

# ASSESSMENT OF THE LEVEL OF KNOWLEDGE ABOUT THE NEUROPHYSIOLOGY OF PAIN IN PHYSIOTHERAPISTS: A CROSS-SECTIONAL STUDY

## AVALIAÇÃO DO NÍVEL DE CONHECIMENTO SOBRE NEUROFISIOLOGIA DA DOR EM FISIOTERAPEUTAS: UM ESTUDO TRANSVERSAL

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**Abstract: Introduction:** Data show that physical therapists who have poor knowledge about pain assessment, pathophysiological mechanisms and treatment contribute to the perpetuation of chronic pain disorders. **Objective:** To assess the level of knowledge about pain of physical therapists working in the Recôncavo of Bahia. **Method:** Observational, cross-sectional and quantitative study. The sample was based on convenience, based on the spontaneous demand of physical therapists who agreed to answer the questionnaires. The research was carried out in Recôncavo Bahia, with physiotherapists of both sexes duly registered with the Regional Council of Physiotherapy and Occupational Therapy of the 7th Region (CREFITO 7). Individuals who did not answer 2/3 of the questionnaire were excluded from this study. The data collection instrument consisted of two distinct questionnaires, one of the sociodemographic type, and the other called the Neurophysiological Pain Questionnaire (NDQ). **Result:** The physical therapists obtained an average of correct answers of  $7.5 \pm 1.6$  in the items of the

questionnaire, representing 62.7% of correct answers. There was no correlation between training time and the physical therapists' hit rate ( $r = 0.135$ ,  $P > 0.321$ ). **Conclusion:** Physiotherapy professionals working in the Bahian Recôncavo had a low level of knowledge about pain neurophysiology.

**Keywords:** Chronic pain; Physiotherapy; Neurophysiology.

## INTRODUCTION

Pain is conceptualized by the International Association for the Study of Pain (IASP), as an "displeasent sensory and emotional experience associated with real or potential material damage, or described in terms of such damage"<sup>(1)</sup>. Thus, it is a current health problem, representing about 70% of emergency care<sup>(2)</sup>. A systematic review revealed that the prevalence of chronic pain in Bahia is around 41.4%<sup>(3)</sup>.

Studies show that more than half of the patients referred to the physiotherapy sector have pain as the main complaint, and this has a direct impact on the functionality and quality of daily life<sup>(4-5)</sup>. Physiotherapy is a very efficient resource for the treatment of patients with pain conditions<sup>(6-7)</sup>. However, the selection of the most appropriate approaches seems dependent on a high degree of knowledge, combined with the best scientific evidence<sup>(8)</sup>.

According to the Montreal Declaration<sup>(2)</sup>, it is the right of all people with pain to receive adequate treatment by a properly trained professional. However, studies show that health professionals have poor knowledge about evaluation, pathophysiological mechanisms and pain treatment<sup>(9-10)</sup>. This may be a consequence of a superficial approach to the study of pain during the training process of these professionals<sup>(11)</sup>, which may reflect in ineffective clinical practices, such as sub-diagnosis<sup>(12)</sup>.

So far, little is known about the level of knowledge about the neurophysiology and evaluation of the pain of physiotherapists working in the Bahian recôncavo. For this reason, this study has as its main objective to evaluate the knowledge about pain of physiotherapists working in the Bahian recôncavo.

## METHODS

Observational type study, of a cross-sectional and quantitative character. The sample was given through convenience, from the spontaneous demand of physiotherapists who agreed to answer the questionnaires. The survey was conducted in the Bahian recôncavo, with physiotherapists of both sexes, duly registered with the Regional Council of Physiotherapy and Occupational Therapy of the

7th Region (CREFITO 7), and individuals who did not answer 2/3 of the questionnaire were excluded. The participants in this study were characterized by a sociodemographic questionnaire containing questions related to the identification of the sample, with data regarding sex, age group, race/color, marital status, as well as questions related to academic training, such as training time, area of specialization and whether the individual has ever participated in congresses or events on neurophysiology of pain.

After the sociodemographic characterization, all participants were submitted to the Neurophysiological Questionnaire of Pain (QND)<sup>(13-14)</sup>. The QND is a self-applied instrument, originally containing 12 items that proposes to evaluate the knowledge related to the neurophysiology of pain, in which each item contains three response options, namely: true, false and indecisive. The QND results are interpreted with each hit corresponding to a point, however, if the individual makes a mistake or chooses the "undecided" alternative, the question is zeroed. Therefore, the total score varies from zero to 12, and the higher the score, the higher the level of understanding of the pathophysiological mechanisms of pain. The level of knowledge about neurophysiology of pain was determined by the accuracy rate of professionals in relation to QND. Professionals were classified as low knowledge if they had a hit rate lower than 75% of the QND, and a high level of knowledge for hit rates greater than 75%<sup>(13)</sup>.

