

# Cancer Pain

## An Evolutionary Concept Analysis

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### ABSTRACT

**Background:** Cancer pain is among the most severe types of pain and is among the most common types of cancer-related problems. Yet, many ambiguities surround the concept of cancer pain and its attributes.

**Objective:** This study aimed to analyze the concept of cancer pain.

**Methods:** This concept analysis was conducted using the Rodgers' evolutionary method. Nursing, psychology, social sciences, and medicine literature were reviewed through searching online databases. In total, 52 articles were included and analyzed through thematic analysis.

**Results/Conclusion:** The attributes of cancer pain are known origin, sharp, burning, piercing, or throbbing quality, varying duration (acute, chronic, or breakthrough), intolerability, and moderate to severe intensity. Its antecedents are cognitive system, pain-related beliefs, coping strategies, family and social support, financial status, and cultural, ethnic, racial, and religious values. Its consequences include physical, psychological, existential and spiritual, and social consequences, and reduced quality of life. This concept analysis concludes that cancer pain is different from other types of acute and chronic pain. Thus, specific interventions are needed for its assessment and management.

**Implications for Case Management Practice:** The results of this concept analysis can broaden the case manager/health care team and other health care providers' knowledge about cancer pain and help them make better decisions and take more effective interventions for its management. The information in the article can be used to inform the case manager/health care team when it may be time to consider palliative care or even hospice care. Also, the information, itself, is crucial for case managers to understand when a patient has cancer pain.

**Key words:** cancer pain, concept analysis, discomfort, suffering

Pain is one of the most common problems among patients with cancer (Babgi, 2010; Sigley, 2016). It occurs among 25% of newly diagnosed patients with cancer, 59% of patients who are receiving cancer treatments, 33% of patients who have received treatments, and 64% of patients with metastatic and end-stage cancer (Badr Naga et al., 2013; Chapman, 2012; Ovayolu et al., 2015). In overall, around 44% of patients with cancer experience moderate to severe cancer pain.

Cancer pain is a multifactorial problem caused by cancer-induced cell degeneration in different parts of the body and is also a side effect of cancer treatments such as radiation therapy, chemotherapy, and surgery (Asghari et al., 2005; Badr Naga et al., 2013; Chapman, 2012; Ovayolu et al., 2015). There is a strong belief that cancer pain is fundamentally different from non-cancer pain *because* of its multifactorial etiology, quality, duration, intensity, and different types of pain (Asghari et al., 2005; Ovayolu et al., 2015). Cancer pain is a highly disturbing experience with many different negative effects on health and quality of life (Babgi, 2010; Sigley, 2016; Tavoli et al., 2008).

Effective pain management necessitates accurate and deep understanding about its attributes

and dimensions. Such understanding helps health care professionals make accurate decisions and take effective measures for cancer pain management (Alnajjar et al., 2017; Shahriary et al., 2015; Sigley, 2016). Yet, studies showed that physicians and nurses have limited knowledge about cancer pain and hence cannot adequately alleviate and effectively manage it. Ineffective cancer pain management, in turn, can cause different complications and increase health care costs (Gallagher et al., 2004; Purkayastha et al., 2018). One of the factors contributing to health care providers' lack of knowledge about cancer pain is the paucity of studies into cancer pain, its attributes, and its dimensions, so many ambiguities still surround this concept. The handful studies in this area did not provide detailed data about the attributes, antecedents, and consequences

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of the concept and did not differentiate this concept from surrogate terms and related concepts. Therefore, concept analysis studies are needed to clarify ambiguities surrounding cancer pain, differentiate it from other concepts, and provide detailed data about its attributes, antecedents, and consequences (Rodgers & Knafl, 2000). The present study aimed to analyze the concept of cancer pain.

