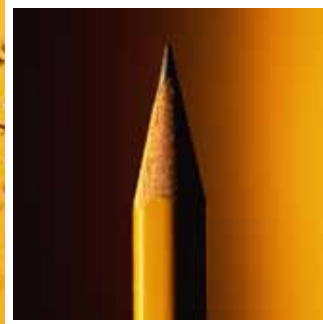


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# 2009 WRITING AWARDS



# Core Phenomenon: Chronic Pain

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Nominated by Sally Decker, Department of Nursing



**Brittany Bushong, in the Bachelor of Science in Nursing program, is from Tawas and will graduate in May 2010. She looks forward to the experience her position as a nurse extern in pre-op and post-op at Covenant HealthCare will bring her this summer. As a nurse, she plans to care for patients in a hospital setting, possibly in the surgical services department. When her time is not occupied by school, she enjoys visiting family and friends, shopping, and relaxing at the beach.**

## Abstract

Chronic pain is both an emotion and a sensation due to actual or potential tissue damage that lasts six months or longer. The comfort theory by Kolcaba explains the facilitating and obstructing features of a healthcare situation such as chronic pain, and the health seeking behaviors that need to be implicated to achieve comfort. The theory of unpleasant symptoms portrays how a diagnosis like chronic pain can lead to a variety of different symptoms, each of which has similar psychological, physiological, and situational effects on the patient. In the Roy Adaptation Model, depression was found to be a common effect of chronic pain. A study conducted showed how implementing a chronic pain diary results in better assessment of pain. Additional research findings show that the experience of chronic pain affects the whole family of the pain sufferer. The pathophysiology of chronic pain is explained through the gate control theory and central sensitization. Factors such as age and gender are considered, as they affect the experience of chronic pain.

## Defining and Characterizing Chronic Pain

The phenomenon of chronic pain is a complex health concern; the cause of such pain can be somewhat ambiguous (Margoless & Weiner, 1999). Chronic pain, as described by Margoless and Weiner, is intractable, meaning the origin of pain cannot be treated or withdrawn. Taber's Cyclopedic Medical Dictionary (2005) defines chronic pain as "long-lasting discomfort, with episodic exacerbations, that may be felt in the back, one or more joints, the pelvis, or other parts of the body" (p. 1568).

The International Association for the Study of Pain (IASP) (1994) characterizes pain as both an emotion and a sensation linked to actual or potential tissue damage. The IASP recognizes three durations of chronic pain: less than a month, one to six months, and longer than six months (Carrieri-Kohlman, Lindsey, & West, 2003). According to the North American Nursing Diagnosis Association, to be classified as chronic pain, the sensory and emotional discomforts related to actual or potential tissue damage must last longer than six months (Moorhead, Johnson, & Maas, 2004). Moorhead et al. state chronic pain is not a condition in which there is an anticipated or measurable end in sight. Thus, chronic pain is persistent and difficult to treat. Pain is not objective, meaning it cannot be accurately measured by others; pain is subjective to what the client perceives it to be. The experience of chronic pain is not identical for all sufferers; rather, it is unique to each person (Smith & Friedemann, 1999).

Unlike acute pain, chronic pain is neither something of short duration nor can it be alleviated with usual methods of pain control like non-opioid analgesics (Craven & Hirnle, 2007). Psychologist Richard Sternbach further differentiates acute pain from chronic pain. He compares acute pain to a biological alarm warning the brain that fire has occurred somewhere in the body; chronic pain is described as a "false alarm" where the fire has subsided but the alarm keeps ringing (Drum, 1999). That alarm is analogous to the chronic pain that is unremitting. The false alarm correlates with the fact that chronic pain serves no useful purpose like the alarm in acute pain does. In acute pain, once the alarm goes off, the person is aware something is wrong in their body and seeks treatment for the pain, expecting the pain will soon subside. In contrast, since chronic pain is intractable and lasts at least six months, the alarm in chronic pain serves no purpose. Drum (1999) explains that psychologist Lawrence LeShan has related the experience of chronic pain to a nightmare in which the dreamer is "helplessly under the control of outside forces and cannot predict when the nightmare will end" (as cited in Drum, 1999, p.

