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Evaluation of the Functional Capacity of Patients with Chronic Low Back Pain in an Outpatient Clinic in Manaus, Brazil

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Abstract

Aim: *To relate the degree of low back pain with the functionality of patients attended at a spine outpatient clinic, and to determine the main complaints according to age and gender.*

Materials and Methods: *Prospective observational data collection was performed. At first, low back pain patients were assessed using the Mini-Mental, a cognitive measure, followed by the Oswestry Questionnaire, according to inclusion criteria, to determine the individual's functional capacity.*

Results: *The sample consisted of 110 volunteers, with a predominance of the female gender (59%) and an average age of ± 47,8 years. It was found that 80% of patients have a moderate or greater functional disability and that only 11,8% of patients can tolerate pain without a need for analgesics.*

Conclusion: *The disability degree of most patients contrasts with other cross-sectional studies and reveals the limiting and progressive nature of the disease. Although progressively related to age, low back pain is highly representative in middle age (40 and 49 years), probably associated with work activities in this age group.*

Keywords: *Chronic pain; Low Back Pain; Quality of life; Surveys and Questionnaires.*

Introduction

Low back pain is considered the manifestation of pain, muscle spasm, or stiffness located above the infra-gluteal sulcus and below the costal margin, associated or not, with irradiation for the lower members[1,2]. The pain in this region is just a symptom, and it is the clinical manifestation of various diseases located in the spine or other abdominal organs such as the kidneys/ureters, pancreas, and duodenum. From patients who look for primary health care, low back pain is the second biggest cause of doctor appointments, being the first main reason for removal or dismissal from professional activities[3]. Up to 84% of people at some point in life will have low back pain[4]. It is estimated that 18,5% of the Brazilian population suffers from chronic spine problems, being more prevalent in females[5].

Low back pain can be classified as acute or chronic. Acute pain is related to the rupture of the annular fibers of the intervertebral disc or the stretching of muscular or ligamentous structures of the spine, possibly having or not having nerve compression. On the other hand, chronic pain consists of pain in the lower back, lumbosacral or sacroiliac regions of the spine, which is related to muscular and psychosocial factors that engender avoidance conducts, fear, and muscle atrophy, which lead to chronicity and disability[6].

Among the main causes of low back pain, there are factors associated with sedentarism, age, genetic inheritance, posture at work, and the lifting of weights that require forward or backward spine inclination. Intervertebral discs, joints between the vertebrae, muscles, periosteum, nerve root, and nerve ganglia are included in the main affected structures[7].

According to Beattie and Maher[8], functional barriers include restrictions on the individual's performance, for example, an inability to sit or put on shoes. The questionnaires that evaluate functional activities, conducted through self-evaluations, provide quantitative information obtained directly from the patient to verify the degree of ability in executing their activities of daily life. Therefore, they are fundamental instruments to access the patients' quality of life and in which dimensions the chronic pain affects them the most.

The objective of the present study was to relate the degree of low back pain to the functionality of patients attended at a spine outpatient clinic and to determine the major complaints according to the age group and gender.

Methods

A cross-sectional study with prospective data collection was conducted, having a descriptive and observational character of patients of both genders claiming low back pain, without the need of imaging tests or who already had a recent examination, with a maximum of 3 years. These individuals were evaluated by the Orthopedic Doctor Marcos Gassen Martins and invited to participate in the study at the Ambulatory Araújo Lima, which belongs to the Getúlio Vargas University Hospital. The population sample was collected at the interviewer's convenience since, at the days of Spine Outpatient, few patients met the inclusion criteria.

This study was included patients with low back pain, from both genders, with age from 18 years old, with or without clinical indication to perform imaging tests, be it X-ray, Computed Tomography, or Magnetic Nuclear Resonance. Furthermore, the participants who were included in the study presented adequate cognitive ability to respond to the tests that were applied (MMSE) following the rule of considering dementia for unlettered patients with a score lower than 19. For patients with 1 to 3 years of schooling, the cutoff was 20 points, for patients with 4 to 7 years of schooling the cutoff point was 24 points, and for patients with more than 8 years of schooling, the cutoff point was 28 points. It was excluded patients with Alzheimer's disease, Parkinson's disease, or any classification of dementia or pathology that could alter the cognitive. The study used the Mini-Mental State Examination Score (MMSE) as exclusion criteria. After the questionnaire application, the data were submitted to a Google Platform Form for analysis.

