half the population had monthly family income of up to one minimum wage (44.5%) and most did not complete elementary school (56.5%).

The prevalence of musculoskeletal pain was 64.5% (95% CI: 60.0%-68.9%). Out of 292 (64.5%) people who complained of pain, 63.1% (95% CI: 57.4%-68.6%) reported having sought care in the “*Bandeira Científica*” program because of this problem.

Figure 1 shows the locations, the frequency, the duration and the intensity during the crisis and at the moment of musculoskeletal symptoms. When they were asked about the location of the pain, the spine (cervical, thoracic and lumbar) was the most cited (158 persons, 55.0%), followed by lower limbs (62 persons, 21.6%).

Regarding pain intensity at the time of the interview, the majority of respondents reported little (71 persons, 24.5%) or moderate pain (102 people, 35.7%). However, the pain reached strong or unbearable intensity in the crisis in 202 (69.6%) respondents. Many people, 226 (67.9%), reported pain almost every day (from 21 to 30 days per month).

Chronic pain, characterized by being present for at least three months, had a prevalence of 62.5% (283 persons), being that 208 (45.9%) reported the existence of the pain for more than six months.

Among people with pain, 142 (32.2%) reported that they have already been or are away from their labor occupations because of the pain, being that 68 (47.9%) remained away for at least a day. When they were asked about the cause of the onset of musculoskeletal complaints, 108 (38.4%) respondents mentioned the work carried out and 8.9% poor posture.

Table 1- Distribution of people with and without pain who sought the "Bandeira Científica" and of population of Belterra, according to sociodemographic characteristics and habits, Belterra, PA, 2011

Characteristics #		Pain	Without Pain	Total	Municipal population*
		n (%)**	n	n(%)	N(%)
Entrevistados		292 (64.5)	161 (35.5)		
Age	13-19	17 (39.5)	26	43 (10.2)	2452 (21.4)***
	20-29	21 (38.2)	34	55 (12.9)	2485 (21.7)
	30-39	52 (61.9)	32	84 (19.8)	2143 (18.8)
	40-49	52 (69.3)	23	75 (17.6)	1587 (13.9)
	50-59	62 (81.6)	14	76 (17.9)	1255 (11.0)
	60-69	32 (76.2)	10	42 (9.9)	804 (7.0)
	70-84	37 (74.0)	13	50 (11.7)	701 (6.2)
Gender	Male	88 (66.2)	45	133 (30.4)	8481 (52.0)
	Female	194 (63.6)	111	305 (69.6)	7837 (48.0)
Education Level	Incomplete Elementary School	178 (69.0)	80	258 (62.5)	8660 (79.2)
	Elementary School	36 (50.0)	36	72 (17.4)	1842 (16.8)
	High School	37 (60.7)	24	61 (14.8)	186 (1.7)
	College	14 (63.6)	8	22 (5.3)	241 (2.2)
Place of residence	Urban	111 (68.5)	51	162 (35.8)	6852 (42.0)
	Rural	181 (62.2)	110	291 (64.2)	9466 (58.0)
Physical Activity	Yes	90 (60.4)	59	149	-
	No	186 (65.9)	96	282	-
Profession	Farm worker	115 (70.6)	48	163	-
	Others	65 (57.0)	49	114	-
	Housewife	66 (58.4)	47	113	-
	Unemployd/ retired	42 (72.4)	16	58	-
Monthly family income (one minimum wage)	0 ≤ 1/2	65 (63.1)	38	103 (25.8)	1018 (25.7)
	1/2 – 1	62 (62.6)	37	99 (24.9)	731 (18.4)
	1 – 2	91 (66.9)	45	136 (34.2)	1154 (29.1)
	2 – 5	22 (59.5)	15	37 (9.3)	815 (20.6)
	> 5	15 (65.2)	8	23 (5.8)	244 (6.1)
"Bolsa Família" government financial assistance	Yes	120 (57.1)	90	210	-
	No	156 (70.6)	65	221	-
Community health worker	Yes	238 (63.8)	135	373	-
	No	38 (65.5)	20	58	-
Integrative and complementary practice	Yes	188 (69.9)	81	269	-
	No	88 (54.3)	74	162	-