## METHODS

Concept analysis is a strategy used for examining concepts for their semantic structure. The basic purpose of concept analysis methodology is to distinguish between concepts and thus to clarify the relationships and the distinguishing characteristics between concepts (Rodgers & Knafl, 2000; see the definitions in Box 1). This concept analysis was conducted using

the Rodgers' evolutionary method. Rodgers' evolutionary concept analysis is a method for developing knowledge in nursing science. The aim of this method is to explain the concept of cancer pain and its uses and clarify its attributes as a basis for further concept development (Rodgers & Knafl, 2000). The method includes six nonlinear steps that are taken simultaneously. These steps are as follows:

1. Identifying the concept of interest, its surrogate terms, related concepts, and associated expressions. The concept of interest is the aspect of an individual's clinical, biological, physical, or functional state, or experience that the assessment is intended to capture or reflect (Love, 2020). Surrogate terms are those concepts and terms that are similar to the concept of interest but do not have all its attributes (Dinmohammadi et al., 2010; Morse, 2017; see the definitions in Box 1).
2. Identifying and selecting an appropriate setting and sample for data collection.
3. Collecting the relevant data to identify the attributes and the sociocultural, interdisciplinary, and time-related bases of the concept (antecedents and consequences).
4. Analyzing the data to identify characteristics.
5. Identifying a model case/case study.
6. Identifying implications and hypotheses for further development of the concept.

## BOX 1

### Definitions of Concepts Related to Research Methodological Approaches and Results

| Term                 | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | References                                  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Concept analysis     | Method for determining the defining attributes or characteristics of the concept under study. The basic purpose of concept analysis methodology is to distinguish between concepts and thus to clarify the relationships and the distinguishing characteristics between concepts. This method leads to a specific measurable definition of a concept and/or identifies the gaps in knowledge and in measurement that should be undertaken in future theoretical work.                                                                                                                         | Rodgers and Knafl (2000)                    |
| Concept of interest  | The concept of interest is the aspect of an individual's clinical, biological, physical, or functional state, or experience that the assessment is intended to capture (or reflect). It can be thought of simply as the "thing" that we are trying to measure. The concept of interest should reflect what patients tell us is important. For example, if patients tell us that fatigue is the most important symptom to them, fatigue would be an appropriate "concept of interest" for a new measure.                                                                                       | Love (2020)                                 |
| Thematic analysis    | Thematic analysis is a method of analyzing qualitative data. It is the method for identifying, analyzing, and interpreting patterns of meaning (or "themes") within qualitative data or to identifying common themes—topics, ideas, and patterns of meaning that come up repeatedly in set of texts.                                                                                                                                                                                                                                                                                          | Rodgers and Knafl (2000)                    |
| Surrogate terms      | Surrogate terms are those concepts and terms that are similar to the concept of interest but do not have all its attributes. Surrogate terms portray multiple ways of expressing the same concept. Those are synonyms that are used interchangeably to describe and express the concept.                                                                                                                                                                                                                                                                                                      | Dinmohammadi et al. (2010) and Morse (2017) |
| Pain catastrophizing | A negative cognitive–affective response to anticipated or actual pain and has been associated with a number of important pain-related outcomes. It is characterized by the tendency to magnify or exaggerate the threat value of pain stimulus or seriousness of pain sensations and to feel helpless in the context of pain and by a relative inability to inhibit pain-related thoughts. Similarly, pain-related catastrophizing is broadly conceived as a set of exaggerated and negative cognitive and emotional schema brought to bear during actual or anticipated painful stimulation. | Quartana et al. (2009) and Safari (2015)    |

## DATA COLLECTION

Data were collected by reviewing nursing, psychology, social sciences, and medicine literature through online search in databases such as ScienceDirect, Scopus, MEDLINE, PsycINFO, ProQuest, CINAHL, and Social Sciences Citation Index. Primary search key terms were “cancer pain” and “concept analysis.” Search key terms such as “discomfort” and “suffering” were also used to retrieve relevant studies. The search protocol date was limited to 1995–2019 because most studies into the concept of cancer pain were conducted in this time period. The inclusion criteria included studies in Farsi or English language and studies about cancer pain. From 315 articles reviewed after excluding duplicate records, 56 studies that were directly related to cancer pain were selected and analyzed.

## DATA ANALYSIS

Data were analyzed through thematic analysis (Rodgers & Knafl, 2000). It emphasizes identifying, analyzing, and interpreting patterns of meaning (or “themes”) within qualitative data (see the definitions in Box 1). Each paper was read and compared several times. Then relevant thematic statements were extracted, summarized, and coded, and the definitions, antecedents, and consequences of the concept were identified. Similar instances of the data were organized to identify the coherent and relevant indicators of the concept. Studies were continuously read until achieving informational saturation. Agreements and disagreements among different disciplines with respect to the attributes, antecedents, and consequences of the concept were determined. Finally, the attributes, antecedents, consequences, surrogate terms, and related concepts of the cancer pain concept were identified, labeled, and categorized.

