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EFFECT OF RACIAL AND ETHNICAL DIFFERENCES IN PAIN PERCEPTION: EXPLAINING THE EFFECTIVE MECHANISMS ON IT*

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Pain is a subjective and personal experience and many factors such as cognitive, affective, sociocultural factors can be effective on it. Cultural differences, especially in terms of discrimination and racial inequality in the world and their impact on health functioning,have not been adequately studied. Explanations forethnic differences in pain reports are inevitably quite complicated. Thus,a biopsychosocial model of pain is warranted in the interpretation of these differences .in this study we explain this model. Because that Everym human being belongs to a particular ethnic and cultural and his culture and ethnicity shape his perception of the phenomena and how he will react to it, it is very important that researchers and clinicians should pay attention to these differences when plan research and therapeutic interventions. In this research will investigate the relationship between race and ethnicity whit pain. And will be mentioned that social, psychological and cultural factors are as an explanation for these differences.

Keywords: pain perception, pain behavior, cultural differences, racial and ethnical differences, chronic pain, biopsychosocial theory

ВЛИЯНИЕ РАСОВЫХ И ЭТНИЧЕСКИХ РАЗЛИЧИЙ НА ВОСПРИЯТИЕ БОЛИ: ОБЪЯСНЕНИЕ ДЕЙСТВУЮЩИХ МЕХАНИЗМОВ

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Боль представляет собой индивидуальное переживание, на которое могут влиять когнитивные, аффективные и социокультурные факторы. Тем не менее, остаются малоизученными культурные различия и, особенно, касающиеся расовой дискриминации расового неравенства и их влияния на здоровье. Представляется био-психо-социальная модель рассмотрения боли к интерпретации этих различий. В силу того, что любое человеческое бытие принадлежит к определенному этносу и культуре, культура и этничность формируют своеобразие восприятия феномена и реагирования на него. В этой связи крайне значимым является обращение внимания на них со стороны исследователей и клиницистов при планировании исследований и проведении терапевтического вмешательства. Рассматривается соотношение понятий «раса», «этничность» и «боль». Акцентируется внимание на социальных, психологических и культурных факторах, обусловливающих существующие различия в переживании боли.

Ключевые слова: восприятие боли, болевое поведение, культурные различия, расовые и этнические различия, хроническая боль, биопсихосоциальная теория

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Introduction. Pain is a subjective and personal experience, but uniformly in terms of sensory and emotional characteristics is described. As the International **A**ssociation for the Study of Pain [IASP], has defined: "Undoubtedly the pain is felt at the point or points of the body, it is always unpleasant and therefore also is an emotional experience" [35].

In newer definition, pain is defined as: pain is an unpleasant sensory and emotional experience that is caused by actual or potential tissue damage, or can be explained in terms of such damage. In experience of pain should be noted two factors: tissue damage [as the sensory dimension] and being unpleasant [as the emotional dimension], it is important that although biologically always there is a sensory receiving in pain perception but what is necessary in definition of pain, it is being unpleasant of this feeling. [45]

Different models are presented in the field of pain. The Gate Control model [36] is a first and most influential psychological model in this field. In this model the importance of central and peripheral systems is emphasized in reports of pain. Melzack and colleagues argue that cognitive – evaluative factors and motivational – affective in interaction with sensory phenomena, create pain. According to this model, the interaction of these factors determines the pain experience.

So, pain is a physiological-psychological concept that has been formed on several hypotheses that one of this hypotheses is "stress – pain" [37]. This theory argues that stressful events can create psychological and physiological responses and directly the pain is created. Intense stress can cause autonomic arousal or increase muscle activity and lead to painful stimulation in the periphery part. Emotional reactions related on pain (anxiety and depression or somatization), actually increase stress levels and so the pain is increased in a vicious circle. Recent researches show whenever that can specify a particular stress and also can show its relationship with pain, this hypothesis can be used for treatment of many problems such as tension headaches and migraine [37].