Note: # number of respondents 453. The total number of people for each variable was not the same due to lack of answers

* IBGE/2013

** Proportion of pain in persons with each variable

*** Estimated data

With regard to the functional activities of individuals in pain, the majority did not present great difficulty in performing them, but 238 (84.1%) had decreased functionality to heavy activities, 173 (60.28%) to stay up and 199 (69.58%) to crouch (Figure 2A). Individuals with unbearable pain intensity and daily frequency of the symptom (56 persons) reported great difficulty to perform heavy activities (43; 91.5%) as walking (32; 66.7%), kneeling (32; 66.7%), stand up (38; 79.2%), carry out transfer (31; 63.4%), climb stairs (28; 63.6%), and remain at the same position (39; 82.9%) and less trouble in light activities (14; 29.2%) and bathing (17; 36.2%) (Figure 2B).

Discussion

As this study, several others have found high prevalence of musculoskeletal pain, even with variations in the definition of pain, methods, study populations and instruments used. Brattberg et al. (21) investigated the residents of Sweden by mail and 66%

reported pain. In a similar study, Elliott et al. (22) found pain among 61% of the users of the health system in Scotland. In the population of Southern Brazil, such prevalence reached 61.4% (23). However, considering chronic pain as the presence of the pain for a period longer than three months, Verhaak et al. (2) found in a literature review prevalences ranging from 7% to 40%, values lower than that found in our study of 62.5%.

The body location most affected in the individuals interviewed in our study was the vertebral column, as also observed in other studies (21, 22). This can be justified because it is a region vulnerable to repeated patterns of movements and to mechanical overhead related to labor activities, mainly those that require great physical demand (24).

By analyzing the intensity of pain, 60.2% of the individuals interviewed in this study had little or moderate pain in the day of the interview, but in times of crisis, 69.6% reported strong or unbearable intensity. In a study from 2010, Sardá Junior et al. (8) observed that 47.3% of subjects had severe pain and 30.2% moderate.

