# Transitions in the Concept of Chronic Pain

Chronic pain is a worldwide problem with significant physical, psychological, and social impacts. Despite its prevalence and cost, the phenomenon is not well understood. An inductive method of concept analysis was used to study the concept of chronic, non-cancerous pain in adults. A random sample of nursing, psychology, and neurophysiology literature published over a 30-year period (1969 through 1999) was used to generate a consensual definition of chronic pain. The transition in the attributes, antecedents, consequences, related concepts, and surrogate terms of chronic pain is described, and the implications of the findings for practice and research are discussed. Key words: *chronic pain, concept analysis, continuous pain, intractable pain, neurophysiology, nursing, persistent pain, psychology*

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CHRONIC pain is a worldwide problem with a prevalence of between 2% and 46.5%.[1–3] More than half of those with chronic pain for 6 months or more report their pain as severe (ie, greater than 7 on a 1-to-10 scale).[4] Chronic pain sufferers are more likely to experience depression, anxiety, activity limitations, and unfavorable health perceptions. One study[5] found the cost of neck pain in The Netherlands in 1996 to be over $680 billion (US dollars). At that rate worldwide, the true cost of all forms of chronic pain may be trillions of dollars in tangible and intangible costs to the patient, family, and society for medical care, medication, and treatment; lost wages and tax dollars; and lost productivity and workers' compensation expenditures. Intangible social costs to the patient and family can only be measured in decreased physical, psychological, and social well-being and low quality of life.[6–8]

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Since the 1970s and the first publication of the journal *Pain,* researchers and practitioners have been calling for clarity in the taxonomy of pain.[9,10] In 1994, the International Association for the Study of Pain (IASP) published a Classification of Chronic Pain[11] that codes and classifies pain syndromes. Although the IASP stated that "chronic pain has gradually emerged as a distinct phenomenon in comparison with acute pain," chronic pain as a concept was not analyzed.[11(pxi)] From a nursing perspective, studies between 1961 and 1984 examined the assessment of pain and the management of pain,[12] not the concept of chronic pain. Cupples[13] examined pain as a "hurtful experience" but did not distinguish between acute and chronic pain. Davis[14] analyzed the meaning of pain management. It appears that despite the prevalence and cost of the phenomenon, a conceptual analysis of chronic pain has not been conducted.

## METHOD

Rodgers'[15] evolutionary method of concept analysis was used in this study to clarify transitions in the concept of chronic pain over time. This method, philosophically consistent with dispositional theoretical underpinnings, recognizes concepts as private abstractions influenced by socialization and developing over time within various contexts that include cultural groups and disciplines. Although this is not the only method that could have been chosen, it was selected because it is consistent with the idea that the concept of chronic pain is dynamic and that the professional and scientific meaning and use of the concept influences and is influenced by the social context of its use. Furthermore, this method provides the most rigorous approach to sample selection. According to this method, the concept and associated expressions are identified first. Then the setting, which includes the time period, the discipline, and types of literature, is defined. Within each discipline included in the study, the total body of indexed literature is identified through computerized database searches. Next, overlapping references are deleted, and a random sample of at least 30 articles or 20% of the indexed literature is selected for review. From that sample, data on antecedents, attributes, consequences, related concepts, and surrogate terms are collected in the form of direct quotes. The collected data are then analyzed to determine interdisciplinary variations and changes in the concept over time, between disciplines, and within disciplines.

The concept of chronic, non-cancerous pain in adults is the focus of this study. The terms *chronic pain, persistent pain, intractable pain, and continuous pain* were used to search CINAHL, Medline, PsychInfo, and Grateful Med bibliographic databases to identify a body of English-language literature on chronic pain in humans. The setting for the study was nursing, psychology, and neurophysiology professional journal publications of the years 1969 through 1999. Case studies, qualitative and quantitative studies, review articles, and meta-analyses were included as data sources relevant for sample selection. In addition, a descendency search was conducted by reviewing reference lists of articles related to chronic pain that had been read, books on pain, and reference lists available from pain associations, such as the American Pain Society and the IASP. All references were entered into a bibliographic database to facilitate review.