## FINDINGS

### The Definition of the Cancer Pain Concept

Compared with other symptoms, pain is a confident finding to confirm the presence of cancer (Chen et al.,

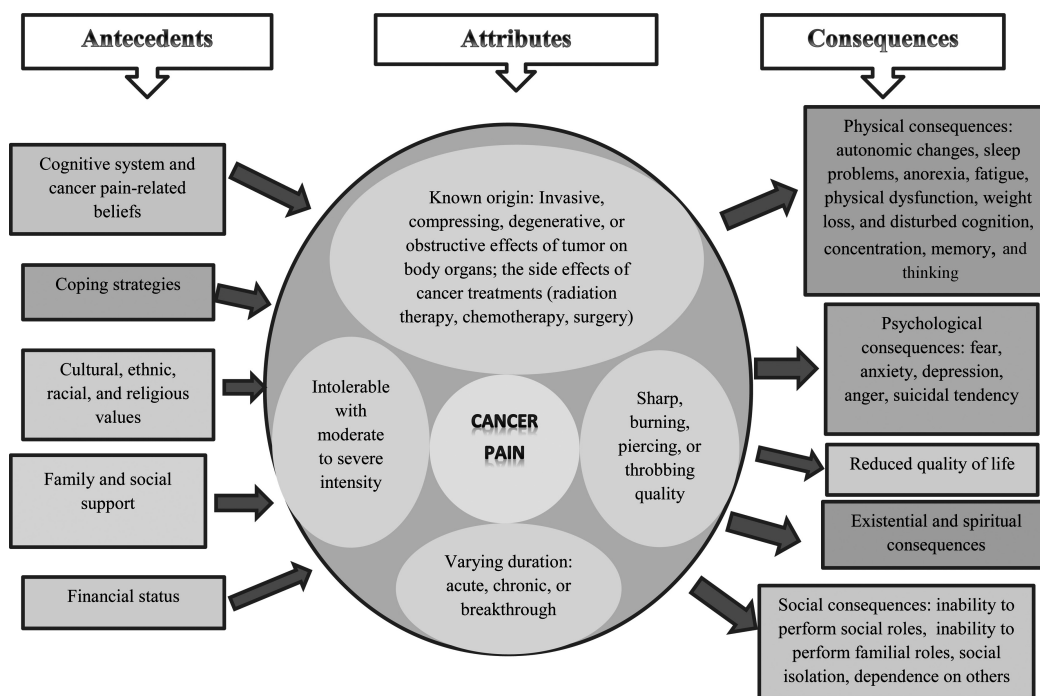
*The International Association for the Study of Pain defines pain as what a patient says it is and is present whenever he or she expresses it. This definition highlights the subjectivity of pain and introduces patient as the most reliable source for confirming its presence.*

2008). The International Association for the Study of Pain defines pain as what a patient says it is and is present whenever he or she expresses it. This definition highlights the subjectivity of pain and introduces patient as the most reliable source for confirming its presence (Strang, 1998). Cancer pain is defined as an unpleasant sensory and emotional experience in relation to a potential or actual tissue damage, which may recur or become persistent over time due to cancer progression and in association with functional impairment (Sigley, 2016). Cancer pain has physical, sensory, mental, emotional, social, spiritual, cognitive, behavioral, and cultural aspects (Chen et al., 2008; Tavoli et al., 2008). The physical aspect of cancer pain is related to the process of cancer and its treatments, whereas its mental aspect includes anxiety, depression, fear, and despair. Its social aspect refers to concerns over the future and family as well as the loss of social roles, independence, and employment. Spiritual aspect of pain also deals with anger at fate and God, fear over the unknown, and finding meaning in life (Karlsson et al., 2014; Li et al., 2017; Yeagar et al., 1995).

### Attributes of Cancer Pain

As the first step in concept analysis, determining the attributes helps further clarify the intended concept and provides a deeper insight about the concept. Attributes of cancer pain are those characteristics that are associated with pain, contribute to its occurrence, and can facilitate its diagnosis and management (Cheng et al., 2003; Sigley, 2016). Cancer pain differs from other pains with respect to its origin,

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**FIGURE 1**  
The antecedents, attributes, and consequences of cancer pain.

quality, duration, and intensity. These antecedents are explained in the following and are shown in Figure 1. Table 1 shows articles, which attributes of the concepts under study have been adopted.