Because of that People differ markedly in how frequently they report physical symptoms, in their propensity to visit physicians when experiencing identical symptoms, and, as noted, in their response to the same treatments [38], The Biopsychosocial Perspective was introduced. Often the nature of patients' responses to treatment has little to do with their objective physical condition. For example, White, Williams, and Greenberg noted that less than one-third of people with clinically significant symptoms consult a physician. Conversely, from 30 to 50% of patients who seek treatment in primary care do not have specific diagnosable disorders, and for up to 80% of people with back pain and the majority of chronic headache suffers, no physical basis for the pain can be identified. [16]. So related to this model, Pain is a subjective perception that results from the transduction, transmission, and modulation of sensory input filtered through a person's genetic composition and prior learning history and modulated further by the person's current physiological status, idiosyncratic appraisals, expectations, current mood state, and sociocultural environment (body–self neuromatix).[16]

In contrast to the biomedical model's emphasis on disease, the biopsychosocial model focuses on both disease and illness, a complex interaction of biological, psychological, and social variables. From this perspective, diversity in illness expression [which includes its severity, duration, and consequences for the individual] is accounted for by the interrelationships among biological changes, psychological status, and the social and cultural contexts. All these variables shape the person's perception and response to illness and pain. [16]. pain is a biopsychosocial phenomenon that often requires interdisciplinary care. Research on the biology and neurobiology of pain has given us new ways to think about and manage pain, and is paralleled by research into the cultural, psychological, and social factors related to the experience of pain and its expression, behavioral responses, health care seeking, and receptivity to and adherence to treatment [1]. According to this model can be stated that the factors influencing pain are: Beliefs about pain, Belief to pain control, Self-efficacy, Physical disabilities resulting from pain, Affective factors (Depression, anxiety, anger, and stress), cognitive factors, cognitive errors (pain catastrophizing) and social-cultural factors [16].

Since the Zborowski's pioneering work on ethnic and cultural differences in the experience of pain [38], numerous clinical studies investigating a wide variety of painful conditions have noted ethnic differences in the prevalence and severity of pain[4] , And also because of that recently publications on topics (e.g., studies using pain induction techniques; studies of race,

ethnicity, and culture; women's pain; and treatment studies) have flourished[2], and with the increase in global migration and because Of being multicultural societies, therapists need to develop increased sensitivity to the influence of culture on pain perceptions and behaviors. In the provision of home health care, it is essential that therapists are sensitive to such influences in the delivery of culturally competent care in the assessment and management of both acute and chronic pain. The perception of pain and behaviors associated with pain are influenced by the sociocultural contexts of the individuals experiencing pain. So, in this study, we want to investigate importance of attention to relationship between culture, race, ethnic and pain in assessment and management of pain.

Because that there are some limitations or areas of concern in these studies, for example, there continues to be confusion among researchers in the use of the terms race, ethnicity, and culture. Researchers tend to use these terms interchangeably, seemingly without realizing the differences and without clarifying the terms in the methods section or discussing their conceptualization or limitations [2]. So, in this section, is expressed a definition about culture, race and ethnic.

Traditionally race has been applied as a loosely defined term that classifies people based on their ancestry and distinguishing biological characteristics [2]. Race is generally considered as genetic in origin because it includes physical characteristics (skin color, blood type, hair and eye color) as well as biologic variations such as predisposition to certain disease processes and differences in drug metabolism [8]. The classification of the human race by race is extremely problematic. Newer research highlights the limitations and dangers inherent in biologic explanations of group differences in health and disease. An emphasis on biologic sources of "racial" variations in health obscures the social origins of disease, while reinforcing group stereotypes. There is a paradigm shift occurring in research related to the label of race. The dominant perspective in the social sciences views race as socially constructed through political, legal, economic, and scientific institutions. From this perspective, the meaning of race finds its origins in social practices and a system of social relations that signify social conflict and group interests. So, Race is a major source of personal and collective identity as it is a central category of social recognition [7].