The 368 nursing references found were combined into one list. After deleting duplicates, references not written by nurses, and references related to cancer and pediatrics, 142 references constituted the entire population of nursing literature related to noncancerous chronic pain in adults. Rodgers recommended:

> at least 30 items from each discipline or 20% of the total population, whichever is greater, is needed, as experience has shown that this volume of literature provides an adequate basis for identifying a consensus within the discipline and for substantiating the conclusions of the researcher.[15(p81)]

After sorting the list chronologically, 30 articles, or 21% of the entire population of nursing literature, were randomly selected for review using a table of random numbers. A similar search was conducted for references in the disciplines of psychology and neurophysiology. The database and descendency searches identified 3,400 articles. Duplicates, references written by nurses, references not related to humans, and references related to cancer and pediatrics were deleted. Because of the large number of references, the abstracts were read; only those articles in which the primary focus was chronic pain were retained. The entire population of the neurophysiologic-psychological, non-nursing references specific to noncancer chronic pain in adults consisted of 532 references. From that list 21%, or 112 articles, were randomly selected for review using a table of random numbers.

In addition to these primary references, a purposive sample was selected from identified literature known to be classic, seminal works, or works frequently cited in the literature selected for review. There were no books or seminal articles written by nurses that specifically addressed chronic pain. However, books and articles on pain written by Jacox and Stewart,[16] Jacox,[17] and McCaffery[18] were read to extract data on chronic pain. Books and seminal articles written by Engel,[19] Bonica,[20] Fordyce,[21] Blumer and Heilbronn,[22] and Merskey and Bogduk[23] were read to extract data related to chronic pain.

After reading each article to determine the essence of the article that would indicate the meaning of the concept of chronic pain, each article was reread, documenting direct quotes from the article related to the antecedents, attributes, consequences, related concepts, and surrogate terms of chronic pain. Two computer databases of direct quotes, one from the nursing literature and one from the neurophysiologic-psychological literature, were created.

After all the articles were read and the relevant quotes documented, the quotes were coded as an antecedent, attribute, consequence, related concept, or surrogate term and by the year the article was published. The databases were first sorted by code and then chronologically. The resulting databases were then read, and common themes were highlighted. The lists were then recoded by theme and resorted by original code, theme, and chronologically by year. Each article was then reread to determine whether additional themes could be identified; additional quotes related to the identified themes were recorded in the databases. The themes within each discipline were then analyzed, and the relationship between themes clarified for each of the areas—antecedents, attributes, and consequences. Very few surrogate terms and related concepts were identified. The themes then were

compared to determine between-discipline similarities and differences. Widespread agreement regarding the conceptualization of chronic pain was found among the disciplines. Finally the data were analyzed to determine if there had been transitions in the conceptualization of chronic pain over the last 30 years. The themes in the following section are a summary of the data extracted from a randomly selected sample of 142 primary references that were read. The results represent a consensus among disciplines of the concept of chronic pain and the transition of the concept over the 30-year period of this study.

## RESULTS: TRANSITION THEMES

### Attributes

The attributes of chronic pain fall within three primary dimensions: physical, behavioral, and psychological. The physical dimension is characterized by the quantity, intensity (also called level or severity), neurologic transmission, and anatomic pattern of chronic pain. Expressive, movement, and functional behaviors characterize the behavioral dimension. The psychological dimension is related to the meaning of chronic pain and is characterized by affective and evaluative components. Distinct thematic transitions related to these dimensions emerged.