### **Known Origin**

Although some chronic noncancer pains mainly have psychological origins, cancer pain is caused by known physical problems (Asghari et al., 2005) such as the degenerative or compressive effects of the tumor; tumor invasion to nerves, bones, soft tissues, ligaments, or fascia; organ enlargement or obstruction; skin lesions; nerve damages; hormonal imbalance; and immune responses (Portenoy & Ahmed, 2018). Tumors may compress and obstruct vessels and thereby cause organ enlargement and pain. For instance, the obstruction of the vena cava due to tumor compression can cause chest pain (Müller-Schwefe et al., 2014; Portenoy & Ahmed, 2018). Diagnostic and therapeutic procedures are also among the causes of cancer pain. Radiation therapy, chemotherapy, and surgery can cause pain through damaging neural, visceral, muscular, and skeletal tissues. Acute cancer pain is usually due to diagnostic and therapeutic procedures, whereas chronic cancer pain is due to the process of cancer (Chapman, 2012; Müller-Schwefe et al., 2014; Portenoy & Ahmed, 2018). Overall, 75% of cancer pains are related to the process of cancer and the remaining 25% are related to diagnostic and therapeutic procedures. The stimulation of nociceptors due to the degenerative

effects of cancer can also cause a severe pain called nociceptive pain (Portenoy & Ahmed, 2018; Sigley, 2016). Dermatitis and stomatitis caused by radiation therapy or chemotherapy are also associated with debilitating pain and serious clinical problems (Abedipour et al., 2006; Müller-Schwefe et al., 2014).

### **Sharp, Burning, Piercing, or Throbbing Quality**

The quality of cancer pain is different from other pains; cancer pain may be extremely severe even at the beginning of the disease. Multiple organ involvement in cancer causes different types of pain in patients, which may vary in quality according to cancer progression and its treatments (Dabbous et al., 2017). Cancer pain may have a sharp, burning, piercing, or throbbing quality. Patients with cancer may also experience radiating pain, that is, pain that starts in an area of the body but is perceived in another area (Babgi, 2010). Moreover, patients with cancer who undergo surgery may experience phantom pain for several months or years after the removal of an organ, such as the breast (Ahmed et al., 2017).

### **Varying Duration**

Respecting its duration, cancer pain may be acute (short-term), chronic (long-lasting), or breakthrough. Acute pain lasts several days to several months and is alleviated by managing its underlying cause. In most cases, acute cancer pain is due to diagnostic or therapeutic procedures *in addition* to pathophysiology

**TABLE 1****Literature Support for Cancer Pain Attributes, Antecedents, and Consequences**

| Row | Attributes                                        | Literature                                                                                                                                                    | Antecedents                                               | Literature                                                                                                                                                                                                                                  | Consequences                           | Literature                                                                                                                                       |
|-----|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Known origin                                      | Ahmed et al. (2017), Akhondzadeh (2012), Alnajjar et al. (2017), Asghari et al. (2005), Babgi (2010), Hatamipour et al. (2015), Hojat (2010), Hosseini (2014) | Cognitive system and cancer pain-related beliefs          | Babgi (2010), Badr & Shen (2014), Jim et al. (2015), Karlsson et al. (2014), Kelly et al. (2013), Ko et al. (2013)                                                                                                                          | Physical consequences                  | Ahmed et al. (2017), Cheng et al. (2003), Akhondzadeh (2012), Otto (2001), Ovayolu et al. (2015), Peacock (2008), Chen et al. (2008)             |
| 2   | Sharp, burning, piercing, or throbbing quality    | Abedipour et al. (2006), Hojat (2010), Hosseini (2014), Im (2007), Im, Lim, et al. (2008)                                                                     | Coping strategies                                         | Abedipour et al. (2006), Lai et al. (2017), Lamont (2003), Hosseini (2014)                                                                                                                                                                  | Psychological consequences             | Strang (1998), Syrjala et al. (2014), Tajikzade et al. (2016), Tavoli et al. (2008), Xu et al. (2018), Yeagar et al. (1995), Young & Ades (2012) |
| 3   | Varying duration                                  | Akhondzadeh (2012), Asghari et al. (2005), Hojat (2010), Lyman (2007)                                                                                         | Cultural, ethnic, racial, spiritual, and religious values | Bishop & Warr (2003), Ahmed et al. (2017), Akhondzadeh (2012), Im (2007), Alnajjar et al. (2017), Asghari et al. (2005), Lyman (2007), Mehta et al. (2010), Morse (2017), Shahriary et al. (2015), Shiralipour et al. (2010), Sigley (2016) | Reduced quality of life                | Jim et al. (2015), Love (2020), Lyman (2007), Mehta et al. (2010), Morse (2017), Im, Liu, et al. (2008), Müller-Schwefe et al. (2014)            |
| 4   | Intolerable and with moderate to severe intensity | Ahmed et al. (2017), Jim et al. (2015), Akhondzadeh (2012), Babgi (2010), Hojat (2010)                                                                        | Family and social support                                 | Abedipour et al. (2006), Ahmed et al. (2017), Otto (2001), Ovayolu et al. (2015), Peacock (2008), Hojat (2010), Asghari et al. (2005)                                                                                                       | Existential and spiritual consequences | Richardson (2012), Dabbous et al. (2017), Esmaeili et al. (2015)                                                                                 |
| 5   |                                                   |                                                                                                                                                               | Financial status                                          | Akhondzadeh (2012), Love (2020), Portenoy & Ahmed (2018), Purkayastha et al. (2018)                                                                                                                                                         | Social consequences                    | Abedipour et al. (2006), Cheng et al. (2003), Dabbous et al. (2017), Portenoy & Ahmed (2018)                                                     |