3). Lakoff (1990), a professor of psychology, says chronic pain patients have the following characteristics: “infantile dependency needs, marked passivity, masochism, denial, regression, repressed anger or overt hostility, and feelings of guilt, anxiety, and depression” (p. 500).

Whereas the field of psychology looks at chronic pain as an emotion, psychological viewpoints often make an analogy for chronic pain, and focus more on the behaviors and feelings that accompany the experience. The nursing definitions of chronic pain view pain as both an emotion and a sensation. The length of time for pain to be considered chronic pain and the origin of pain are also included in the nursing definition.

### **Nursing Research and Theories of Chronic Pain**

There are multiple nursing theories that can relate to chronic pain, direct research, and influence nursing practice. These theories include the comfort theory, the theory of unpleasant symptoms, and the Roy Adaptation Model. In the theory of comfort, Kolcaba (2001) defines comfort as “the state of having met basic human needs for ease, relief, and transcendence” (p. 88). Kolcaba (2001) explains relief as having a particular need met; ease as the state of calm or contentment; and transcendence as rising above the pain or health concern. There are also different perspectives for how comfort can be achieved; these are physical, psychospiritual, environmental, and social. The physical component relates to body sensations and function, psychospiritual relates to internal self-awareness, environmental pertains to one’s connection with a higher being, and social relates to interpersonal, family, and financial relationships (Kolcaba).

The model illustrated in diagram A [Figure 1] in the Appendix shows an additional aspect of the theory of comfort. Kolcaba (1994) says that in the comfort theory there is a stimulus situation which is considered under any healthcare circumstance. This healthcare condition causes persons to have feelings of either success or failure about their circumstance and is considered their human development; this can be positive or negative. The stimulus situation entails alpha press and beta press. Kolcaba says the addition of negative obstructing forces, positive facilitating forces, and interacting forces equals the alpha press. To clarify, obstructing forces are the sum of negative stimuli coming from the healthcare circumstance, such as side effects of an ailment or treatments, harmful environmental or social experiences, and emotional sensations. In regard to chronic pain, decreased activity tolerance and frustration from long-lasting discomfort are examples of obstructing forces. The facilitating forces are nursing interventions performed to reach the needs of persons after they have faced obstructing forces and can no longer help themselves. A nurse who applies a heating pack or administers pain medication is an example of a facilitating force for chronic pain. A person’s past experiences, age, emotional status, support system, and sum of all the elements in their present condition are the interacting forces (Kolcaba). Therefore, alpha press is analogous to how a person copes with chronic pain in relation to the obstructing, facilitating, and interacting forces.

Also explained by Kolcaba (1994), beta press is how the person perceives the full effect of their stimulus situation and the success of the nursing interventions (facilitating forces) at achieving the needs of the healthcare circumstance (obstructing forces). If the person feels his or her negative strains have been decreased, then they have a perception of comfort. A unitary trend exists if the person believes the nursing interventions have a positive effect and they anticipate other stimulus situations will also result in success. This success will hopefully lead to a “health theme,” which is awareness of health seeking behaviors. Kolcaba (1994) explains that there are internal and external health seeking behaviors. Internal behaviors like healing occur at the cellular level, whereas external behaviors are health maintenance programs, activities of daily living, improved functioning, and decreased hospitalization time. (The other form of a health seeking behavior to improve comfort is a dignified or peaceful death). If persons have the cognitive ability, they can assist in their own health seeking behaviors. Otherwise, the nurse can assess for signs of a person’s discomfort and implement health seeking behaviors (Kolcaba, 1994).