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### *The language of chronic pain*

Because chronic pain is self-reported, there is a natural interest in the language of pain. References to the language of chronic pain appear in nursing, neurophysiologic, and psychological literature. During the 1970s an early reference to the language of chronic pain had a distinct psychological overtone, comparing pain descriptive words of patients with psychiatric diagnoses to those of patients with organic pain diagnoses and those with mixed organic-psychiatric diagnoses.[24] During the 1980s nursing research of the language of pain with individuals who had chronic pain and individuals without pain led to an understanding that words differentiate the quality and intensity of pain.[25,26] During the 1990s investigations focused more on variations in verbal and information processing of individuals with chronic pain in comparison with individuals without pain.[27–30]

Different words are used to describe chronic pain than to describe acute pain. The word *ache* was most frequently used to describe chronic pain, and it was described as less severe than pain. Specific verbal modifiers, such as annoying or dull, often were used to further describe levels of intensity. Although specific fiber and tract stimulation and transmission also were linked to the verbal descriptors used, later references call into question the idea of specific pathways or brain center dedicated to pain.[31,32]

There is an anatomic pattern to chronic pain. Headache and backache were cited as the most common types of chronic pain. Low back, joint, or musculoskeletal chronic pain is usually described as a dull, annoying ache. Even the more diffuse chronic pain of fibromyalgia demonstrates an anatomic

pattern to the painful sites that is used diagnostically.

### *Chronic pain behaviors*

Chronic pain is communicated by behavior with operant expressions serving as indices of chronic pain. Influenced by the theory that chronic pain is a result of operant conditioning,[21] chronic pain was described in the literature of the late 1970s and early 1980s of this study as learned behavior. Chronic pain behaviors included excessive complaining uncorrelated with physical findings and illness behaviors such as exaggeration of the sick role, avoidance of activity, and disability, all described as manipulative, maladaptive, and used for secondary gain. During the last decade of this study, behavior was described as a definitive symptom of chronic pain with behaviors unique to chronic pain differentiated from behaviors of acute pain.[33,34] Behaviors found in the literature of this study were listed and categorized into expressive behaviors, movement behaviors, and functional behaviors. Expressive behaviors included such things as moaning and the use of pain words. Movement behaviors, used to communicate and relieve chronic pain, included grimacing, massaging, protective movements, and rhythmic movements. For example, rocking from side to side when standing to relieve chronic low back pain was described. Functional behaviors, used to relieve or cope with pain, included the use of socially defined sick role behaviors such as decreased mobility, inactivity, and bed rest.

### *Time and chronic pain*

Chronic pain was most often defined in temporal terms. Three temporal patterns associated with chronic pain—onset, duration, and frequency—were described in the literature. The most common diagnosis of chronic pain in the literature of this study was related to the duration of the pain from the onset of acute pain. In the literature of the 1970s chronic pain was most often defined as pain that lasted for a period of 6 months or more. By the late 1980s the duration of acute pain definitive of chronic pain was described either as persisting beyond usual healing or 6 months. The literature of the 1990s most frequently defined the duration to onset either as any time pain does not resolve as expected or a period of 3 months or more. In addition, it was recognized that there are some chronic pain conditions, such as complex regional pain syndrome (previously called reflex sympathetic dystrophy), in which chronic pain may start within hours or days of an injury,[23,32] calling into question the idea that it is the duration of acute pain that is definitive of chronic pain. Chronic pain is not simply acute pain that lasts for a long time.

The frequency, or rhythm, of chronic pain was described using the terms persistent, intermittent, episodic, recurring, and continuous. During the 1980s persistent pain (ie, long-lasting pain) and chronic pain syndrome (ie, long-lasting pain with psychiatric symptoms) were differentiated.[22,35] During the 1990s there was controversy over whether an individual with intermittent, recurring pain had chronic pain or whether only persistent, continuous pain should be considered chronic pain. For example, it was suggested that the person with arthritis does not have chronic pain but has recurring, acute pain due to an unhealed condition.[23,36] The temporal pattern of chronic pain varies with the type of pain or the antecedent diagnosis.