Ethnicity, a much broader concept than race, is normally defined as a group of people who have similar beliefs, laws, customs, histories, and language, and are most often of the same race [2]. Ethnicity basically devolves to phenotype. Paul Baker [1996] reminds us that phenotype represents a composite of culture, genotype, and the physical environment; when we talk about ethnicity, all of those factors come to play [17].

Culture is an even broader term, defined as a stable carrier of distinctive structures and patterns that influence perspectives, cognitions, and health [2]. Culture, according to Locke, is "socially acquired and socially transmitted by means of symbols, including customs, techniques, beliefs, institutions and material objects". According to this definition, culture is learned, not predetermined or genetic. It is important to remember that members of a particular racial group may not share the same cultural experiences. It is for this reason that one must assess for variances from the group's norm in each individual's experiences. This is an extremely important point that must be recognized. Culture influences people's health status and it shapes our concept of health, illness, and our health practices. This is a dynamic process for, as we grow and develop, we become exposed to more cultural variables [7, 8].

So,culture was most frequently presented as the topic for study, but in actuality, was rarely or never studied. Researchers should strive for conceptual clarity in the use of these terms because the meaning of findings hinges on the consistent and accurate use of them.

The perception of pain and behaviors associated with pain are influenced by the sociocultural contexts of the individuals experiencing pain. Pain perception is "composed of highly interactive emotional, cognitive, as well as sensory components". Although the pain experience is complex and influenced by multiple variables,the perception of pain and behaviors associated with pain are influenced by the sociocultural context of the individuals experiencing pain. Pain is a culturally defined physiological and psychological experience [5].

The classic work of Zborowski concluded that each culture has its own language of distress when experiencing pain. Gaston-Johannson noted

more than a decade ago that there are similarities in word descriptors in a variety of cultural groups, with the word pain characterizing the most intense discomfort, the word hurt characterizing less severe discomfort, and ache describing minimal pain [5].

Ethnic Differences in Pain Perception and Pain Response. In medical and public health as well as in the pain literature, "ethnicity" signifies group membership. Classic studies on pain and group membership have described how ethnic norms for appropriate pain behavior influence pain perception, interpretation, and response. Laboratory studies have not produced consistent results on the relationship between ethnicity and pain. If, as some studies have reported, physiological pain thresholds do not vary substantially according to ethnicity, this gives us pause as to why differing amounts of analgesics are ordered. [1]

In many of previous researches have been emphasized about differences in pain tolerance and chronic pain perception among different cultures and ethnics, for example African American and Caucasian college students were evaluated on thermal pain responses [23]. African Americans rated the stimuli as more unpleasant. Authors concluded that thermal pain unpleasantness ratings may account for greater self-reported pain symptoms among African Americans. Cutaneous pain perceptions have been compared in Caucasians and African Americans [9], noting that African Americans rated the stimuli as more unpleasant and showed a tendency to rate the pain as more intense than did Whites. Johnson-Umezulike found a moderate correlation between self-reported pain intensity and ethnicity in a study of older African Americans and Caucasians, with African Americans reporting higher levels of pain intensity. In a recent comparative study exploring normative pain response in college students in the United States and East India, it was noted that Indian participants had higher pain tolerance than did those living in the United States [39]. Galanti described Filipino attitudes toward pain medication, including stoicism and higher pain thresholds. In a comparative study of women experiencing cholecystectomy pain, no significant differences were found in Mexican American and Anglo-American women [40]

Also, in some studies have been determined that there are ethnic differences in perception of chronic pain.

Chronic pain is a stable status of pain experience during which the cause of pain doesn't eliminate or treatment is so hard and may become a long-term incurable medical status. The duration of this pain is considered between three to six months [41]. Chronic pain creates changes in mood, thinking and self-concept of patient and depression, anxiety and anger in the chronic pain syndrome are frequently seen.

