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Characteristics of pain and interferences in aspects of life in adults with chronic neck pain

Características da dor e interferências em aspectos da vida em adultos com dor cervical crônica

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ABSTRACT

BACKGROUND AND OBJECTIVES: Chronic neck pain (CNP) is a disabling condition that still lacks clarification about its characteristics and interference in aspects of life. Therefore, the aim of this study was to investigate the characteristics of pain and interference with aspects of life in adults with CNP.

METHODS: Cross-sectional study carried out in a health service, from September to December 2022. 134 adults (18 to 59 years old) participated, regardless of gender, complaining of neck pain (> 3 months). A questionnaire was applied to collect sociodemographic and lifestyle variables, and the Brief Pain Inventory (BPI) was used to measure intensity and interference in aspects of life. Descriptive analyzes were performed using SPSS Statistics version 23.0.

RESULTS: The average age was 28 years old, and the highest proportion was female (78.4%; n=105), low social class (53.7%; n=72) and without paid work (52.6%; n=70). Regarding lifestyle, more than half consumed alcoholic beverages (56.7% n=76) and practiced physical activity (62.7% n=84). Furthermore, 50% (n=67) declared that they did not sleep well, averaging 6 hours/night. Regarding the characteristics of pain and its interference, an average of 5.19 ± 2.17 was found for pain intensity, with mood (4.5 ± 3.7) and sleep (4.4 ± 3.6) as activities that suffered the most interference.

CONCLUSION: People with CNP had predominantly moderate pain intensity, with also moderate interference in various aspects of life, mainly mood and sleep, which could cause harm to quality of life.

KEYWORDS: Adult, Neck pain, Chronic pain, Quality of life.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor cervical crônica (DCC) é uma condição incapacitante que ainda carece de esclarecimentos sobre suas características e interferências nos aspectos da vida. Assim, o objetivo deste estudo foi investigar as características da dor e as interferências nos aspectos da vida em adultos com DCC.

MÉTODOS: Trata-se de um estudo transversal realizado em um serviço de saúde, de setembro a dezembro de 2022. Participaram 134 adultos (18 a 59 anos), independentemente do sexo, com queixa de dor cervical (>3 meses). Foi aplicado um questionário para coletar as variáveis sociodemográficas e o estilo de vida, e foi utilizado o Inventário Breve da Dor (IBD) para mensurar a intensidade e a interferência em aspectos da vida. Análises descritivas foram realizadas pelo *SPSS Statistics* versão 23.0.

RESULTADOS: A média de idade foi de 28 anos e maior proporção do sexo feminino (78,4%; n=105), classe social baixa (53,7%; n=72) e sem atividade remunerada (52,6%; n=70). Quanto ao estilo de vida, mais da metade consumia bebida alcoólica (56,7% n=76) e praticava atividade física (62,7%; n=84). Ademais, 50% (n=67) declaram não dormir bem, com média de 6 horas/noite. Quanto às características da dor e sua interferência, constatou-se uma média de 5,19 ± 2,17 para intensidade da dor, sendo humor (4,5 ± 3,7) e sono (4,4 ± 3,6) as atividades que mais sofreram interferência.

CONCLUSÃO: Os pacientes com DCC apresentaram intensidade de dor predominantemente moderada, com interferência também moderada em diversos aspectos de vida, principalmente no humor e no sono, o que pode acarretar prejuízos para a QV.

DESCRITORES: Adulto, Dor cervical, Dor crônica, Qualidade de vida.

HIGHLIGHTS

- Most of the participants were women from lower social classes and had no paid work. This female predominance and socioeconomic vulnerability highlighted the need for targeted interventions and public policies aimed at this demographic group, which may be more susceptible to painful conditions due to social and economic factors
- More than half of the participants reported drinking alcohol and practicing physical activity. These habits can have significant implications for the perception and management of pain
- A significant proportion of the participants reported sleep problems, with an average of only 6 hours of sleep per night. This is crucial, as the quality of sleep is closely linked to the perception of pain
- The pain intensity reported by the participants was moderate, and the same perception was also found in the interference with aspects of life in relation to sleep and mood. These results highlighted the importance of a multidimensional treatment approach for improving QoL

INTRODUCTION

Chronic neck pain (CNP) is a musculoskeletal condition that affects millions of people worldwide, significantly compromising quality of life (QoL) and functional capacity[1]. This condition is characterized by persistent or recurrent pain lasting more than three months, located in the region from the base of the occiput to the top of the scapulae. Its etiology is multifactorial, involving a complex interaction between biological, psychological and social factors, which result in systemic, musculoskeletal and neurological alterations[2]. The evidence highlights CNP as a global health problem since it is an epidemic, with significant costs associated with investment in treatment, as well as absenteeism[1].