A later article by Kolcaba (2001) states six propositions of the comfort theory described above that can be applied to the phenomenon of chronic pain. First, the nurse discovers the comfort needs of the patient or the stimulus situation, which is pain relief for the subject of chronic pain. Then, the nurse forms interventions to meet the needs of pain relief. The third step indicated by Kolcaba is to form interventions that reach a level of improved comfort which the patient and nurse both agree upon, as well as health seeking behaviors, all while considering intervening variables. Next, if the patient has

improved comfort or decreased pain due to increased vigor, he or she can participate in health seeking behaviors. Once the patient has carried out health seeking behaviors, the fifth step involves the nurse and patient being pleased with the healthcare. When a patient is pleased with his or her healthcare, or relief of pain, that gives the health care institution integrity, as stated in the final proposition.

The second theory related to chronic pain is the middle-range theory of unpleasant symptoms by Lenz, Pugh, Milligan, Gift, and Suppe (1997). This theory asserts that there are many similarities between different symptoms; thus the theory can describe a range of unpleasant symptoms, not just one. As a result, more than one symptom may be relieved by related nursing interventions. Lenz et al. state there are three main factors of the unpleasant symptoms theory: “the symptoms that the individual is experiencing, the influencing factors that give rise to or affect the nature of the symptom experience, and the consequences of the symptoms experience” (p. 14). The theory claims that numerous symptoms are more likely to occur at the same time rather than a symptom taking place by itself; this is known as a symptom cluster. An example of this, given in the theory, is pain, which is frequently accompanied by nausea (Lenz et al.).

According to Lenz et al. (1997), different symptoms have many similar components, such as intensity, timing, level of perceived distress (extent of discomfort), and quality. A patient rating the severity of his or her pain is an example of assessing the intensity. The level of perceived distress can be explained as the emotional aspect of pain and indicates the patient’s quality of life; words used to explain the sensations of the symptom portray the quality of pain. An example of quality given by Lenz et al. (1997) is the McGill Pain Questionnaire, which “provides a list of sensory pain descriptors, such as pounding, throbbing, or flickering” (p. 15). This theory reveals that chronic pain patients may be better than patients who endure acute pain at distinguishing and describing the quality of their symptoms, due to their long-lasting experience (Lenz et al., 1997).

Lenz et al. (1997) claim there are three types of variables that affect the intensity, timing, degree of distress, and quality of symptoms: physiologic features, psychological features, and situational features. These three aspects of the symptom can exist independently from one another, but there also can be a combination of all three features. Examples of physiologic features are any pathology and one’s level of energy. A person’s mental status, response to the ailment, and level of understanding of the symptoms make up the psychological feature. Situational features (elements of the physical and social environment) impact how the person accounts for and experiences the symptoms (Lenz et al., 1997). The final portion of the unpleasant symptoms theory is the performance or effect of the symptom occurrence. The effect demonstrates how the unpleasant symptoms a person experiences from a disease can alter his or her physiological, psychological, and situational condition. One example of this given by Lenz et al. (1997) is how a person’s experience of chronic pain and its symptoms can have a negative influence on the person’s role performance and social relations. The influence of chronic pain symptoms may alter eating habits (physiologic feature), increase anxiety or depression (psychological features), and result in alterations in support systems or employment (situational features). Understanding the multiple aspects and effects of unpleasant symptoms and the relations between them allows for similar nursing interventions to be implemented for overlapping symptoms (Lenz et al., 1997).

The theory of unpleasant symptoms illustrates how the nursing profession views chronic pain as an actual diagnosis instead of just a symptom. Chronic pain is a condition which causes unpleasant symptoms to arise. Lenz et al. (1997) revealed that nausea can be an unpleasant symptom of chronic pain, establishing chronic pain as an actual diagnosis. Also, Moorhead et al. (2004) list chronic pain as a NANDA (North American Nursing Diagnosis Association) diagnosis with specific outcomes for interventions.