The influence of culture on cancer pain management in Hispanics has been described in a qualitative work by Juarez,Ferrell,& Borneman. Cancer pain was the focus of the work done with study participants who were immigrants from Europe and Eastern Europe [42]. There were statistically significant differences in cultural identity and measures of pain sensation [20].

In a study of four different ethnic/cultural groups, descriptors used to describe pain were both similar and different among cultural groups [43]. Kodiath concluded that clients "in both cultures who find meaning in their pain show markedly less suffering than those who find pain to be meaningless". She purports there are considerable cultural differences in the meaning of pain, which then influence human suffering. Differences in coping mechanisms and beliefs about pain control in African American and White women diagnosed with rheumatoid arthritis have been identified [32]. Pain-coping strategies differ in cultural groups, and this may be as significant as differences in perceptions of pain [18]. In Mexican American families dealing with chronic childhood illness, religious faith represented a powerful coping strategy engendering hope and a sense of wellbeing [44].

Pain behaviors vary widely and may be culturally bound. Some clients cope by turning inward, describing pain as a private and personal experience. Other clients are verbally expressive, sometimes crying and screaming. It has been suggested that "people in Eastern cultures have higher pain tolerance than those in the West" [39]. In dominant cultures living in the United States, it is postulated that the willingness to verbalize pain may "be due to the belief that pain is bad, need not be endured, and should be quickly eliminated" [39]. This may not be true in other cultural groups [5].

And the nature and extent of group differences in pain tolerance according to age, sex and race were examined by Woodrow and et al; the results

showed that, on the average, Whites tolerate more pain than Orientals, while Blacks occupy an intermediate position [10].

Ethnic differences in the levels of pain reports have been found in both clinical and laboratory settings with members of minority groups often reporting higher levels of pain than Caucasians [4; 9; 12; 11]. Cultural differences regarding the acceptability of expressing psychiatric distress may contribute to ethnic differences in pain reports [3].

Also, in the study was performed by Hernandez and Sachs-Ericsson, examined ethnic differences in pain reports between Hispanics (n _ 147) and Caucasians (n _ 1308) with serious health problems. Findings indicated that Hispanics reported more pain compared with Caucasians and that depression was associated with higher pain reports in both groups. Depression moderated the relationship between ethnicity and pain such that ethnic differences in pain reports were even greater among depressed participants than among non-depressed participants. That is,pain reports for Hispanics were higher in the presence of depression than was found for the Caucasian participants. Cultural differences in the acceptability and the expression of distress may be related to higher pain reports among Hispanics as compared with Caucasians, particularly in the presence of depression [3].

And In a comparative study of 337 individuals suffering chronic pain that performed by Edwards and et al, examined the effects of ethnicity [African American vs. white] on experimental pain tolerance and adjustment to chronic pain. Findings showed that African American subjects reported higher levels of clinical pain as well as greater pain-related disability than white participants. In addition, substantial group differences were observed for ischemic pain tolerance, with African Americans demonstrating less tolerance than whites [4].

And in the study that was done by Sheffield and et al, his purpose was to determine race and sex differences in cutaneous pain perception. Findings showed that African Americans rated the stimuli as more unpleasant and showed a tendency to rate it as more intense than whites. These differences in pain perception may be associated with different pain mechanisms [9].

In another study that was performed by Bates and et al, it appeared that pain intensity variation may be affected by differences in attitudes, beliefs and emotional and psychological states associated with the different ethnic groups. Although it is likely that intense pain affects attitudes and emotions, it is also very likely that attitudes and emotions influence reported perceptions of pain intensity [21].

Minority patients are at high risk for poor pain outcomes. When patients belong to a culture or speak a language that's different from that of their health care provider, the provider faces additional challenges in successfully assessing and managing the patients' pain [19].