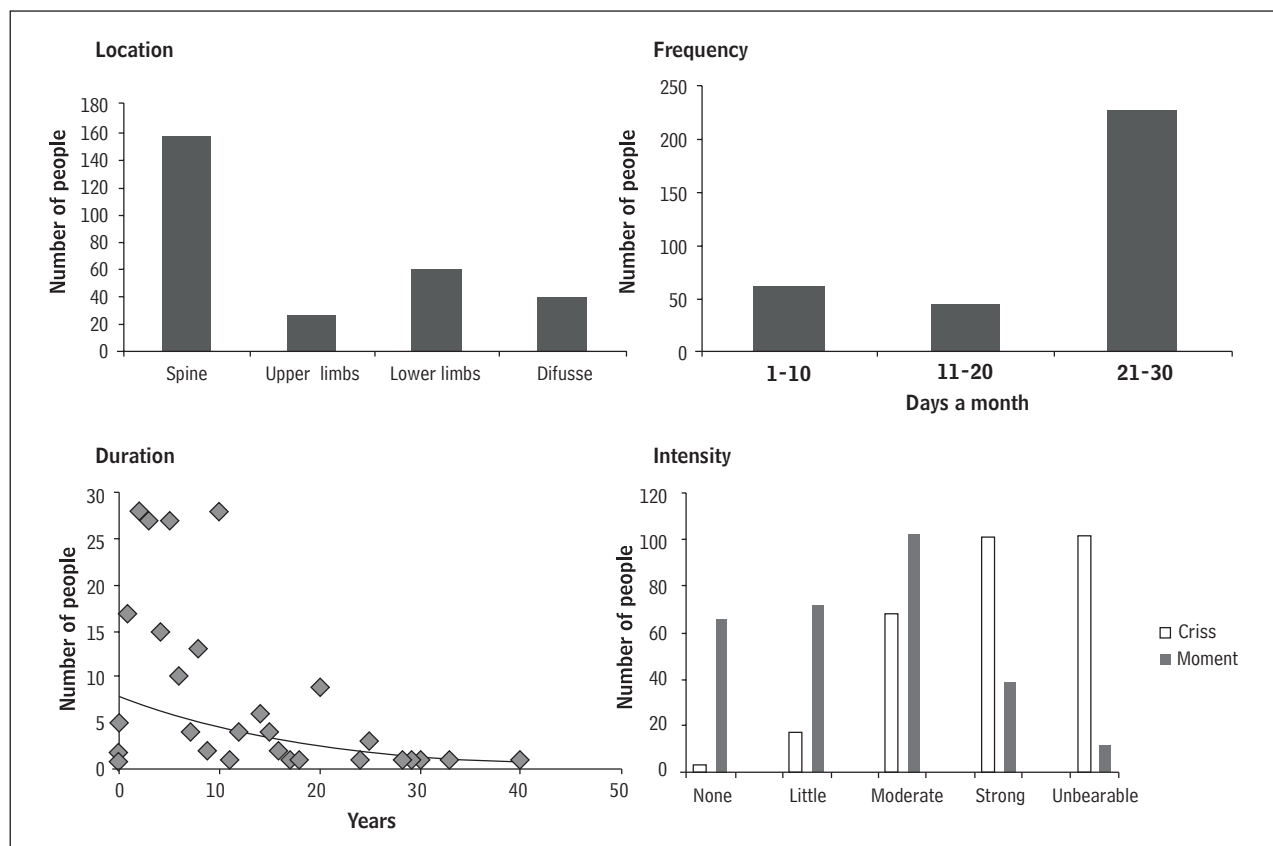


Figure 1 - Distribution of people with musculoskeletal pain, according to location, frequency, duration and intensity, Belterra, PA, 2011

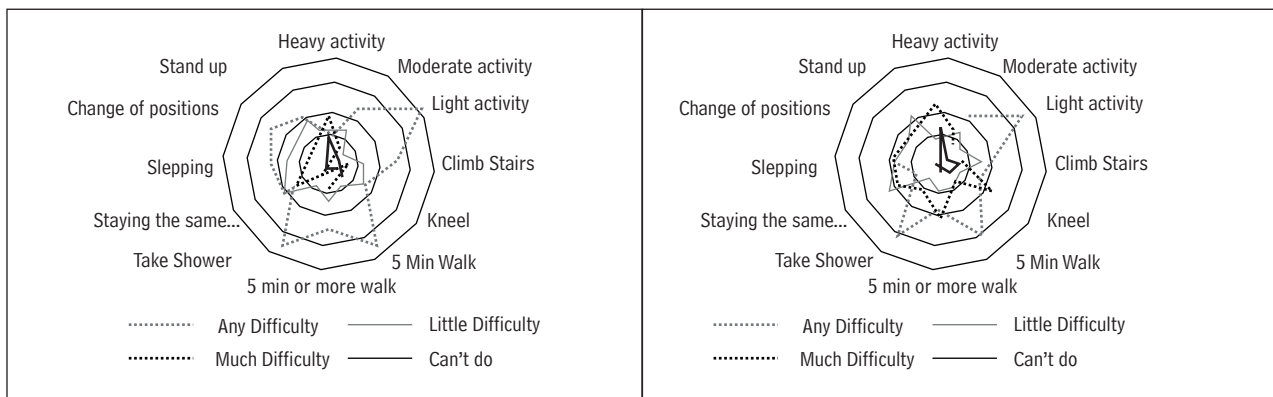


Figure 2 - Distribution of people with musculoskeletal pain, according to restrictions of daily activities. Belterra/PA, 2011. (A) All people with pain; (B) Individuals who reported daily pain and unbearable intensity during time of crisis

The osteoarticular pain and the functionality are elements connected to the health of the individuals and, thus, they influence the mode of interaction between themselves and between them and the environment (25).

For James (26), it is of great importance to establish the relationship between the presence of pain for a considerable period of time and the limitation to the functionality, mainly in activities that require great energy expended as: walking, kneeling, standing, perform transfer and heavy activities. Such functional implications appear more frequently in individuals who report daily pain and moderate and unbearable intensities. We found that 32.2% of the study persons justified sick leave by pain, besides, most have presented difficulties in various activities of everyday life.