It is estimated that thousands of people in the world suffer from pain, with 10% being diagnosed with chronic pain each year, affecting a large part of the population, regardless of gender, age and economic conditions[3]. However, the prevalence of pain varies between countries and is more frequent in low-income regions. In Brazil, around 60 million people suffer from some form of chronic pain[4].

Among chronic musculoskeletal pain, CNP stands out as one of the most prevalent musculoskeletal disorders, affecting approximately 203 million people worldwide, with a rate of 2,450 per 100,000 inhabitants, which varies between countries and regions. This condition is recognized as a global epidemic, causing both functional incapacity and significant socio-economic costs in treatment, as well as reducing productivity in the workplace[5].

CNP is multidimensional in nature, involving physical, psychological and social components. This complexity can result in postural, proprioceptive, muscular and sensitivity impairments, negatively impacting QoL and activities of daily living[6,7]. These interferences are related to cognitive and behavioral changes, influenced by the severity of the pain, which can result in maladaptive behaviors. These behaviors, in turn, are influenced by memory processes and can lead to persistent pain experiences, even in the absence of structural lesions, highlighting the role of neural correlates in the expectation of pain and impairment of functionality in people with CNP[8].

Functional impairment can lead to interference in various aspects of life, such as sleep, mood, work and social activities, among others. However, there is little data in the literature on which specific activities are affected by CNP. Identifying and understanding this influence can help develop strategies to minimize these impacts and improve QoL. In addition, it can provide health professionals with more precise and individualized guidance, contributing to the development of more effective interventions in the management of CNP. Therefore, this study aimed to investigate the characteristics of pain and the interference of pain in aspects of life in adults with CNP.

METHODS

Type of study

This is a quantitative, cross-sectional study carried out at the Integrated Medical Care Center (*Núcleo de Atenção Médica Integrado* - NAMI), as part of a larger project entitled "Evaluation of the clinical-epidemiological, functional and biomarker profile in adults with CNP". Data collection took place between September and December 2022. NAMI provides multidisciplinary care and various services through the Brazilian Public Health System (*Sistema Único de Saúde* - SUS) or by agreement, and is characterized by being a type II rehabilitation center, which provides physical and intellectual rehabilitation care recognized by the Brazilian Ministry of Health.

This study was approved by the ethics committee of the University of Fortaleza (CAAE no. 53206121.3.0000.5052), respecting the bioethical aspects of Resolution 466/12 of the Brazilian National Health Council. All participants signed the Free and Informed Consent Term (FICT).

Participants were recruited through direct approaches in different sectors of the health service, and through advertisements in public places and social media networks.

Adults aged between 18 and 59, regardless of gender, with CNP for a period of three months or more, and who were in care or present at the institution during the collection period were included. Participants who reported trauma and/or surgery in the cervical spine, cancer and neurological disorders (neuropathies, amyotrophic lateral sclerosis, stroke, epilepsy, Parkinson's disease, myasthenia gravis, Alzheimer's, muscular dystrophy) during the recruitment process were excluded.

The sample was calculated based on the adult population of Fortaleza (n=1,930,479), with a standard deviation of 2.51 for the pain intensity variable[9], a margin of error of 0.5 and a 95% confidence interval. The minimum sample size was estimated at 105 participants.

Data was collected using two self-administered instruments: 1) a sociodemographic and lifestyle questionnaire; and 2) the Brief Pain Inventory (BPI). This collection was carried out by a team of health professionals and academics who had undergone prior training.

The first questionnaire prepared by the researchers had questions related to demographic and socioeconomic characteristics, health conditions and lifestyle. The demographic and socioeconomic profile included questions about age, gender, marital status, ethnicity/color, schooling, paid work and social class by minimum wage (MW). The social class variable was categorized as class A/B (> 10 MW) and class C/D/E (≤ 10 MW). As for lifestyle, hours of sleep, screen time, smoking, alcohol consumption, physical activity and health satisfaction were investigated.