By the 1990s it also was recognized that there are phases in the development of chronic pain, as there are in other chronic syndromes.[35,37,38] These phases are linked to the sensory, psychological, and behavioral dimensions of chronic pain. Three to four phases were identified in the literature of this study. The first phase is linked to the sensory discrimination of pain and is similar to acute pain in the neurologic processes, although there often is not an identifiable nociceptive stimulus. During this phase the individual may self-treat the pain as if it were acute pain. The second and third phases are linked to the psychological dimension. During the second phase the person realizes that the pain is not subsiding but still believes that a cause of the pain can be found and so aggressively seeks a cure. It is in the third phase that the person understands that the pain is chronic, and emotions and previous experiences with pain influence the ability to cope with chronic pain. The final phase is a time in which the consequences of pain predominate. It is during this stage that lifestyles are modified and behaviors changed to compensate for the impact of chronic pain on living. The duration of each phase is idiosyncratic.

### *The meaning of chronic pain*

There was interdisciplinary consensus that the psychological dimension is related to the meaning of chronic pain. The first component of this dimension is the affective, or immediate unpleasant sensation. This component is reactive, varies with intensity, and may increase or decrease pain perception. The affective component described in the literature included responses of stress, anxiety, and anger. It is the affective aspect of chronic pain that may differentiate those who have had some previous trauma, either physical or emotional. Seven books, nine nursing articles, and 74 neurophysiologic-psychological articles that were read discussed the relationship between trauma and chronic pain. In general, antecedent trauma, either physical or psychological, seems to change the response to pain, either amplifying or diminishing it. It is during this reactive period that the individual reports the quality of the experience. The evaluative or cognitive component is influenced by past experiences with pain, imagination, unconscious conflicts, and the significance that the pain has for the person.

### *Psychological symptoms of chronic pain: Antecedent or consequent?*

One of the greatest changes in the concept of chronic pain is the understanding of the relationship of the psychological state and chronic pain. Since the idea that chronic pain was the result of unresolved psychic conflicts in pain-prone patients[19] was first described, a psychological perspective of chronic pain dominated. Throughout the sample literature of the 1970s through the first half of the sample of the 1980s, there was widespread agreement among disciplines that in the absence of altered physiology, the cause of chronic pain was psychological. The psychological problems cited included depression, hysteria, hypochondriasis, conversion, alexthymia, and substance abuse. As a result of this psychological perspective, psychological treatments predominated, including psychotherapy and behavior modification.

During the late 1980s and into the 1990s, the psychological explanation of chronic pain was challenged. Studies that documented the psychological origin of chronic

pain in many cases had not used control groups,[39] and findings of those that had used control groups were contradictory.[40] These challenges resulted in a gradual shift in thinking reflected in the literature of the last decade of this study that psychological symptoms are not antecedent to chronic pain but are consequences of chronic pain.

## Antecedents

There are no necessary physical or psychological characteristics that are antecedents of chronic pain. In spite of the fact that some type of trauma sometimes precedes chronic pain, trauma is neither necessary nor sufficient to cause chronic pain. Although it was believed for many years that the cause of chronic pain was psychogenic or somatogenic,[19,22] that is no longer the case. At this point in time there is no known cause of chronic pain. During the last decade of this study, technological advances have allowed a greater understanding of the neurobiologic processes that may be involved in chronic pain. Although there are no definitive conclusions, there is evidence that chronic pain may be related to alterations in the production and regulation of cortisol, serotonin, and endogenous opioids and in the synthesis and release of sensory neuropeptides.[41–43] A complex interaction of nervous, immune, and endocrine system functions may account for the development and multidimensionality of chronic pain.[32]

## Consequences

Two major themes emerged in the analysis of the consequences of chronic pain: living with chronic pain and coping with chronic pain.