The Oswestry scale (ODI) is a disease-specific instrument recommended for the evaluation of spinal disorders[9]. The purpose of this instrument is to provide the doctor with information on how low back pain has affected the patient's life. It is a tool composed of 10 questions, which the first refers to the intensity of pain and the following evaluates limitations imposed by low back pain in daily activities, such as personal care, lifting objects, walking, remain sitting or standing, sleeping, sexual life, social life, and locomotion. The total count ranges from 0 to 100, where 0 corresponds to the normal function, and 100 indicates considerable disability. For each item, 0 is normality, and 5 is the greatest functional change. The sum of values found in the 10 items divided by 50 (worst possible score, equivalent to reaching a score of 5 in the 10 items questioned), multiplied by 100, constitutes the Oswestry Score. Therefore, it is considered without a disability when the value is below 10%; from 10-28%, minimal disability; from 30-48%, moderate disability; from 50-68%, severe disability; and above 72%, complete disability[10].

The tabulation and organization of data were executed using Google Forms. After the organization, the entire characterization of the sample was presented in tables of absolute (n) and relative (%) frequencies for qualitative variables, and for numerical variables, it was calculated measures of position and dispersion.

The comparison between the groups was carried out using the T-test and the Pearson correlation test. The data were tabulated and organized in Excel, and the statistical analysis was executed using Software R, version 4.0.2. The level of significance adopted was 5% ($p < 0,05$).

This present study was performed in compliance with the guidelines of Resolution n. 466/12 of the National Health Council, having been submitted to and approved by the Human Research Ethics Committee from UFAM (Federal University of Amazonas). The patients were clarified about the objectives and finalities of the research and registered their free acceptance through the signature of the Free and Clarified Consent Term in two copies.

Results

The average age of the patients was 47,65 (± 14,24) in general, 48,31 (± 15,19) for the female gender and 46,69 (± 12,86) for the male gender. **Table 1** shows the measures of position and dispersion of the patients' age in general and by gender.

Table1. *Measures of position and dispersion of the patients' age in general and by sex.*

Gender	n	Average	Median	PD	Min	Max
General	110	47,65	50	14,24	14	85
Female	65	48,31	50	15,19	14	85
Male	45	46,69	50	12,86	16	74

It was used a sector chart (**Figure 1**) to represent the gender of the patients in the sample, with the colors representing the sexes. Of the 110 patients, 65 (59%) were females and 45 (41%) were males.

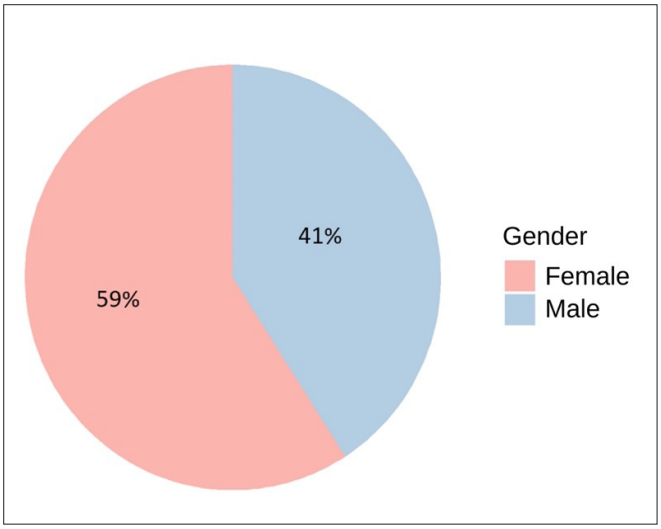

Fig1. *Gender of the participants*

Table 2 - Distribution of the interviewee's answers

Variable	N	%
Pain Intensity		
I can tolerate the pain I have without having to use painkillers	13	11,82
The pain is bad but I manage without taking pain killers	11	10,00
Pain killers give complete relief from pain.	24	21,82
Pain killers giver moderate relief from pain.	42	38,18
Pain killers giver very little relief from pain.	19	17,27
Pain killers have no effect on the pain and I do not use them.	1	0,91
Personal Care		
I can look afeter myself normally, without causing extra pain.	27	24,55
I can look after myself normally, but it causes extra pain.	40	36,36
It is painful to look after myself and I am slow and careful.	27	24,55
I need some help, but manage most of my personal care.	10	9,09
I need help every day in most aspects of self-care.	4	3,64
I do not get dressed, wash with difficulty and stay in bed.	2	1,82
Lifting		
I can lift heavy weights without extra pain.	1	0,91
I can lift heavy weights, but it gives extra pain.	27	24,55
Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned.	22	20,00
Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.	23	20,91