BPI is a multidimensional instrument that assesses various dimensions of pain, validated for Portuguese. BPI has 16 items, divided into three parts: the first measures pain intensity through four items that measure pain severity (pain now, average pain, worst pain and least pain), using an 11-point Linkert scale (0 = "no pain" and 10 = "the most horrible pain you can imagine"). The second consists of questions about pharmacological treatment, type of drug, frequency of use and start date. It is scored using a percentage scale (0% = no relief and 100% = complete relief). The third part is made up of seven items that measure the interference of pain in various aspects (general activity, mood, walking ability, usual work, relationships with other people, sleep and lifestyle) using an 11-point Linkert scale (0 = no interference and 10 = complete interference)[10]. Test-retest reliability is excellent (0.83 to 0.88) for musculoskeletal disorders[11].

Statistical analysis

The variables were analyzed descriptively using SPSS Statistics IBM® version 23.0. In the descriptive analysis, the mean and standard deviation (SD) of the quantitative variables and relative frequency (%) of the qualitative variables were calculated.

RESULTS

The sample of this study involved 134 participants, with a mean age of 28±10.4 years. With regard to sociodemographic data, there was a greater predominance of females (78.4%; n=105), single people (80.6%; n=108), those with completed secondary education (66.4%; n=89), those belonging to the lower social class (D/E; 54.5%; n=70) and those who did not work (Table 1).

Regarding the lifestyle of the participants, it was found that 50% (n=74) did not sleep well, with an average of 6.1±1.3 hours of sleep and 7.9±4.0 hours of screen time a day. Only 14.1% (n=20) had smoking habits and the majority consumed alcoholic drinks, 56.7% (n=76). Regarding physical activity, 62.7% (n=84) reported exercising regularly. In addition, 53.8% (n=72) considered their health to be good (Table 2).

Regarding pain characteristics, moderate intensities were observed for average pain (5.4 ± 2.2) and for the worst pain in the last 24 hours (5.1 ± 2.7; Figure 1). In addition, it was found that the participants suffered from pain in more than two areas other than the neck, with a greater predominance of headaches (49.3%; n=66), followed by pain in the thoracic region (43.3%; n=58), lower back (41.8%; n=56) and shoulder (34.3%; n=46; Figure 2). As for treatment, 38.8% (n=52) of the participants were

Table 1. Distribution of the socioeconomic profile and lifestyle in adults with chronic neck pain.

Variables	n	%	Mean ± SD
Socio-economic profile			
Age (years)			28.3 ± 10.4
Female	105	78.4	
Marital status			
Single	108	80.6	
Married	19	14.2	
Divorced/Separated	7	5.3	
Education			
Incomplete elementary education	5	3.7	
Completed elementary school/uncompleted high school	4	2.9	
High school completed/unfinished university	89	66.4	
University full	36	26.9	
Paid activity (no)	70	52.6	
Social class			
A/B	29	21.7	
C	31	23.1	
D/E	73	54.5	
Lifestyle			
Hours of sleep			6.1 ± 1.3
Perception of sleep (poor)	67	50.0	
Tobacco habits (yes)	20	14.1	
Drinking alcohol (yes)	76	56.7	
Physical activity (yes)	84	62.7	
Screen hours			7.9 ± 4.0
Satisfaction with health			
High	72	53.8	
Low	62	46.3	

Mean SD: standard deviation.

Table 2. Distribution of pain characteristics, body regions and interference of pain in aspects of life in adults with chronic neck pain.

Variables	n	%	Mean ± SD
Characteristics of neck pain			
Worst pain in the last 24 hours			5.1 ± 2.7
Weaker pain			2.0 ± 1.9
Average pain			5.4 ± 2.2
Pain at the moment			3.3 ± 2.6
Number of areas other than neck pain			2.3 ± 1.4
Drug treatment	52	38.8	
Effect of drug treatment			62.4 ± 30.5
Interference in life			
General activity			3.5 ± 3.1
Mood			4.5 ± 3.7
Walking skills			2.3 ± 2.9
Work			3.2 ± 3.3
Relations with people			2.7 ± 3.1
Sleep			4.4 ± 3.6
Skills for appreciating life			3.1 ± 3.4

Mean SD: standard deviation.