of cancer. Chronic cancer pain is mainly due to the pathophysiology of cancer and is usually persistent. Breakthrough pain refers to transitory flare-up of pain in a background of chronic cancer pain. It may happen even when the patient is receiving long-acting analgesics. Breakthrough pain is classified as physical, visceral, neuropathic, or mixed. It usually starts abruptly, lasts for 30 min, and alleviates with rapid-acting analgesics. Breakthrough pain is very common among patients with cancer and is considered as a significant predictor of distress, functional impairment, and low quality of life (Chapman, 2012; Lai et al., 2017; Müller-Schwefe et al., 2014; Ovayolu et al., 2015).

### **Intolerable and With Moderate to Severe Intensity**

The presence and the intensity of cancer pain have direct linear correlations with the physical pathology of cancer and its extent. In other words, the more extensive the tissue damage is, the more intense the pain will be (Asghari et al., 2005). Pain intensity is determined through determining its unpleasantness. It largely

depends on the type of cancer, so that hematologic cancer is associated with mild pain, whereas patients with gastrointestinal, genitourinary, and skeletal cancers usually complain of severe intolerable pain. It is estimated that 70%–80% of patients with advanced cancers experience severe pain (Ovayolu et al., 2015; Safari, 2015). The management of severe cancer pain, particularly at the end stages of cancer, necessitates the use of strong opioid analgesics. Yet, in most cases, severe cancer pain does not respond to treatments (Müller-Schwefe et al., 2014; Sigley, 2016).

### **Antecedents of Cancer Pain**

Antecedents are events or situations preceding the concept of interest (Rodgers & Knafl, 2000). The antecedents of cancer pain can be determined by genetic factors and environmental factors (Cheng et al., 2003). These antecedents are explained in the following and are shown in Figure 1. Table 1 shows articles from which the antecedents of the concept under study have been adopted.

### **Cognitive System and Cancer Pain–Related Beliefs**

A general consensus exists about the effects of cognitive system and pain-related beliefs on pain experience, the psychological and emotional outcomes of pain, pain-induced disability, perceived pain intensity, coping with pain, response to pain treatments, and treatment outcomes (Asghari et al., 2005; Tavoli et al., 2008). In cases of persistent refractory pain, which is perceived as a lifelong problem caused by a life-threatening condition, patients abandon their previous pain-related beliefs and form new beliefs and meanings about pain based on their cognitive system, personality, and attitudes (Asghari et al., 2005). Although some patients consider pain as a new life challenge, which should be managed, others consider it as a punishment that is associated with fear, despair, and death. Patients who have positive attitudes toward pain use positive methods for coping; however, those who consider cancer pain as a permanent problem experience more severe depression and physical disability and show poorer treatment adherence (Asghari et al., 2005; Im, Liu, Kim, et al., 2008). Pain catastrophizing is a negative cognitive–emotional process that includes pain exaggeration, frustration, and rumination (Quartana et al., 2009; see the definitions in Box 1). It has significant relationships with strategies used for coping with pain. Pain catastrophizing is also significantly correlated with anxiety, so that higher fear and anxiety cause patients to experience more severe pain (Badr & Shen, 2014; Bishop & Warr, 2003; Safari, 2015). Pain catastrophizing makes patients extremely focused on their physical symptoms and hence, they often avoid daily activities. Such avoidance, in turn, is associated with different problems such as more severe perceived disability, greater physical and emotional dysfunction, and deeper depression (Tajikzade et al., 2016).