Variable	N	%
I can lift only very light weights.	28	25,45
I cannot lift or carry anything at all.	9	8,18
Walking		
Pain does not prevent my walking any distance.	36	32,73
Pain prevents me walking more than 1,6 km.	16	14,55
Pain prevents me walking more than 800 m.	20	18,18
Pain prevents me walking more than 400 m.	31	28,18
I can only walk using a stick or crutches.	2	1,82
I am in bed most of the time and have to crawl to the toilet.	5	4,55
Sitting		
I can sit in any chair as long as I like.	9	8,18
I can sit in my favourite chair as long as I like.	6	5,45
Pain prevents me sitting more than 1 hour.	36	32,73
Pain prevents me sitting more than ½ hour.	40	36,36
Pain prevents me sitting more than 10 minutes.	16	14,55
Pain prevents me sitting at all.	3	2,73
Standing		
I can stand as long as I want without extra pain.	12	10,91
I can stand as long as I want but it gives me extra pain.	16	14,55
Pain prevents me from standing more than 1 hour.	33	30,00
Pain prevents me from standing more than 30 minutes.	36	32,73
Pain prevents me from standing more than 10 minutes.	13	11,82
Pain prevents me from standing at all.	0	0,00
Sleeping		
Pain does not prevent me from sleeping well.	35	31,82
I can sleep well only by using tablets.	23	20,91
Even when I take tablets, I have less than 6 hours sleep.	29	26,36
Even when I take tablets, I have less than 4 hours sleep.	16	14,55
Even when I take tablets, I have less than 2 hours sleep.	6	5,45
Pain prevents me from sleeping at all.	1	0,91
Sex Life		
My sex life is normal and causes no extra pain.	37	33,64
My sex life is normal but causes some extra pain.	34	30,91
My sex life is nearly normal but is very painful.	12	10,91
My sex life is severely restricted by pain.	15	13,64
My sex life is nearly absent because of pain.	5	4,55
Pain prevents any sex life at all.	7	6,36
Social Life		
My social life is normal and causes no extra pain	19	17,27
My social life is normal, but increases the degree of pain.	32	29,09
Pain has no significaant effect on my social life apart from limiting more energetic interests, e.g., dancing, etc.	7	6,36
Pain has restrcited my social life and I do not go out as often.	32	29,09
Pain has restricted my social life to my home.	15	13,64
I have no social life because of pain.	5	4,55
Travelling		
I can travel anywhere without extra pain.	18	16,36
I can travel anywhere but it gives extra pain.	37	33,64
Pain is bad but I manage journeys over 2 hours.	16	14,55
Pain restricts me to journeys of less than 1 hour.	14	12,73
Pain restricts me to short necessary journeys under 30 minutes.	12	10,91
Pain prevents travel excepts to the doctor or hospital.	13	11,82

Table 2 presents the distribution of the interviewee's answers in absolute (N) and relative (%) frequency of the 10 sections present in the database, according to the Oswestry scale. Pain does not significantly interfere with the patients' sexual lives. It is observed that most volunteers can take care of themselves normally, sleep, have a normal social life, and travel anywhere, but all these activities cause more pain to the patient, limiting the individual. A great number of participants have their pain moderately relieved with the use of analgesics. The pain prevents them from lifting considerable weights, as well as moving properly. Regarding sitting or standing, the majority of patients are unable to sit or stand for more than half an hour, revealing a high degree of disability in these points.

Table 3 presents the measures of position and dispersion for the calculated score. The average number of patients was 39,65 (± 17,70) in general, 41,38 (± 19,59) for the female gender and 37,16 (± 14,39) for the male gender. **Figure 2** shows the categories distribution among the patients in the sample.