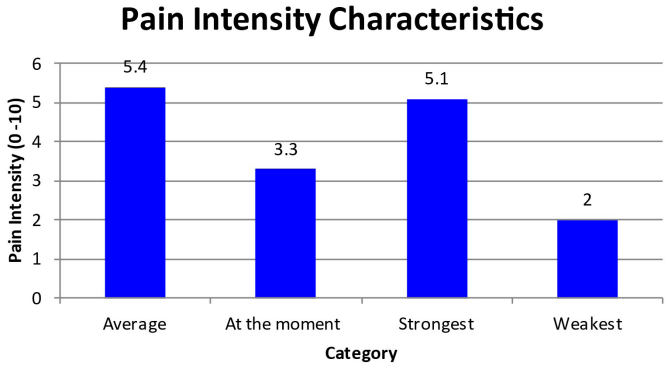

Figure 1. Distribution of pain intensity, on a zero to 10 scale, in adults with chronic neck pain.

using pain-relieving drugs, achieving an average improvement rate of 62.4% ± 30.5.

Using BPI, in the aspects of life that are affected by pain, it was found that mood and sleep are moderately interfered, with means of 4.5 ± 3.7 and 4.4 ± 3.6, respectively; followed by general activity (3.5 ± 3.1), work (3.2 ± 3.3) and abilities to enjoy life (3.1 ± 3.4), with a slight interference.

DISCUSSION

As for the characteristics of the pain, moderate intensity was observed both for crises in general and for the worst pain in the last 24 hours. However, the sample studied also had an average of mild pain at the time. These findings are in line with a study that assessed the sensory, motor and psychosocial characteristics of people with CNP, with an average pain score of 5.16 ± 2.0. This study identified a correlation between pain intensity and functional incapacity, factors that influence the deterioration of QoL[12]. Such variations in pain intensity may be related to the fact that this variable only measures the perception of pain, without taking into account the biopsychosocial contexts involved[13].

The literature points out that people with neck pain may experience pain in adjacent regions of the body, especially in the shoulder and trunk regions, as it is believed that pain, when associated with fear of movement, leads to an inhibition of muscle activation which is mediated by spinal and supraspinal mechanisms, justifying the weakness of the cervical, shoulder and trunk muscles[14]. In addition, neck pain is also associated with headaches, both primary, which occur through activation of the trigeminocervical complex, which receives information from the trigeminal nerves and upper cervical roots, and secondary, arising from trauma or cervical dysfunction itself[15]. This can explain the presence of pain in other regions of the body, especially headaches, followed by thoracic, lumbar and shoulder pain.

This study found that pain moderately interferes with aspects of life such as sleep and mood. Mood can be affected by several factors, including negative emotions, psychological distress and comorbidities such as depression. In addition, sleep quality can influence mood, as well as having a direct and indirect relationship with psychological issues, functional disability of the cervical spine and pain perception[12].