We can highlight the musculoskeletal pain and its association with musculoskeletal disorders related to work as generators of varying degrees of functional disability, being considered one of the most serious problems in the field of occupational health. Musculoskeletal diseases have become the leading cause of illness at work, within the ten most prevalent diagnoses nine are musculoskeletal diseases. These disorders are responsible for most of the work absenteeism and of the severance costs, both in the Brazilian population and in the world population (25).

Individuals with chronic pain become a significant burden for health services, social security institutions and insurance companies. According to a population survey conducted in Brazil, more than 1/3 of our population believes that chronic pain commits the usual activities and over 3/4 considers that the chronic pain

limits the recreational activities, social and family relationships. Due to pain, approximately 50% to 60% of patients become partially or completely disabled, transiently or permanently (27).

Having been held in a distant region of the main Brazilian cities and with inclusion of residents of different localities of the city with difficult access, this study brings a vision of a little-known population. This achievement was only possible through the encounter between external health practices at the municipal reality and the individual active search for assistance. Thus, a limiting and disabling aspect as musculoskeletal pain made it possible the rise of important aspects of the health status and care of this population.

The importance of the findings of this study further increases when verified that for many people the pain occurred for several years, being that 63.1% sought the “Bandeira Científica” program presenting that pain as the primary complaint. Thus, one can ask whether these individuals: (1) seek help, but the problem is not solved, generating a new search for professional or (2) have difficult access to health facilities in the region or (3) believe that professionals from a large urban center such as São Paulo have better technical and scientific resources to care for their complaints.

The piece of information that may contribute to the answer this question is that 86.5% of the respondents reported that they receive visits from community health agents, thus showing that there is some access to health care. However, there is no information whether this access is complete in the care networks, since adequate services and professionals might not assist these individuals. This fact can also be observed in Canadian and Australian studies, which show that in the countryside access to health services are unevenly distributed

compared to urban areas due to poor distribution of health professionals and equipment throughout the territory (28, 29). This difficulty regarding the complete access to health care might be motivated by structural barriers and lack of information about services (29).

We believed that a follow-up of patients with musculoskeletal pain already exists, however the municipal health system cannot resolve this type of complaint for not having an organized network care and sufficient professionals for this demand, maybe because they are not used to this type of question. Associated to this is the fact described by Sibley and Weiner (29) that residents of inland areas report lower health care needs when compared with individuals from central areas, and postpone the search for health services when they are not in economic and social favorable moments.

The results show high prevalence of pain among the study population. This great demand for public health in Belterra/PA is important to generate reflections on the profile of people with pain, its associated factors and the consequences for the population in order to rethink the planning of an articulating line to pain care network and its human resources. Mata et al. (25) also warned that health services direct their actions towards these problems, identifying them, in everyday life, by listening to individuals and families covered by the Brazilian primary care, and then trying to solve them creatively, especially focusing on promotion and prevention actions to avoid further illness in these individuals.

Finally, the pain characteristics and the implication on the functionality observed in this study may be similar in many cities in Brazil, as the majority of these cities, 4,037 out of 5,575 municipalities, has up to 20,000 inhabitants and is located in the countryside (30). The knowledge of the facts mentioned here is important for the physical therapist and manager as it permits understanding and qualifying the demand, enabling the creation of actions and better organization of human resources looking at comprehensive health care by actions in collective health.

Conclusion

The prevalence of musculoskeletal pain was high and of chronic nature with high intensity in the crisis, being frequent and long-lasting. The most predominant site was the vertebral column. For the study persons, pain interfered with achieving heavy activities and maintaining the bipedal position. For those who

reported unbearable pain and daily frequency, there was great difficulty in daily activities such as walking, kneeling, standing, performing transfer, climbing stairs and remaining in the same position. We emphasize the importance of these results for planning a physical therapy care line in the health care network for musculoskeletal pain in Belterra/PA, and in other similar municipalities, and we recommend new studies in other cities and analysis of causality relationship between pain and functionality.

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