Table3. *Measures of position and dispersion for the calculated score.*

Gender	n	Average	Median	PD	Min	Max
General	110	39,65	40	17,70	6	84
Female	65	41,38	42	19,59	6	84
Male	45	37,16	40	14,39	6	68

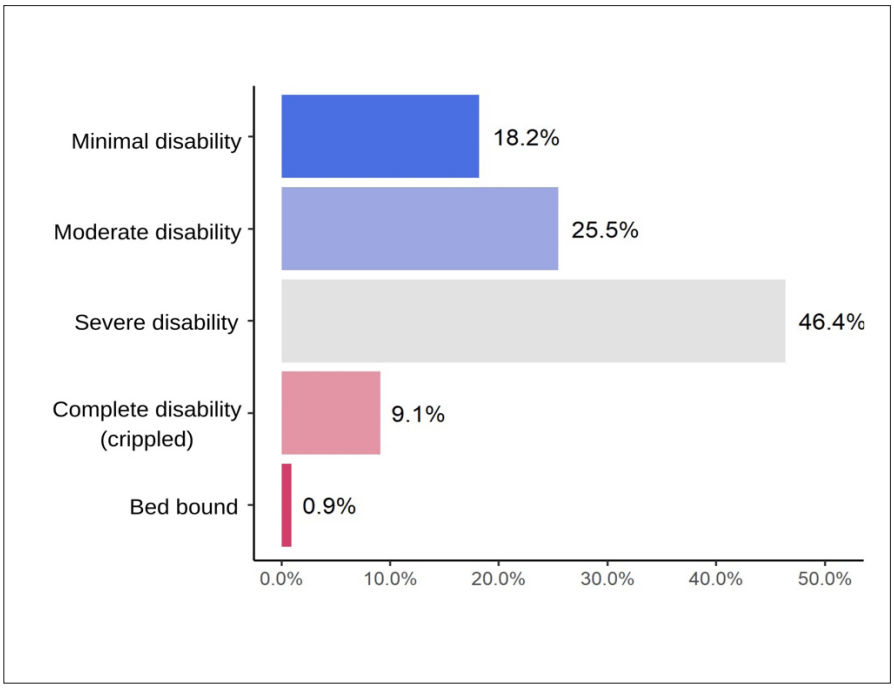

Fig2. *Categories distribution among the patients in the sample.*

Table 4 shows the measures of the Pearson correlation test between age and the Oswestry scores of the patients. The correlation result coefficient was 0,30, which means that as the patient's age increases the score also increases. The p-value of 0,001 shows that the result is statistically significant, at the level of significance of 5%.

Table4. *Pearson correlation test between age and the Oswestry scores of the patients.*

Variable		Correlation coefficient	Test statistic	P-value*	Confidence Interval (95%)	
					Inferior Limit	Superior Limit
Age	Oswestry score	0,30	3,31	0,001	0,12	0,46
*Pearson correlation test						

After the verification of the assumptions was made, was conducted the T-Test to ascertain if there is a difference in the mean score between the genders. **Figure 3** indicates a comparison of the scores of patients subdivided by gender. When executing the T-teste it was obtained a p-value of 0,19, which means that there is no statistically significant evidence that the value of the scores differs between the patients' genders.

