Evaluation of the Clinical Conditions of Individuals with Chronic Non-Specific Low Back Pain in the Extreme North of Tocantins

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Abstract: *Chronic non-specific low back pain (NEBBD) is characterized as a public health problem worldwide, causing personal, social, occupational and economic impact. Therefore, this research seeks to verify the clinical conditions of individuals with chronic non-specific low back pain in the extreme north of the state of Tocantins. This was a cross-sectional study whose dependent variable is chronic non-specific low back pain and whose independent variables are sociodemographic, clinical and psychosocial variables. The epidemiological survey was carried out asynchronously by filling out the electronic form (Google Forms). Subjects with a clinical diagnosis of chronic non-specific low back pain aged between 18 and 59 years were included; both sexes; and who do not have any other pathology in the spine. The total number of people in the sample is 31, most of whom are female. The present study presents a comprehensive analysis of the quantitative and qualitative aspects of DLCNE, addressing not only pain intensity, but also issues such as functionality and depression levels of the participants, which are fundamental assessment items to provide the necessary information for the development of treatment and intervention strategies. The results obtained indicate that most participants had moderate pain intensity, with balanced distribution of responses on the Visual Analogue Scale. In addition, functional disability was moderate in the sample, and depression levels varied, with some participants reporting more severe symptoms.*
Key Word*: Low back pain. Clinical conditions. Chronic non-specific low back pain.*

I. Introduction

Chronic non-specific low back pain (DLCNE) is characterized as a public health problem worldwide, causing personal, social, occupational and economic impact. It is one of the most common musculoskeletal complaints in the world, being the number one cause of disability and leaves from work. In most cases, it is not possible to diagnose a specific cause of the pain, and there may or may not be involvement of the lower limb For this reason, pain is characterized as a multidimensional factor, affecting the patient both physically and emotionally. In addition, DLCNE is responsible for generating functional disability and reducing the social participation of the affected person in society (DESCONSI et al., 2019).

Chronic non-specific low back pain is a condition that is characterized by persistent pain in the lower back. The most common symptoms include constant or intermittent pain in the lower back; feeling of stiffness or muscle tension in the lower back; pain that may extend to other areas, such as the buttocks, legs, or feet; difficulty in moving or performing daily activities; feeling of muscle weakness or fatigue; pain that worsens when sitting or standing for prolonged periods; pain that improves with a change of position or when lying down (HAYDEN et al., 2021).

The sociodemographic profile of individuals with DLCNEB may vary according to the study and the population surveyed. However, in general, this condition most commonly affects middle-aged and older adults. In addition, studies suggest that chronic non-specific low back pain may be more prevalent in women than in men, although this difference is not always significant (DA ROCHA ALVES et al., 2021).

In addition, some studies suggest that people with lower socioeconomic and educational status may be at higher risk of developing chronic non-specific low back pain. However, more research is needed to confirm these associations. It is important to highlight that DLCNE can affect anyone, regardless of sociodemographic profile, and that appropriate treatment can help improve the symptoms and social aspects of the subjects (LIMA et al., 2022).

The socioeconomic profile of people who have low back pain is important information for health professionals who deal with this condition. Such information can help healthcare professionals better understand the underlying causes of the condition, identify associated risk factors, and develop more effective prevention and treatment approaches. In this way, it is possible to promote a more personalized and effective approach to the care of low back pain, reducing the negative impact of this condition on people's lives and society as a whole (CARGNI et al., 2019).

NCLD can be a disabling condition and can lead to various physical and psychological problems, such as anxiety and depression. It is common for people who suffer from chronic non-specific low back pain to experience negative impacts on their lives, such as limitations in daily activities, social isolation, and feelings of hopelessness (DE PAULA; COTRIN, 2020).