### *Living with chronic pain*

There was interdisciplinary consensus across all decades of this study that living with chronic pain adversely alters life patterns resulting in negative physical, psychological, and social effects. The effects of living with chronic pain that were described included alterations in physical patterns of eating, resting, and sleeping, resulting in the need for inactivity and frequent periods of rest, and alterations in mobility, resulting in the loss of the ability to perform the activities of daily living and disability. The transition in this theme was noted in the literature of the 1990s when it was recognized that it is living with chronic pain that results in alterations of psychological patterns. The psychological effects described included depression, anger, anxiety, grief, hopelessness, and feelings of helplessness. Alterations of social patterns result in isolation and loneliness. Disability results in loss of work and loss of work results in loss of insurance and money to pay for medical expenses. The loss of work and resulting economic stress often results in strained, dysfunctional relationships with significant others.

### *Coping with chronic pain*

The effectiveness of coping behaviors may decrease the adverse effects of chronic pain by reducing stress and thereby reducing pain intensity. Coping behaviors noted in the literature of this study were categorized into early and late strategies. Early strategies included cure-seeking behaviors, medication use, surgery, and the use of alternative treatments. Late coping strategies included physical, psychological, and social strategies. Physical strategies included ex-

ercise or reduced activity; psychological strategies included distraction, meditation, positive thinking, and counseling; and social strategies included seeking social support and using social activities as distraction. It seems to be inadequate coping that results in multidimensional negative consequences. The greatest transition that occurred in coping with chronic pain is the increasing use of alternative treatments such as acupuncture, massage, herbal medications, meditation, and imagery cited in the literature of the 1990s.

**Surrogate terms**

In the past the most common surrogate term used for chronic pain was intractable pain. The term *intractable,* meaning not responsive to treatment or incurable, considers chronic pain from a treatment perspective. The term intractable pain was rarely used after the 1980s. During the 1990s there were attempts to differentiate among other terms for chronic pain conditions. It was suggested that the term *chronic pain syndrome* be used to describe the person who suffers and does not cope well with chronic pain,[44] the term *dysfunctional chronic pain* be used to describe chronic pain that results in a loss of activities of daily living,[45] and *chronic pain disorder* be used to describe chronic pain with no physical or psychological pathology.[42] There was no consensus in the use of these terms. In general, most literature of the 1990s refers to chronic pain as a syndrome regardless of its effect on coping, function, or psychological status. From a neurophysiologic-psychological perspective chronic pain is described as a syndrome because it includes multidimensional physical, psychological, and behavioral symptoms. From a nursing perspective chronic pain has been described as a syndrome because it requires a cluster of nursing diagnoses related to the resulting multidimensional physical, psychological, and social human responses and the need for multiple nursing interventions in its care.[46] Although there are many diagnoses associated with chronic pain, specific diagnostic terms should not be used as surrogate terms for chronic pain.

**Related concepts**

Suffering is closely related to chronic pain. The terms *pain* and *suffering* are often used together. The literature of this study often described persons as suffering from chronic pain. The source of suffering from chronic pain described included the pain itself, anxiety and depression, physical and functional limitations, and social problems caused by the pain. The amount of suffering is related to the duration of the pain and the number of physical, emotional, and social consequences. The amount of suffering has physical, psychological, social, and cultural correlates. For example, in some cultures, chronic pain is not viewed as suffering, but is viewed positively as a purifying process leading to added social respect.[38] Strong social support was described as decreasing the amount of suffering the individual experiences. Suffering is often viewed from a psychological perspective. The third stage of pain—the cognitive, reflective stage—is sometimes called the suffering stage. It is during this stage that anxiety, depression, and conscious and unconscious conflicts may intensify the suffering related to chronic pain. Finally, suffering is related to pain behaviors. Pain behavior may be used to reduce suffering by avoiding activities that increase pain, and pain behaviors may be used to communicate to others the

amount of suffering experienced. The term *suffering* sums up the consequences for the individual who does not cope well with chronic pain. Cognitive behavioral therapy used in the 1980s was aimed at relieving suffering by increasing coping behaviors. Suffering may be the most important clinical aspect of chronic pain.