### **Coping Strategies**

Coping strategies are methods for managing situations and life events. Coping with pain refers to the thoughts and behaviors that people use to manage their pain or their emotional responses to pain. Pain-coping strategies include cognitive strategies such as self-talk, distraction, information seeking, and problems solving, as well as behavioral strategies such as rest, physical activity, and local heat or cold therapy. These coping strategies are further classified as adaptive and maladaptive (Babgi, 2010; Bishop & Warr, 2003). *Adaptive strategies* include praying, positive thinking about capabilities, distraction,

positive imagination, muscle relaxation, acceptance of the status quo, and pain medications. *Maladaptive strategies* include pain catastrophizing, activity restriction, assumption of a fixed position, protection of the painful areas, crying, and suppression of feelings. Maladaptive strategies can negatively affect pain management (Babgi, 2010; Bishop & Warr, 2003; Syrjala et al., 2014).

### **Cultural, Ethnic, Racial, Spiritual, and Religious Values**

Cultural values determine how patients interpret and respond to pain. Culture also determines cancer pain-related behaviors and beliefs and affects patients' pain perception, conceptualization (Chen et al., 2008; Cheng et al., 2003; Xu et al., 2018), and self-reporting (Im, 2007; Kwok & Bhuvanakrishna 2014). People with higher sociocultural and economic status are more aware of their pain and are more likely to report their pain (Peacock, 2008). Ethnic and racial characteristics can also affect pain perception and reporting. For instance, Asians pay little attention to cancer pain and are more likely to avoid pain reporting because they consider it as an indicator of a serious condition that is perceived by others as a negative event. Asian Americans also consider cancer pain as the body's automatic response to cancer, which is inevitable, but can be overcome through positive thinking (Im, Liu, Kim et al., 2008). African Americans report lower levels of pain. Pain experience among White Americans is an individual and independent experience (Im, Lim, Clark, et al., 2008). Culturally defined social roles (such as gender-dependent roles; Im, 2007; Kwok & Bhuvanakrishna, 2014; Richardson, 2012) and religious beliefs (Im, 2007) also affect cancer pain experience. Spirituality helps patients with cancer better tolerate their pain (Akhondzadeh, 2012); patients with cancer can use spiritual coping strategies to improve coping with pain (Esmaeili et al., 2015). But, on the other hand, several studies mentioned that cancer pain can cause spiritual distress and patients with cancer are more susceptible to spiritual conflict. This is discussed in the "Consequences" section.

### **Family and Social Support**

Cancer is sometimes defined as the disease of family because family is the main source of support for patients with cancer (Hojat, 2010; Kelly et al., 2013). Most patients, particularly those with end-stage cancer, prefer to stay home and receive care from their family members (Mehta et al., 2010). Receiving care from family members alleviates cancer pain

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and discomfort and prevents isolation (Hojat, 2010). Social support also facilitates access to socioeconomic resources, enhances quality of life, promotes treatment adherence, and, thereby, alleviates pain. Peer groups, collective works, and interpersonal relationships can reduce cancer pain through improving patients' knowledge about cancer and its treatments, reducing their feelings of distress and loneliness, helping them more closely adhere to their treatments (Hosseini, 2014), giving them feelings of peace and confidence, and reducing their anxiety (Safari, 2015).

### **Financial Status**

Cancer significantly affects patients' employment status and imposes heavy financial burdens on patients and families (Ovayolu et al., 2015). Patients with higher income usually experience lower levels of pain (Kwok & Bhuvanakrishna 2014; Shiralipoor et al., 2010) because they are more likely to access and afford advanced treatments and analgesics (Lyman, 2007).

### **Consequences of Cancer Pain**

Consequences are events or phenomenon that results from the concept (Sigley, 2016). Cancer pain is not a mere physical experience; rather, it affects different aspects of human life such as personality, emotions, behaviors, social relationships, and spirituality (Yeagar et al., 1995). The consequences of cancer pain are explained in the following and are shown in Figure 1. Table 1 shows articles from which the consequences of the concept under study have been adopted.