The intensity of pain usually worsens due to increased physical exertion or excess load during some daily activity, decreases at rest and is aggravated by a sedentary lifestyle and/or inadequate posture. Its classification is given by the duration of symptoms. Acute, when pain symptoms are less than 6 weeks, lasts between 6 and 12 weeks. Subacute, when symptoms last between 6 and 12 weeks, and chronic when symptoms exceed 3 months. Most patients are able to treat low back pain while still in the acute phase, however there is a percentage that ends up developing disability and the pain ends up becoming persistent (ROCHA et al., 2021).

There are individual and occupational risk factors in DLCNE, the most frequent are individual ones such as age, gender, body mass index and muscle imbalance, muscle strength capacity, socioeconomic conditions and history of other pathologies. Risk factors are related to repetitive movements, sitting for a long period, constant bending of the trunk, lifting large loads, incorrect postures that in most cases are due to the work environment. Such risk factors alter and determine the patient's aspects of life, thus requiring more attention to care (SILVA, 2018).

II. Material And Methods

This was a cross-sectional study whose dependent variable was chronic non-specific low back pain and whose independent variables were sociodemographic, clinical and psychosocial variables. Data collection was carried out asynchronously by filling out the electronic form. The research consisted of filling out an online form (Google Forms) that was disseminated through a link through online communication platforms (Instagram, Facebook and WhatsApp). By accessing the link, participants were directed to a page with questions pertinent to the inclusion and exclusion criteria of the study.

The volunteers who met the inclusion criteria were redirected to a virtual page where the Informed Consent Form (ICF) was digitized, where those who agreed to participate in the research after reading the ICF received the form composed of questions related to obtaining information about personal data, pain, understanding of causal factors and possible conducts for self-management of pain.

The study population consists of subjects with chronic non-specific low back pain, living in the city of Augustinópolis-TO and surrounding cities. As there is no record with the quantitative population, in this study the spontaneous demand sampling method was adopted. Thus, 31 patients were part of the sample.

The inclusion criteria used to define the sample were subjects who had a clinical diagnosis of chronic non-specific low back pain (with the presence of symptoms for more than three months); age between 18 and 59 years; both sexes; and that they do not present any other pathology in the spine, which was verified by the clinical evaluation of the individuals. The exclusion criteria were subjects who had another pathology in the spine, pregnant women and who used anti-inflammatory and/or analgesic medication. The individuals were recruited through social networks. All subjects who expressed interest were instructed to sign the informed consent form and then proceed with the evaluation procedures.

For the collection of sociodemographic and clinical data, an initial evaluation was carried out by the researchers. To assess pain, the Visual Analogue Scale (VAS) and the McGill questionnaire were used, functional disability was assessed by the Roland Morris Disability Questionnaire, anxiety by the State-Trait Anxiety Inventory, and depression by the Beck Depression Scale.

The evaluation is based on the latest Consensus on the Evaluation and Management of Chronic Nonspecific Low Back Pain, following the clinical approach for differential diagnosis. Thus, the evaluation was initiated through anamnesis, collecting sociodemographic, personal and clinical data of the disease with the objective of verifying the general and specific health status of the individual.

To assess the level of pain, the visual analog scale was used, which is a linear scale ranging from 0 to 10, where 0 represents no pain and 10 represents unbearable pain. This was the only instrument asked to the participant to record the level of pain before each session and 5 minutes after the end of the session (MARQUES et al., 2015).

The McGill Pain Questionnaire is an instrument for the subjective evaluation of pain, distributed in subcategories, composed of 77 words that qualify pain, which are distributed in four categories: sensory, affective, evaluative and mixed. Each word has a specific value ranging from 1 to 5, the pain index was the sum

of the values, being considered: sensory: 41, affective: 14, evaluative: 5, mixed: 17 and total: 77. The questionnaire was explained to the participant and asked to answer. In case of doubt regarding the descriptors, the researchers will be available for clarification (PIMENTA; TEIXEIRA, 1996).