The third theory discussed is the Roy Adaptation Model (RAM). According to Tsai, Tak, Moore, & Palencia (2003), the RAM by grand theorist Roy has been incorporated into a middle-range theory of chronic pain. Research included in this theory found that over half of patients with chronic pain experience depression, a major effect of chronic pain. In the RAM, there are three types of input stimuli: focal, contextual, and residual. The concept in this theory regards chronic pain as a focal stimulus, defined as “an internal or external factor that immediately confronts a person” (Tsai et al., 2003, p. 159). Any other aspect that influences the effect of the focal stimulus is the contextual stimulus, and the residual stimulus is an aspect in which the influence on the current circumstances is uncertain. Disability and social support are contextual stimuli, and age and gender are residual stimuli in this model; depression is the output. The control process is perceived daily stress, which reconciles the influence of chronic pain, disability, social support, age, and gender on depression. The model also consists of coping mechanisms (Tsai et al., 2003).

A study by Tsai et al. (2003) using the RAM model involved 71 older adults with arthritis – a subgroup of chronic pain. Tsai et al. (2003) found that the effect of pain, disability, and social support was perceived daily stress, which did predict depression. Gender and age were unsuccessful at predicting daily stress. Although this study was limited to older adults with arthritis pain, integrating the RAM to verify a middle-range theory for chronic pain is an initial step that can possibly guide further research. The study could also be used to relate the RAM to other illnesses causing chronic pain (Tsai et al., 2003).

Nursing researchers Hager and Brockopp (2007) studied the use of a pain diary to assess the level of chronic pain reported by long-term care residents. The study claims that in order to manage pain, better pain assessment needs to be carried out. There were 21 participants in the study, all of whom suffered from chronic pain; their average age was 74.9 years old. At any time participants experienced pain, they were asked to report their pain in their diaries; the diaries allowed pain sufferers to rate their pain on a scale of 0 to 10 (10 being the worst possible pain), record their level of pain during activity and while resting, document all the locations where they experienced pain, mark their sensations of pain using 12 different descriptors (stabbing or heavy), and approximate how many hours they experienced pain in each day. Participants used their pain diaries for two weeks; the manager of the research collected the data from the diaries at the end of each day (Hager & Brockopp, 2007).

Before the diaries were used, the average reported pain level from participants was 5.71. After the diaries were introduced, patients reported their pain levels to be 6.29. Pain levels of 4 to 5 “were found to affect the patients’ daily functioning, while scores of 6 to 7 were found to interfere with enjoyment of life” (Hager & Brockopp, 2007, p. 18). These results illustrate how taking more interest in one’s level of pain raises the amount of pain levels being reported, ultimately improving the management of chronic pain and quality of life. As a result of the diaries, nurses are more aware of the patients’ pain and can use pharmaceutical or non-pharmaceutical pain management to decrease patients’ discomfort (Hager & Brockopp, 2007). The pain diary is a tool that allows better pain assessment since these patients were required to write down the pain when they experienced it and describe the intensity and quality; this way, they remembered the characteristics of their pain more easily than when waiting for a nurse to ask them about their pain. Also, the nurse may forget to assess pain on these patients and the pain would go unreported without the diary, which nurses could get in the routine of checking for patients with chronic pain. The study was limited to older adults in a long-term care facility, but further studies using pain diaries could be implemented to assess reported pain levels in a more randomized population of chronic pain patients.

A qualitative study by Smith and Friedemann (1999) evaluated the effects of living with chronic pain on patients’ relationships with members of their family. The 30 participants ranged from ages 31-82. Most were married, and about half had children under 18. In this context, Smith and Friedemann (1999) state that chronic pain is seen from three perspectives: “a symptom caused by family dynamics; an agent that shapes family dynamics; and a force that maintains and reinforces family processes” (p. 545). The researchers interviewed the chronic pain participants using open-ended questions about how their experience with pain affected the function of the family. Interviewers sought to find any inconsistencies or conflicts in how the participant discussed family values, emotions, or the splitting up of responsibility within the family (Smith & Friedemann, 1999).