Explaining the mechanisms of racial and ethnic differences in pain experience and adaptability whit it. According to expressed researches set in the above, there are no doubt significant racial and ethnic differences in pain experience and its expression. Because of these differences can affect the diagnosis and treatment of pain, it is clinically important. Although researchers in the field of pain has spent most of their efforts to document these differences, but have done efforts to identify and clarify the mechanisms involved in these differences. In this regard, it is mentioned a set of biological, social and psychological mechanisms as important factors in the incident racial and ethnic differences in pain experience and expression [15].

Biological factor. Ethnic factors may be affecting on the activity of higher nervous centers that through activation of interrupting descending nervous system modulate pain. Persons belonging to certain ethnic groups (for example, African Americans) are more vulnerable than others for disease hypertension. When they experience pain, they show more severe cardiovascular activity. This increased activity can affect the perception of pain. In this regard, it has been shown that heart rate and blood pressure in African Americans with hypertension, increase more than in comparison with their white counterparts, when Intravenous catheterization. In contrast, white Americans with hypertension in exposure whit the intervention (intravenous catheterization), levels of beta-endorphin of their blood increase more than African American counterparts [24].

Social factor. Inequalities in social- economic conditions of ethnic groups in a community can effect on their access to health facilities. One of the consequences of this inequality is inadequate treatment of pain for ethnic minorities that in

recent years has turned into acute problem for the health care system [25]. For example, Cleeland and colleagues have studied inadequate treatment of pain and Inadequate prescription of analgesics drugs in the case of ethnic groups living in the United States. In this study, 65% belong to ethnic minorities and 50 percent of white Americans had received inadequate analgesic. In the study of Cleeland and colleagues, Hispanic patients not only had received lower analgesics than other ethnic groups, but were reported less reduction than other ethnic groups in analgesic consumption [26].

In another study, were compared consumption of analgesics for pain control after Operation in both groups whites of European and Asian, In this study, European whites used more than Asian Americans analgesic drugs for control of postoperative pain [27].

Racial and ethnic groups,due to inequality in access to educational resources,also have unequal educational levels. These unequal conditions are considered one of the possible causes of explanation of the racial differences in pain experience. In non-clinical population, higher education is associated with better health. Also, in clinical groups, education is associated with disability from disease. For example, in patients with rheumatoid and osteoporosis, lower education level is associated with more severe disabilities. Also, in different groups of patients with chronic low back pain, lower education levels are associated with higher prevalence of back pain, severe disability and weaker response to treatment [28].

Since people with low education have jobs with hard physical activity, there is strong evidence that hard physical activity is associated with a higher incidence of pain and more disability [29].

Because of the racial and ethnic minorities' exposure to racism and racial discrimination, they experience more intense psychological stresses. This severe stress can cause increasing of lasting activity of the sympathetic system and physiological fatigue. By such circumstances, resources and coping abilities may be reduced or ended, and thus dealing with acute or chronic pain will be more difficult [30].

Psychological factor. Research evidences that gathered during the past thirty years show that the use of strategies to deal with the pain is effective on pain severity and levels of adaptability whit it [13]. Since research evidences shows that racial and ethnic groups use different coping strategies to deal with the pain, therefore, differences in use of pain coping strategies can be explained as one of the causes of racial and ethnic differences in pain experience and its adaptability whit it [31, 30, 32]. For example, when African Americans experience pain they tend the use of coping strategies of social support [33]. In another study, Coping Strategies with pain were compared in a group of African Americans and white Americans with rheumatoid disease. Although in this study, pain intensity of the two groups were statistically equal to each other,but it was observed significant racial differences in coping strategies of the two groups to dealing with pain. African Americans in the face of pain used more of two coping strategies: distraction and praying – hoping, while white Americans used more of Ignoring and Self-statement [32]. In another study, Kano and colleagues compared a group of patients with chronic pain from the U.S.

regarding the type of strategies that were used to dealing with pain. In this study, African Americans used more than white Americans from two copings strategies: diverting attention and praying-hoping.