The Roland Morris questionnaire is validated in 17 countries, consisting of 24 self-answer questions, which patients answer in a dichotomous way (yes or no) related to their activities of daily living. The result is the sum of the affirmative answers and can vary from 0 to 24 points, the zero value corresponds to patients without complaints and the maximum value to those with severe limitations. The questions are objective and simple, giving a score of 1 for each question whose statement the volunteer agrees with and 0 for each statement that does not agree. With values above 14, the individual is considered to have functional disability due to low back pain (SARDÁ JÚNIOR et al., 2010).

The State-Trait Anxiety Inventory is an instrument that measures the propensity to anxiety and the state of anxiety, such as tension, nervousness, worry and apprehension. This is made up of its scales, the A-trait scale, consisting of 20 statements that is geared towards the individual describing how he feels. The A-state scale is also composed of 20 statements; however, it is directed to the individual to indicate how he feels at certain times.

Each statement is scored according to a Likert scale, ranging from 1 to 4, and the score of each questionnaire can vary from 20 to 80; scores lower than 33 indicate low anxiety; between 33 and 49, medium anxiety; and greater than 49, high level of anxiety. In the A-state questionnaire, questions 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20 should have their values inverted, and in the A-trace the questions, 1, 6, 7, 10, 13, 16 and 19 (MARQUES et al., 2015).

Depression was assessed using the Beck Depression Scale, which has a maximum score of 63 points, indicating that the higher the score, the higher the depression indices (MARQUES et al., 2015). Sleep was assessed using the Pittsburgh index, which is an instrument composed of 19 questions, grouped into seven components; These are: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, use of sleep medications, and sleep dysfunction. The score of each component ranges from 0 to 3, and the sum of all ranges from 0 to 21. Indices greater than 5 indicate poor sleep quality, while indices equal to or less than 5 indicate good sleep quality (MARQUES et al., 2015).

To organize the data, the Microsoft Excel 2011 program was used, the data will be analyzed using the BioEstat 5.0 program, using the t-test for comparison of variables and the Pearson test for correlation between the findings, considering a level of 5% of significance (p value ≤ 0.05).

According to Resolution No. 466/2012 and 510/2012 of the National Health Council, all research involving human beings must comply with this resolution. Therefore, following the precepts of research ethics, the participation of those involved was totally voluntary without entailing any burden, ensuring the right to withdraw at any time, and the participant could ask any questions about the research at any time. It is the patient's right that all information is kept confidential.

The results obtained from the study will be used for scientific purposes only. The data collected will be archived in the possession of the researchers for five years and then recycled. The present research project is an arm of the umbrella project, already approved by the Human Research Ethics Committee of the State University of Tocantins with opinion number: 4.080.661 and CAAE: 38147120.90000.5492.

III. Result and Discussion

Based on the results, according to table 01, the total number of people in the sample is 31 (7 males and 24 females) most of the participants in the sample are female, representing 68.52% of the total, while males represent 31.48%. Regarding ethnicity, the participants were categorized as white, brown, yellow, and black. Most participants identified themselves as brown, representing about 42.86% of the sample. Whites represent 22.86%, blacks 20% and yellows 2.86%. The mean age in the sample was 20.70 years and the median was 20 years, weighing 60.81 kg, and the mean height was 1.64 cm.

Table 01. Sociodemographic Information.

Variables	Absolute value	Relative value (%)
Gender		
Male	7	31,48%
Female	24	68,52%
Color/Ethnicity		
White	8	22,86%
Brown	15	42,86%

Yellow	1	2,86%
Black	7	20%
Continuous Variables	**Average**	**Median**
Age	20,70	20
Weight	60,81	62
Height	1,6409	1,64
BMI	22,38	22,31

According to data collected regarding the qualitative evaluation of pain, in the sensory category (S: 1-10), the first category to be evaluated, a mean of 19.25 was obtained. Thus indicating that the participants attributed a relatively high qualitative representation to pain in this category. In the next category, affective item (Af: 11-15), it obtained a mean of 4.06, showing that the qualitative representation of pain is greater in the sensory category, thus suggesting that the emotional aspects related to pain are perceived less intensely. The evaluative category (Av: 16) obtained an average of 2.12, representing that the qualitative evaluation of pain in terms of its evaluative nature is even less compared to the previous categories.