#### **Physical Consequences**

Episodes of cancer pain are associated with symptoms such as sweating, vomiting, general weakness, syncope, reduced muscular tone, sleep problems, anorexia, weight loss, fatigue, alterations in daily activities, disturbed concentration, and fluctuations in heart rate, respiration, and blood pressure. Persistent chronic cancer pain can affect all activities that need intellectual and cognitive activities and thereby cause problems in learning, memory, concentration, attention, thinking, and functioning (Ko et al., 2013; Müller-Schwefe et al., 2014; Ovayolu et al., 2015; Strang, 1998).

#### **Psychological Consequences**

Cancer pain is significantly correlated with mood status, anxiety (Tavoli et al., 2008), and depression (Ko et al., 2013), and is considered a significant predictor of depression and anxiety. Despair, anger, and suicidal tendency are also common among patients with cancer pain (Ko et al., 2013; Strang, 1998; Syrjala et al., 2014). Fear over cancer pain and its recurrence is an unwanted constant feeling that results in anxiety and a sense that this vicious cycle is not ending (Sigley, 2016). Pain recurrence makes patients feel that treatments are not

adequate, cancer is getting worse, and death is imminent (Sigley, 2016; Young & Ades, 2012).

### **Reduced Quality of Life**

Uncontrolled cancer pain significantly affects daily activities, sleep, comfort, social activities, and sexual activities, and thereby reduces quality of life. Cancer pain can cause sleep problems, which in turn can aggravate cancer pain, reduce coping ability, and cause fatigue, anxiety, depression, and mood disorders. Most patients with cancer experience nighttime awakening due to cancer pain. All these factors negatively affect quality of life (Chapman, 2012; Strang, 1998; Syrjala et al., 2014; Tavoli et al., 2008).

### **Existential and Spiritual Consequences**

Cancer pain can cause patients spiritual distress and spiritual conflicts due to existential questions, inability to find meaning in life, and anger at fate (Hatami-pour et al., 2015; Jim et al., 2015; Silva et al., 2015). Severe cancer pain may be interpreted as a sign of an imminent death and, hence, is a cause for existential and death anxiety. The effects of such anxiety on patients are sometimes more severe than the effects of cancer. Patients with severe cancer pain may question God's justice and His conduct toward them. Cancer pain can be considered as a threat, punishment, or divine trial and, hence, its existential and spiritual manifestations widely vary from person to person (Balducci, 2010; Silva et al., 2015; Strang, 1998).

### **Social Consequences**

Cancer pain causes significant alterations in social activities such as engagement in recreational activities and interpersonal relationships. Cancer causes patients to feel tired and nonenergetic. Cancer pain aggravates these problems. It also changes roles in families so that strong fathers or mothers turn into weak and fragile individuals who need help even in doing simple activities. Such dependence in turn significantly affects quality of life (Babgi, 2010; Hosseini, 2014; Ovayolu et al., 2015; Strang, 1998).

### **Surrogate Terms and Related Concepts**

Surrogate terms of cancer pain were synonyms that were used interchangeably to describe cancer pain. The most common surrogate terms and expressions related to cancer pain are suffering and discomfort (Cheng et al., 2003).

#### **Suffering**

Suffering is a negative emotional response to events such as fear, anxiety, loneliness, and depression; thus, pain may also include suffering. Suffering is more subjective, whereas pain can be measured through facial

expressions and visual scales. People may experience suffering in the absence of pain or may not experience suffering even in the presence of pain (Cheng et al., 2003). Overall, suffering has three main components, that is, physical, mental or existential, and spiritual. Patients may differ from each other respecting their suffering even if they have similar symptoms because something that causes suffering for a person may not have the same effects for another person. The effects of perceived suffering can be assessed independently from the effects of the underlying condition or disability. Suffering measurement is based on patients' personal experiences and is done through self-report methods, verbal and nonverbal responses, behaviors, and caregivers' perceptions of patient suffering (Cheng et al., 2003; Egnew, 2009).