Due to the current pandemic context, in order to minimize the risk of contagion by the novel coronavirus SARS-Cov2, the data collection procedure was carried out by completing the questionnaires on an online platform, Google Forms®. The questionnaire link was published on social networks, such as instagram, facebook and whatsapp, to recruit these professionals. Each participant responded safely, with minimal risk of breach of confidentiality. The free and informed consent form (TCLE) was made available on the first page of the form, so that participants were aware of the objectives, risks and benefits of the study. Then, all participants who agreed to participate in the study had access to the sociodemographic and QND questionnaires.

The collected data were tabulated in the Microsoft Excel software and analyzed in the Statistical Packages for the Social Sciences (SPSS) software version 22.0. Quantitative descriptive variables were presented by mean and standard deviation while categorical descriptive variables were presented by absolute and relative frequency. The Pearson test was used to correlate the variable training time and percentage of correctness in the questionnaire, adopting a significance level of 5%, and a confidence interval of 95%. The research was approved by the College Ethics Committee, through the CAAE number: 45481321.5.0000.0042.

## RESULTS

Table 1 presents the sociodemographic and academic characteristics of the population of the samples collected, with regard to the general population of the study.

**Table 1** - Baseline characteristics of physiotherapists working in the Bahian reconcavo in the year 2022, (n=56).

<b>SOCIODEMOGRAPHIC CHARACTERISTICS</b>	
<b>Sex, n (%)</b>	
Female	40 (71,4)
Male	16 (28,6)
<b>Age, years (M±DP)</b>	33,0 ± 7,4
<b>Race/Color, n (%)</b>	
Black	14 (25,0)
Brown	24 (42,9)
Yellow	3 (5,4)
White	15 (26,8)
<b>Marital Status, n (%)</b>	
Single	31 (55,4)
Married	22 (39,3)
Divorced	3 (5,4)
<b>Counties, n (%)</b>	
Cachoeira	14 (25,0)

Santo Antônio de Jesus	1 (1,8)
Camaçari	3 (5,4)
Monte Santo	1 (1,8)
Cruz das Almas	1 (1,8)
São Félix	2 (3,6)
Feira de Santana	6 (10,7)
Salvador	15 (26,8)
Jacobina	1 (1,8)
Candeias	1 (1,8)
Capim Grosso	1 (1,8)
Santa Luz	1 (1,8)
Conceição do Almeida	1 (1,8)
Utinga	1 (1,8)
Mata de São João	1 (1,8)
Itanagra	1 (1,8)
Alagoinhas	2 (3,6)
Lauro de Freitas	1 (1,8)
Porto Seguro	1 (1,8)
Macajuba	1 (1,8)

**ACADEMIC CHARACTERISTICS OF PHYSIOTHERAPISTS**

<b>Training time, years (M±DP)</b>	7,9±7,4
<b>Has a postgraduate degree, n (%)</b>	
Yes	39 (69,6)
No	17 (30,4)
<b>What is your specialization?, n (%)</b>	
Women's Health	3 (5,4)
Cardiology	2 (3,6)
Management	1 (1,8)
Pilates	2 (3,6)
Orthopedics	3 (5,4)
Public Health	2 (3,6)
Neurofunctional	4 (7,1)
Dermatofunctional	1 (1,8)
ICU	6 (10,7)
Elderly Health	2 (3,6)
DTM	4 (7,1)
Osteopathy	4 (7,1)
Manual Teraphy	4 (7,1)

Pediatrics	2 (3,6)
They did not answer	16 (28,6)

**Have you ever participated in events or taken a course on the neurophysiology of pain?, n (%)**

Yes	24 (42,9)
No	32 (57,1)

**During your graduation, did you have any specific course on the neurophysiology of pain?, n (%)**

Yes	31 (55,4)
No	25 (44,6)

**Source:** Elaborated by the authors.

Table 2 presents the total number of hits for each item of the QND questionnaire. Five items (2,3,4,8 and 12) had a high hit rate (84.6%), while seven items (1,5,6,7,9,10 and 11) had a low hit rate (47.1%). Physiotherapists obtained an average of correct answers of  $7.5 \pm 1.6$  on the items of the questionnaire, representing 62.7% of correct answers. There was no correlation between the training time and the hit rate of physiotherapists ( $r = 0.135$ ,  $P > 0.321$ ).

**Table 2** – History of hits by items observed in the QND between physiotherapists working in the Bahian recôncavo in the year 2022, (n=56).