Smith and Friedemann (1999) report that after these taped interviews were reviewed by nurse experts in family nursing, the results illustrated dominant themes of “emotional distress, perceived distancing from family members, inability to share difficult feelings, intense mutual involvement with family members and identification with the problems, family isolation from community, and attempts at healing” (p. 545). Feelings of depression, anxiety, guilt, or anger were reported by all of the chronic pain participants in the study. Some commented on how they feel guilty when their pain holds them back from doing activities with their children. Participants felt like nobody in the family understood the pain they suffered and that it was hard to express their feelings to others. Yet 26 participants reported having a close family, where members sacrificed some autonomy. An attempt at healing refers to the participants seeking religion, marital counseling, or relaxing techniques. The dominant themes found in the study demonstrate that at times, the participants’ pain acted as a means of balancing the distance and connectedness between family members. The findings of this study are useful for giving nurses knowledge about the effects of chronic pain on the patient and the family as a whole and how promoting congruence within the family is significant for a better understanding of one another (Smith & Friedemann, 1999).

## Pathophysiology of Chronic Pain

The gate control theory and the theory of central sensitization are significant in portraying the way in which chronic pain occurs in the body. Carrieri-Kohlman, Lindsey, and West (2003) describe that the gate control theory developed by Melzack and Wall in 1965 established that nociceptive (pain) fibers and nonnociceptive (non-pain) fibers both synapse on cells of the dorsal horn of the spinal cord, where pain sensations are sent to the brain. Diagram B on the Appendix illustrates that within the spinal cord, there are interneurons which can inhibit the cells that transmit sensations, causing a disruption in the equality of small diameter (pain) fibers and large diameter (non-pain) fibers (Carrieri-Kohlman et al., 2003). Therefore, if there is more activity of small diameter fibers than large diameter fibers, then the gate opens and there is stimulation of pain transmission cells. If large diameter fibers are activated, then the gate closes and pain is blocked by inhibitory interneurons (Carrieri-Kohlman et al., 2003).

According to Carrieri-Kohlman et al. (2003), this theory was modified by Melzack after the idea of neuroplasticity was introduced. Neuroplasticity proposed that the brain is not a hard-wired system; rather, it can be re-patterned and work together with other physiological systems. The modified theory is the neuromatrix theory of pain. Carrieri-Kohlman et al. (2003) explain that the neuromatrix is “a genetically built-in matrix of neurons whose spatial distribution and synaptic links” are first determined by genetics and later altered by sensory inputs (p. 238). This theory suggests that the synaptic design of the neuromatrix causes the nervous system to determine if the pain is acute or chronic. The theory also implies there are physical and psychological elements that influence the experience of pain. Both the peripheral and the central nervous systems work together to process pain; transduction, transmission, modulation, and perception are the means for pain processing (Carrieri-Kohlman et al., 2003).

Carrieri-Kohlman et al. (2003) state that transduction entails the stimulation of afferent nociceptors (A-delta and C-fibers), an occurrence which creates impulses that are sent to the dorsal horn. The stimulation of afferent nociceptors starts with a form of tissue damage, which causes an inflammatory response. The inflammation results in the activation of C-fiber terminals, causing pain and sensitization of C-fibers along with intense pain (hyperalgesia). Transmission occurs when the central nervous system (CNS) receives electrical impulses and creates the feeling of pain. The substantia gelatinosa and neurotransmitters are located in the dorsal horn, a position which is necessary for the transmission and modulation of pain. If there is lasting or increased pain, N-methyl-D-aspartate (NMDA) receptors are stimulated. Once these receptors are stimulated, neurotransmitters are released, intensifying the pain; this situation could cause hyperalgesia and eventually chronic pain. Modulation of pain entails the processing of pain through the body’s neurotransmitters, such as endorphin and serotonin. Carrieri-Kohlman et al. (2003) also describe how perception of pain is assessed by the relationship between anatomical and neurochemical components using technology such as positron emission tomography. The gate control and the neuromatrix theories of pain explain how the central nervous system processes sensory inputs to develop the overall sensation of pain; within the transmission phase, the stimulation of NMDA receptors gives rise to chronic pain (Carrieri-Kohlman et al., 2003).