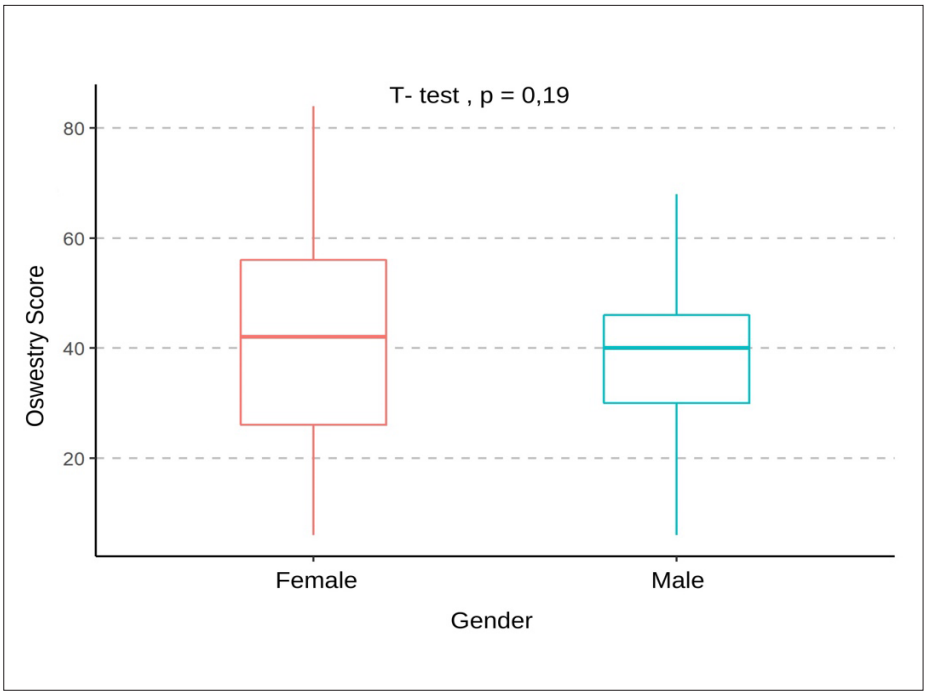

Fig3. *Comparison of the scores of patients subdivided by gender.*

Discussion

The use of instruments to assess the functional index and different clinical conditions of low back pain is well documented in the literature[11].

Regarding the age group, the average age of the patients was 47,65 (± 14,24), with low back pain having a positive correlation with the age increase. It is well established that low back pain affects the population in a way directly proportional to age, due to factors related to aging, mainly degenerative changes that affect posture and flexibility[12]. Therefore, the age group above 55 years for women and above 65 years for men are especially bound to chronic low back pain. The average age identified in the study can be explained by the work activities performed by middle-aged individuals (between 40 and 49 years old), a population that is still economically active[13].

The present study revealed a predominance of women (57,3%), evidencing a greater predisposition for low back pain in females. These data are in line with other studies of chronic low back pain, such as Krelig et al.[14], which indicated that 69,2% of the volunteers affected by chronic low back pain were women. Gender predilection may be related to several factors, such as a greater perception of pain by females, the execution of domestic tasks, and anatomical characteristics, such as shorter stature, less muscle mass, and fewer bone mass[15]. Nevertheless, there was no statistically significant evidence that the score values differ between the patients' genders.

In this study, the global parameters of the Oswestry questionnaire showed that 46,4% of the interviewees undergo severe disability. The functional capacity goes beyond physical performance and concerns how individuals perform their activities of daily life[16].

The results contrast with the findings of other studies, such as Bento et al.[17], who concluded that, in general, the individuals who were evaluated did not present significant disability, and Vieira et al.[18], who identified the majority of volunteers (56,5%) with moderate disability. However, Fracaro et al.[19], in a comparative analysis between individuals who have low back pain and healthy ones, identified a very intense level of disability in the former.

Regarding the questionnaire, it draws attention that only 11,8% of the interviewees can tolerate pain without the need for analgesics, which reveals the level of pain and progression that accompanies chronic low back pain. The relation between pain perception and functional disability was well documented by Moraes[20], who demonstrated a significant correlation between the level of disability and the intensity of pain.

In this context, there is a need for drugs increasingly potent for pain control[21], such as the use of opioid analgesics, which are associated with chemical dependence when used for an extended period. Therefore, 38,18% of the respondents claim that analgesics moderately relieve pain and in 17,27%, they relieve pain very little, which directly interferes with daily activities such as sitting and standing, limiting individuals.

This study was detected a high degree of disability, especially regarding activities related to lifting weights, sitting, standing, and walking. Such data are compatible with other studies, such as Gaideski et al.[22], in which most participants related activities such as lifting heavy objects, remain sitting or standing, walking, and moving, regardless of the distance with the increase of pain.

Conclusion

The study under consideration reveals an accentuated frequency of severe disability, which contrasts with similar researches results. The female gender was more bound to chronic low back pain, although there is no evidence that the scores values differ between the genders. Age showed a positive and linear correlation with low back pain complaints, with great representativeness in middle age (40 and 49 years), probably associated with work activities performed by this age group.

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