QUESTIONS	True	False	Undecided
1. When part of your body is injured, special pain receptors transmit the pain message to your brain.	49 (87,5)	6 (10,7)	1 (1,8)
2. Pain only occurs when you are injured or at risk of being injured.	2 (3,6)	53 (94,6)	1 (1,8)

3. Special nerves in the spinal cord transmit "danger" messages to the brain.	44 (78,6)	5 (8,9)	7 (12,5)
4. Pain occurs whenever you are injured.	6 (10,7)	49 (87,5)	1 (1,8)
5. The brain decides when you will feel pain.	28 (50,0)	22 (39,3)	6 (10,7)
6. Nerves adapt by increasing their resting arousal level.	39 (69,6)	5 (8,9)	12 (21,4)
7. Chronic pain means that an injury has not healed properly.	11 (19,6)	40 (71,4)	5 (8,9)
8. Worse injuries always result in worse pain.	9 (16,1)	45 (80,4)	2 (3,6)
9. Descending neurons are always inhibitory.	13 (23,2)	27 (48,2)	16 (28,6)
10. When you are injured, the environment you are in will not affect the amount of pain you experience, as long as the injury is exactly the same.	3 (5,4)	29 (51,8)	24 (42,9)
11. It is possible to feel pain and not know it.	26 (46,4)	16 (28,6)	14 (25,0)
12. When you are injured, special receptors transmit the danger message to your spinal cord.	46 (82,1)	3 (5,4)	7 (12,5)

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**Source:** Elaborated by the authors.

## DISCUSSION



In the present study, physiotherapy professionals had a low level of knowledge about pain neurophysiology. However, this result was not correlated to the training time of physiotherapists. Interestingly, this finding is corroborated by a study conducted in South Africa, which identified that the evaluated physiotherapists had a hit rate of only 66% of the questions on neurophysiology of pain<sup>(9)</sup>. It is also noteworthy that data from recent studies have shown that the deficit of knowledge about the neurophysiology of pain of physiotherapists does not present significant differences when compared to patients treated by the health service<sup>(13)</sup>. One of the explanations for this rests in the fact that the teaching on the subject of neurophysiology of pain is little widespread in physiotherapy universities, which, consequently, reflects on professionals with little expertise in the management and understanding of pain<sup>(14)</sup>.

Also in this sense, another study conducted with a group of health professionals, among them physiotherapists, revealed inconsistency between the theoretical knowledge of the research participants with regard to their roles in pain management<sup>(15)</sup>. Interestingly, in a research whose objective was to evaluate the clinical reasoning of pain mechanisms of physiotherapists, clear evidence was revealed that professionals obtain such reasoning<sup>(16)</sup>. This evidence may suggest the need for greater investment by colleges and health professionals in the search to offer and achieve, respectively, greater knowledge on the theme of pain.

Regarding the importance of evaluating the different aspects of pain, the understanding of pain phenomena corresponds to the general degree of experience that professionals have acquired during their training. This study can provide an alarming finding, related to the dimension of pain knowledge, which can be reflected in clinical practice, influencing erroneous treatment decisions. Although this study has not focused on the correlation of the curriculum with the level of knowledge of physiotherapy professionals, it is important to point out that the content of pain education, in various undergraduate curricula for physiotherapists, should be explored to identify which specific areas of graduation that endorse the theme of pain are not being addressed. This will contribute to optimizing the effectiveness of education for physiotherapists.

Physiotherapy acts and contributes within the entire scope of clinical evaluation and pain treatment, so, in a way, it is worrying that the knowledge score on QND of these physiotherapists is so low, since they are professionals who, for the most part, work in areas such as Intensive Care Unit (ICU), Orthopedics, neurofuncioanal, etc. The importance of this is evident by the fact that little is known about the best current evidence on pain, which, in turn, can limit the effectiveness of interventions, leading to undervaluation and treatment of patients with pain<sup>(17)</sup>. Although the IASP guidelines aim to improve and standardize the teaching of pain, little research has been done on the

content of pain courses in health curricula. The results of this study point to the need for a better education about pain.

This study had some limitations, such as: a) The sample size was insufficient to ensure statistical power. Currently, according to data from CREFITO 7, Bahia has 17,163.00 active physiotherapists<sup>(18)</sup>, by virtue of this, a larger sample size could have allowed a better representation of gender, ethnicity, academic training and clinical experience of the population, and may have had a different impact on the results; b) Participants may not been motivated to give accurate answers, but to give answers Insufficient. If this is the case, it is worrying, since if physiotherapists with a low level of knowledge about the pathophysiological mechanism of pain are not motivated to respond, the results have been effectively inflated by a selection bias.

However, despite the low level of knowledge, the participants were all physiotherapists registered in CREFITO 7 for practice in the Bahian reconcavo, active in several areas. Therefore, this study provides valuable information about physiotherapy professionals, publicizing that there is a shortage of evidence about knowledge of pain.

## CONCLUSION

The present study suggests that physiotherapy professionals working in Recôncavo Baiano may have inadequate knowledge about the neurophysiology of pain. This hypothesis was raised based on a minimum score of 75%, which indicates inadequate knowledge, both to evaluate and to treat. The physiotherapists, in our sample, had insufficient knowledge to ensure the evaluation and treatment of pain. New surveys with a larger sample number are suggested.

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