Ethnicity and race may have a major impact on the individual's evaluation of pain and their emotional and behavioral responses to it. Cultural and social factors - that is rooted in ethnic and racial issues - can effect on the meaning of pain (I'm a victim in pain against this thinking that pain is something that can be can be dominated on it.) [14]. such evaluations of pain can have a major impact on emotional responses to pain (including depression, anxiety and guilt) and behavioral responses (such as the decision to treat, follow the therapy instructions).

In this relation, Hobara showed that European whites more than their Japanese counterparts accept to express the pain behavior of men and women suffering from chronic pain [34].

Because pain is a subjective phenomenon [35], so person can show it to others only through verbal behavior (expressing pain, and groan and sigh ...) and nonverbal (clopping, to Change facial expressions, Limped walking) and ask others to help him/her for treatment. In clinical activity should be expected that a group of people may disapprove the pain behavior and so they don't show signs of pain existence and therefore do not receive adequate treatment in relation to their

pain. This article attempted to show that it is not correct opinion to assume pain experience and how it is expressed in different races and ethnicities is same and should be noted to ethnic and racial differences in pain research and treatment. Lack of attention to racial and ethnic differences in pain research and treatment not only can lead to the formation of theoretical dysfunctional assumptions but can encounter patient and therapist whit difficulties, such as inadequate treatment for pain.

Conclusion. Each of us has the impression that people from distinct cultures are more or less likely to express their pain experience in a manner that is somewhere between quietly enduring (stoic) or very expressive. Just ask yourself this question - what populations do you regularly encounter that are more likely to be stoic, to be expressive? Now ask yourself a second question-do youtreat such patients who are stoic differently from those who are expressive? Ideally, the answer would be no, we should treat everyone the same. However, in truth, we are likely to provide more attentive and compassionate care to the patient who is stoic compared to the expressive patient. What is it about people that direct them to express their pain experience in different ways? Culture is the framework that directs human behavior in a given situation. The meaning and expression of pain are influenced by people's cultural background. Pain is not just a physiologic response to tissue damage but also includes emotional and behavioral responses based on individuals' past experiences and perceptions of pain (e.g. when you were a child was your expressive behavior tolerated or were you expected to be stoic). On the other hand, knowledge of a patient's culture may help us better understand their behavior.

Even more important than understanding the culture of others, is understanding how our own upbringing effects our attitude about pain. We are likely to believe that our reaction to pain is "normal" and that other reactions are "abnormal". Thus a doctor or nurse from a stoic family may not know how to react to a patient who responds to pain by loud verbal complaints (or discount the pain because of the apparent mismatch between the injury and the verbal response). Even subtle cultural and individual differences, particularly in nonverbal, spoken, and written language, between health care providers and patients impact care [6]. So, now it is very important to be culturally competent for therapists, nurses and physicians. To be Culturally Competent, a therapist must: Be aware of his own cultural and family values, be aware of his personal biases and assumptions about people with different values than yours, be aware and accept cultural differences between himself and individual patients, Be capable of understanding the dynamics of the difference, Be able to adapt to diversity, He/she must listen with empathy to the patient's perception of their pain; explain his perception of the pain problem; acknowledge the differences and similarities in perceptions; Recommend treatment; and Negotiate agreement. In addition, a therapist should consider dimensions of culture in a special country and too, to be awareness of Cultural Mismatch, misunderstanding and misinterpretation between two different culture and Generalizations and Stereotyping in this culture. So, according to this information can be concluded that cultural and ethnical differences among patients whit pain are an important factors to study pain and pain perception and another variables in relation to pain. Because studies showed that there are many differences in pain perception and expression of pain in different cultures and ethnics and now in every country there are a lot of nationalities and different races and ethnics and so cross cultural relationships among them will increase and since the patients from ethnic minorities and cultures different from the health care professionals that treating them, receive inadequate pain management. So,it is very important that researchers and clinicians should pay attention to these differences when plan research and therapeutic interventions.

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