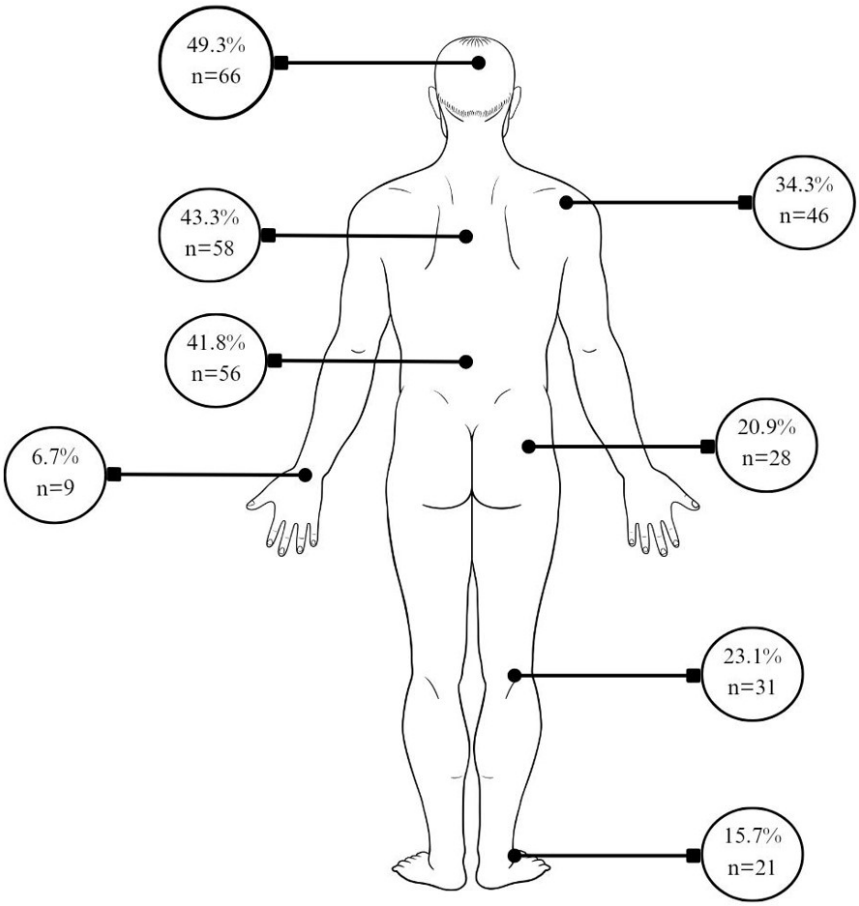

Figure 2. Prevalence of pain in other body regions in adults with chronic neck pain.

The average of 6 hours of sleep found in this study emerges as a factor that can influence both the intensity and persistence of CNP and its interference in aspects of life. This is due to perception and its direct and indirect effects on the sensation of pain and the functional state of adults[16]. In addition, other aspects of lifestyle also play a significant role in influencing the presence and severity of chronic pain. These include alcohol consumption, smoking and a sedentary lifestyle. These habits are recognized as factors that have a negative association with both the intensity and development of chronic pain[17,18].

In this study, only 14.1% (n=20) of the participants smoked, so it was not possible to analyze the interference between smoking and neck pain in this population. However, smoking has an influence on the development and progression of CNP. Years of smoking are associated with greater pain intensity, indicating a potential role of central sensitization due to the toxic effects of nicotine on the body, which increases the risk of persistent pain[17].

In this study, the majority (56.7%; n=76) of the participants consumed alcoholic beverages, and their direct relationship with pain was not analyzed, as well as whether alcohol can influence interference in aspects of life in a positive or negative way. With regard to alcohol consumption, there is a complex relationship that can contribute to the development and progression of chronic pain[19]. However, some evidence suggests that the consumption of alcohol in low doses can reduce the perception of pain and improve physical and psychological functions, because as well as having analgesic properties, it is also considered to facilitate social interaction[20].

In addition, another aspect of lifestyle that can influence the benefits of physical function and pain improvement is physical activity, which is considered a non-pharmacological treatment that promotes the release of endogenous opioids that block pain sensitivity[21]. Other beneficial factors are improved functional capacity, psychological issues and QoL in people with CNP, emphasizing the importance of implementing exercises[22].

In addition to its functional benefits, physical activity influences various aspects of life. It improves life enjoyment by increasing physical capacity and reducing pain intensity in people with chronic pain. It also makes a positive contribution to work activities[23]. In this study, a slight interference in work, general activities and enjoyment of life was observed, possibly related to the regular practice of physical activity, since 62.7% (n=84) of the participants reported exercising frequently. In summary, the data presented here shows the complexity of the factors that influence the characteristics of CNP and how they interfere with aspects of life. The biopsychosocial approach, which considers the physical, emotional and social components related to pain, is essential for effective management of this

condition. Although multimodal treatment and multidisciplinary interventions are recognized in the clinical and scientific context as fundamental to improving functional capacity and QoL, their application is still limited at health care levels[24].

Despite advances in understanding the biopsychosocial context, the biomedical model still predominates in care practice, resulting in less attention being paid to the other aspects involved in care[3]. Evidence indicates that this barrier stems largely from the insufficient training of health professionals, who often do not receive adequate training to understand the factors associated with patients' conditions. In addition, limited resources and subsidies, lack of time for more in-depth consultations and other challenges make it difficult to implement an effective approach to the management of CNP and other chronic conditions[4,25-27].

Finally, there are the limitations of this study. Firstly, there is recall bias, which may have influenced the results due to the participants' responses. In addition, the lack of data related to other pain characteristics and therapeutic interventions, such as pharmacological and physiotherapeutic treatment, is an important gap to be considered. It is also worth mentioning that this is a cross-sectional study, which limits the ability to establish causal relationships between the variables investigated.

CONCLUSION

People with CNP had predominantly moderate pain intensity, which also interfered moderately with various aspects of life, especially mood and sleep, which could have a detrimental effect on QoL.

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