The mixed-sensory category (M S 17-19) obtained a mean of 3.58, indicating an intermediate mean, with no major discrepancies in these values when compared to past evaluative items. In the mixed affective-evaluative category (M AfAv20) it obtained a result of 2.58, reflecting an average similar to the Evaluative category. The last pain evaluation category, total mixed, obtained an average of 6.00, indicating an intermediate qualitative evaluation, involving sensory, affective and evaluative aspects of pain.

In the pain intensity estimate (PRI), a total index of 32.06 was obtained, which suggests that the participants have low back pain with fewer symptoms and higher quality of life. Such data can be proven when analyzing the median, which obtained a result of 34.00, thus reinforcing the hypothesis that most participants evaluated pain as relatively moderate.

After analyzing the 25% percentile of the sample (P25), it is noted that 25% of the sample attributed mean values of 14.00 in the Sensory category and 1.50 in the Affective category. In the evaluative and mixed-total evaluations, the result was 0.0, respectively, as well as in the mixed-sensory and mixed affective-evaluative categories. In the analysis of 75% of the sample, 21.0 were obtained in the sensitive category and 3.00 in the affective category. In the evaluative evaluation item, a mean of 3.0 was obtained, as well as in the items mixed-sensory, mixed affective-evaluative. In the last category, total mixed, the result was 6.5 (Table 02).

Table 02. Qualitative pain assessment.

Variables Statistics	S(1-10)[a]	Af(11-15)[b]	Av(16)[c]	MS(17-19)[d]	MAfAv(20)[e]	MT(17-20)[f]	PRI(1-20)[g]
				McGill Variables			
Average	19.25	4.06	2.12	3.58	2.58	6.00	32.06
Median	21.0	3.00	3.00	3.00	3.00	6.50	34.00
Variance	56.86	9.46	1.78	11.65	3.05	18.83	237.72
Standard deviation	7.54	3.07	1.33	3.41	1.74	4.34	15.41
P25	14.00	1,50	1.00	0.50	0.50	4.00	18.50
P75	21.00	3.00	3.00	3.00	3.00	6.5	34.00
Maximum Value	34.00	11.00	4.00	10.00	5.00	14.00	74.00
Minimum Value	4.00	0.00	0.00	0.00	0.00	0.00	6.00

Legend: a = Sensory, b = Affective, c = Evaluative, d = Mixed Sensory, e = Mixed Affective Evaluative, f = Mixed-Total and g = Estimation of Pain Intensity.

Regarding the analysis of the second qualitative assessment of pain, the mean assessment on the Visual Analogue Scale (VAS) was 5.51, indicating an average score of around 5.51 on a scale of 0-10, which suggests moderate pain. The median VAS was 5.00, which means that half of the participants assigned a pain score equal to or less than 5.00, while the other half assigned the same value, thus evidencing a balanced distribution of responses.

The variation between the mean and the median was 0.37. The standard deviation of 1.52 indicates that this data is statically valid since there is a dispersion of the values in relation to the mean. After analyzing 25% of the sample (First Quartile), it was observed that the score was 5.00.

In 75% of the sample (Third Quartile), the qualitative assessment of pain was 6.00, and there was no discrepancy between these values. The data obtained through the VAS indicate that there is a mean of moderate pain, presenting a balanced distribution of responses in the sample (Table 03).

Table 03. Quantitative pain assessment.

Statistical Variables	Pain
Average	5,51
Median	5,00
Variance	2,24
Standard deviation	1,52
First Quartile (25%)	5.00
Third Quartile (75%)	6.00
Minimum Value	3.00
Maximum Value	10.00

Regarding the analysis of the participants' functionality, the average value of 7.09 was obtained, which suggests that, on average, the participants in the sample experienced a moderate level of functional disability. The median was 8.00, justifying that these values are relatively close, showing that the mean of the data analyzed did not present much difference.