Subsequently, the concept of central sensitization was developed to depict the mechanism of chronic pain. According to Gudin (2004), central sensitization is the excitability or wind up of the central nervous system due to nerves being activated repeatedly. Repetitive nerve stimulation leads the neurons to build up a “memory” of the transmitted pain signals; the more nerve fibers are stimulated, the more powerful the brain’s “memory” of the pain becomes. Gudin (2004) also states that once memory of pain is built up, neurons will react more quickly and more effectively to the same painful stimulus, creating a vicious cycle.

The concept of central sensitization shows how chronic pain is a continuous process of nerve fibers being stimulated and intensified, creating a state of intractable pain (Monahan, Sands, Neighbors, Marek, & Green, 2007). Monahan et al. (2007) state that the sustained activation of hyperexcited nerve fibers causes neurons in the dorsal horn to become hyperresponsive. This reaction causes nonpainful stimuli called allodynia to become painful due to central amplification. Central amplification occurs when N-methyl-D-aspartate (NMDA) receptors are stimulated. If the NMDA receptor sites were blocked by drugs that antagonize NMDA, then the pain may be decreased. Helme and Gibson (1999) state that epidemiological studies have found that between men and women of the same age, women have a higher prevalence of experiencing pain. Women are also more likely than men to experience chronic pain conditions such as rheumatoid arthritis, osteoarthritis, and fibromyalgia. One study found a relationship between age and the number of self-reported diseases and that with disease, the risk of experiencing pain increases. Although older adults are more likely to have diseases that cause pain,

they have a low self-report of pain; the reasons Helme and Gibson give are that the elderly misinterpret their pain as just being old, and they may have a decreased sensitivity of pain due to changes in the function of nociceptive pathways (1999).