## COMMENTS

Rodgers'[15] evolutionary method of concept analysis was used to systematically study transitions in the concept of chronic pain over a 30-year period. This inductive approach has resulted in critical insights regarding transitions in the concept of chronic pain.

Chronic pain is not the same as acute pain that lasts for a long time. Chronic pain is a subjective, multidimensional, biopsychosocial syndrome that can be recognized by physical, psychological, and behavioral patterns. Unlike acute pain that serves as a warning sign, there is no known purpose of chronic pain, and there is no single explanation for the symptoms. The antecedents of chronic pain vary, and there is no necessary or sufficient antecedent. Chronic pain results in physical, psychological, and social alterations of function to varying degrees related to preexisting intrinsic and extrinsic factors. The concept of suffering is closely related to chronic pain.

There have been notable transitions in the physical, psychological, and behavioral conceptualizations of chronic pain over the 30-year period of this study. Within the physical dimension, chronic pain is no longer defined solely on the basis of duration from the onset of acute pain. The most notable change in the physical dimension is the increasing importance of a neurobiologic conceptualization of chronic pain. From a psychological perspective, psychological symptoms are now recognized as consequent, not antecedent, to chronic pain. Therefore, although psychological treatments, such as psychotherapy and behavioral modification once predominated, it is now recognized that multiple interventions may be required, including the use of alternative or complementary therapies in the management of chronic pain. Pain behaviors, unique to chronic pain, are now regarded not as maladaptive and manipulative, but as ways of coping with and communicating chronic pain. Finally there has been an increased recognition that the biologic, psychological, and social aspects of chronic pain are inseparable.

***Suffering may be the most important clinical aspect of chronic pain.***

## IMPLICATIONS FOR RESEARCH AND PRACTICE

The findings of this study have significant implications for nursing research and practice. In spite of the prevalence of chronic pain, few nursing studies of chronic pain have been conducted. Although it is now believed that there is not a hard-wired pain pathway or a single pain center in the brain,[32,47] much more research is needed to understand the relationship between intensity, quality, and duration of pain and central nervous system function. Furthermore, more basic research is needed to identify the role

of body-brain-mind interactions in the development, persistence, and consequences of chronic pain. For example, what is the relationship between the patterns of intensity, pain quality, and function? Do different sites of chronic pain have different effects on the central nervous system? What is the relationship between meaning and function? What is the relationship between psychological factors, coping, and function? The question of whether chronic pain is a common symptom of many diseases, a disease entity in itself, or both is certainly important and needs to be answered. However, from a nursing perspective, understanding human responses to the consequences of chronic pain as well as the responses that signal the development of chronic pain may be more pertinent.

Although there has been research of predictors of chronic pain,[48] nurses need to conduct more research in all settings in which they work—not just at pain clinics or pain management centers[49]—to identify the earliest subjective symptoms that may differentiate chronic pain from acute pain. If early subtle symptoms can be identified, then studies can be conducted to determine interventions that may stop the development of chronic pain. However, many nurses still believe that chronic pain without a physiologic etiology is psychogenic. Since chronic pain is self-reported, a psychological explanation for chronic pain may eliminate a primary source of information about pain. Individuals may be afraid to recognize and report early, subtle symptoms to avoid being diagnosed with psychogenic pain or labeled as a malingerer or complainer. However, individuals with chronic pain need to be encouraged to discuss not only the presence or absence of pain and the intensity of their pain but also how they are feeling (ie, anxious, depressed, or angry) and what they are feeling (ie, the quality, anatomic pattern, and relief of the pain). Nurses need to be aware of and record the language being used to describe pain and the behaviors being used to communicate and cope with pain. Unfortunately important transitions in the concept of chronic pain have not been incorporated into nursing practice. Measuring and reporting pain, as the fifth vital sign as recommended by the American Pain Society in 1995, is a step in the right direction.[50] The next step is for nurses to make the transition in the conceptualization of chronic pain from a psychological explanation to a biologic attribution with psychosocial consequences.

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