The variance of 20.79 indicates a considerable dispersion of the data in relation to the mean. This shows that there is a significant variation in the levels of functional disability among the participants. The standard deviation of 4.63 confirms the variability of the data. After analyzing 25% of the sample (First Quartile), the result was 3.00, while in 75% of the sample (Third Quartile), the value was 9.50, thus there was a small variation between these values.

Table 04. Level of Functional Disability.

Statistical Variables	Functional Disability
Average	7,09
Median	8,00
Variance	20,79
Standard deviation	4,63
First Quartile (25%)	3.00
Third Quartile (75%)	9.50
Minimum Value	0.0
Maximum Value	20.00

Based on the data analyzed about the participants' level of depression intensity, an average of 4.8 was obtained in the first category of the scale (Absence of Depression). In this category, 15 individuals scored, which indicates that these subjects reported very low or almost absent symptoms of depression, according to the characterization in the table. In the next category, mild to moderate, the mean score was 12.1, with 10 individuals.

These subjects showed symptoms of depression at a mild to moderate level, indicating that the symptoms are noticeable, but that they still did not tinge it to a more severe degree. The third category,

moderate to severe, had a mean score of 27.0, with two individuals categorized. This indicates that these participants report more severe symptoms of depression, thus suggesting that this level has a significant impact on emotional well-being.

The last evaluative category of the table, severe, categorized 4 individuals, with a mean score of 45.5. This indicates that these individuals are experiencing severe depression symptoms, with a substantial impact on their daily lives and emotional well-being.

The Beck Scale Depression table provides information about the distribution of depression levels in the sample. However, it is worth noting that this is a representation of the specific sample in question and does not necessarily represent the prevalence of depression in the general population. This scale is useful for assessing the sample profile in terms of depression intensity and can be used to target the provision of appropriate treatment or support for individuals with different levels of depressive symptoms, those with more severe symptoms may require more intensive intervention and follow-ups (DA SILVA et al., 2018).

Table 05. Classification of Depression Intensity.

Depression Level	Absolute value	Average
Absence of Depression	15	4.8
Mild to Moderate	10	12.1
Moderate to Severe	2	27.0
Severe	4	45.5

The results presented provide a comprehensive view of the sociodemographic characteristics, qualitative and quantitative assessment of pain, level of functional disability, intensity of depression and qualitative assessment of the participants' lives. The association between low back pain levels and depression intensity highlights the complex interconnection between physical pain and mental health.

Previous studies, such as that of Silva (2018), have indicated that chronic pain can contribute to depressive symptoms, and vice versa. In this context, the therapeutic approach should encompass both pain management and attention to emotional aspects. The relationship between the level of functional disability and the assessments highlights the direct influence of low back pain on daily activities and general well-being. Rehabilitation strategies and interventions focused on improving functionality can have a positive impact on participants' lives.

IV. Conclusion

Chronic non-specific low back pain is a public health problem that affects a large part of the population, generating significant impacts on the lives of individuals, as well as on the social, economic, and occupational spheres. It is a complex condition that often does not have a specific identifiable cause, which makes it challenging to diagnose and treat.

The sociodemographic profile of individuals affected by DLCNE may vary, in the present study, for example, most of the sample was composed of women, this is correlated with the literature, since studies suggest that middle-aged and elderly adults, mostly women, may be more likely to develop this condition.

The present study presents a comprehensive analysis of the quantitative and qualitative aspects of DLCNE, addressing not only pain intensity, but also issues such as functionality and depression levels of the participants, key assessment items to provide the necessary information for the development of treatment and intervention strategies that can improve the lives of people with this condition.