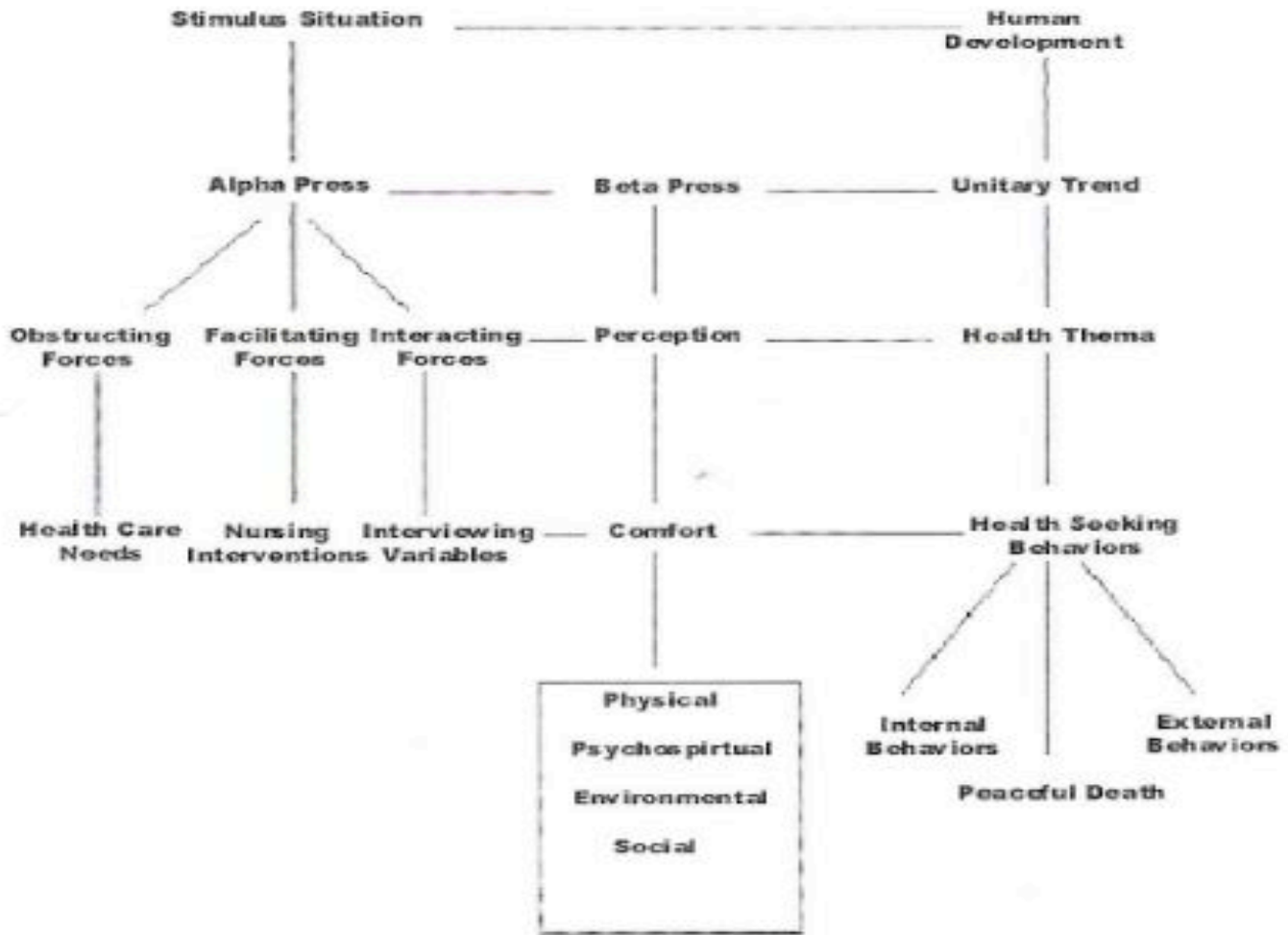
The complex phenomenon of chronic pain has been described and viewed in relation to Kolcaba's comfort theory, the theory of unpleasant symptoms, and the Roy Adaptation Model. The gate control theory and central sensitization explain the way in which chronic pain works at the cellular level in the body. Incorporating a variety of nursing theories and research into one's knowledge of chronic pain gives a holistic view and understanding of the phenomenon.

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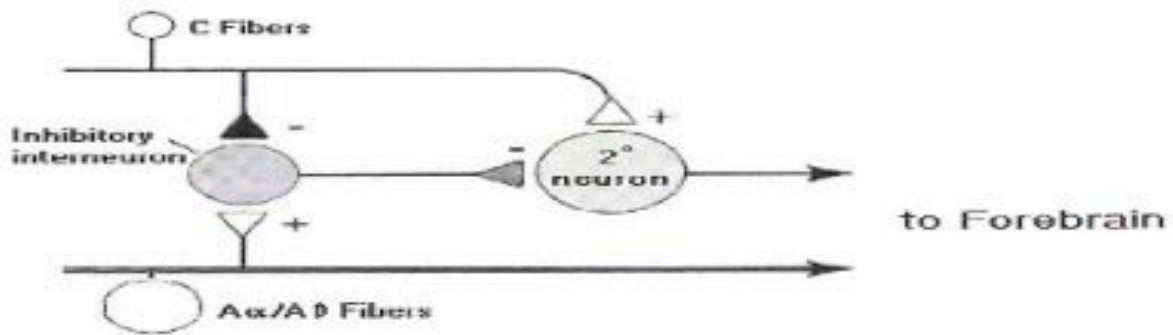
## Appendix

**Diagram A: Kolcaba's Comfort Theory Conceptual Framework**



Source: Kolcaba, 2001

**Diagram B: Gate Control Theory of Pain**



Source: Stoney (n.d.)