The results obtained indicate that most participants had moderate pain intensity, with balanced distribution of responses on the Visual Analogue Scale. In addition, functional disability was moderate in the sample, and depression levels varied, with some participants reporting more severe symptoms.

References

[1]. CARGNIN, Zulamar Aguiar et al. Dor lombar inespecífica e sua relação com o processo de trabalho de enfermagem. Revista Latino-Americana de Enfermagem, v. 27, 2019.
[2]. DESCONSI, Marcele Bueno et al. Tratamento de pacientes com dor lombar crônica inespecífica por fisioterapeutas: um estudo transversal. Fisioterapia e Pesquisa, v. 26, p. 15-21, 2019.
[3]. DA SILVA, Marli Appel; WENDT, Guilherme Welter; DE LIMA ARGIMON, Irani Iracema. Inventário de depressão de beck II: análises pela teoria do traço latente. Avaliação Psicológica, 2018.
[4]. DE PAULA, Gustavo Melo; COTRIM, Teresa Patrone. A dor lombar como indicador de alteração na qualidade de vida no trabalho de docentes universitários: uma revisão da literatura. Brazilian Journal of Development, v. 6, n. 10, p. 74905-74921, 2020.
[5]. DA SILVA, Luma Lopes et al. Análise da prevalência de dor lombar associada á atividades ocupacionais: uma revisão integrativa de literatura. Brazilian Journal of Development, v. 7, n. 2, p. 11729-11743, 2021.

[6]. ROCHA, Jessica Roberta de Oliveira et al. Caracterização de fatores biopsicossociais de pacientes com dor lombar crônica inespecífica. BrJP, v. 4, p. 332-338, 2021.
[7]. DA ROCHA ALVES, Júlio Cesar et al. Perfil algométrico e funcional de pacientes com dor lombar atendidos em um ambulatório de fisioterapia como parte de um projeto de desenvolvimento de recurso terapêutico. Revista Eletrônica Acervo Saúde, v. 13, n. 10, p. e9042-e9042, 2021.
[8]. HAYDEN, Jill A. et al. Exercise therapy for chronic low back pain. Cochrane Database of Systematic Reviews, n. 9, 2021.
[9]. LUBKOWSKA, Wioletta; KRZEPOTA, Justyna. Quality of life and health behaviours of patients with low back pain. Phys Act Rev, v. 7, p. 182-192, 2019.
[10]. LIMA, Fernanda Vargas et al. Perfil da dor lombar em trabalhadores dos restaurantes de uma universidade pública do sul do Brasil. O Mundo da Saúde, v. 46, p. 483-492, 2022.
[11]. NAMBI, Gopal et al. Spinal manipulation combined with laser therapy is more beneficial than laser therapy alone in chronic non-specific low back pain. A randomized controlled study. European Journal of Physical and Rehabilitation Medicine, v.54, n.6, p.880-9, 2018.
[12]. NIJS, Jo et al. Sleep disturbances in chronic pain: neurobiology, assessment, and treatment in physical therapist practice. Physical therapy, v. 98, n. 5, p. 325-335, 2018.
[13]. RING, Joshua et al. Depression and Functional Outcomes in Patients Presenting to the Emergency Department With Low Back Pain. ACADEMIC EMERGENCY MEDICINE, p. 2-11, 14 fev. 2022.
[14]. SANTOS, Ayara Luise; LUNA, Marianna Brito; COUTINHO, Renata Soraya. Influência da dor lombar inespecífica na cinesiofobia: uma revisão integrativa. Revista Eletrônica da Estácio Recife, v.5, n.1, p.1-12, 2019.
[15]. TUCCI, Carlos et al. Comparison between start back screening tool and dram for detection of psychosocial factors in low back pain. Coluna/Columna, v. 20, p. 268-271, 2022.
[16]. URITS, Ivan et al. Low back pain, a comprehensive review: pathophysiology, diagnosis, and treatment. Current pain and headache reports, v. 23, n. 3, p. 1-10, 2019.