### **Discomfort**

Discomfort is another pain-related concept. Mild pain is sometimes called discomfort. For instance, the term discomfort in the McGill Pain Questionnaire refers to mild pain (Cheng et al., 2003). Some scholars introduced discomfort as a physical or emotional feeling that is completely different from acute and chronic pain and believe that the term discomfort cannot be used independently (Lamont, 2003). Discomfort is also considered as an outcome of pain (Young & Ades, 2012). To summarize, the attributes of pain, suffering, and discomfort overlap with each other. The most overlapping attribute is unpleasantness. The main difference among these concepts is that pain is both physical and mental, whereas discomfort is considered as part of pain so that a person can distinguish pain from discomfort. These concepts are related to each other but are not necessarily coincident (Cheng et al., 2003; Sigley, 2016).

### **Model Case/Case Study**

Model cases identify the attributes of the intended concept in relation to the immediate context and, hence, are useful for the further clarification and the practical presentation of the concept (Rafiee & SajadiHezaveh, 2012).

A married 56-year-old woman suffers from colon cancer. Recently, her cancer recurred and the tumor enlarged. Her physician recommended a colostomy. She was hospitalized for the surgery. During hospital stay, her nurse found her in the bed lying down in the lateral position, bending her knees toward the chest, and tightly pressing her abdomen with hands. The patient also seemed pale, tired, and discomforted. When the nurse was talking to her, she kept her eyes closed. Her blood pressure and heart rate were slightly high. She complained of severe pain in

the abdomen radiating to her left flank. The nurse administered analgesics and reassessed her pain 1 hr later. She reported that her pain had somewhat alleviated and was bearable at that moment. The nurse asked her about the date of cancer diagnosis and she answered,

"Three years ago, I experienced weight loss, anorexia, abdominal pain, and bloody stool. I visited a doctor who examined me, ordered laboratory tests, and finally gave a cancer diagnosis [with wet eyes]. Colon cancer is an inherited problem in our family. My mother died of colon cancer. Life has become difficult for me. I have pain most of the times. Sometimes, the pain becomes severe and intolerable. I cannot independently perform my personal activities and have become dependent on my spouse and children due to weakness and disability. Recently, pain has become intolerable to me. I think this is indicative of an approaching death. I have accepted this reality. My only concern is for my children and their lives after me. I don't like to be a burden on my spouse and children. I don't like my children to see me in pain and disability."

This case displays most attributes of cancer pain. The patient complains of pain and her gesture and facial expression are indicative of pain. Through verbal and behavioral responses, she expresses her pain as an unpleasant and distressing experience. Her increased blood pressure and heart rate are the physical consequences of pain. Pain aggravation during the course of cancer indicates cancer progression. She considers pain aggravation as a sign of an imminent death. She also reports that she has accepted the reality of death. Such acceptance shows the existential and psychological effects of cancer pain. Dissatisfaction with dependence on spouse and children and concern over being a burden on them are familial and social consequences of cancer pain. Moreover, her concern over the future of her children after her death reflects the mental and sociocultural consequences of cancer pain. Her learned responses to cancer pain might have been affected by antecedents such as her personality, previous experiences, environment, and sociocultural factors.

### **Discussion**

This concept analysis revealed that cancer pain is different from other types of acute and chronic pain respecting its attributes, namely, origin, quality, duration, and intensity. The origin of cancer pain is the invasive, compressing, degenerative, or obstructive effects of tumor on body organs or the effects of cancer treatments; hence, cancer pain management is also different from the management of other types of pain. The quality and intensity of cancer pain

are also different from other types of pain. Cancers of the pancreas and bones are associated with very severe pain from the very beginning, whereas the pain associated with lung and breast cancers aggravates with cancer progression and the pain associated with tumor metastasis to nerves is described as intolerable (Otto, 2001). These attributes can be used for cancer diagnosis and treatment. Adequate knowledge about the different patterns of cancer pain is necessary for its accurate assessment and effective management.

The antecedents of cancer pain should be considered as components of cancer pain assessment and management because the manipulation and management of negative antecedents and the strengthening of positive antecedents can positively affect cancer pain perception, toleration, and management. Pain is a subjective symptom and, hence, cognitive system, family and social support, and cultural, racial, ethnic, and religious values can affect its perception and management. Spirituality helps patients with cancer better tolerate their pain. Helping patients to give meaning to their cancer pain also improves their coping ability. Family and social support are also effective in reducing anxiety and pain. Moreover, family members' and peers' perception of pain can affect patients' pain perception (Akhondzadeh, 2012). Physical and psychological consequences of cancer pain reduce quality of life, may reinforce suicidal tendency (Ko et al., 2013), and require patients to take actions to shorten their lives (Akhondzadeh, 2012). Therefore, any pain-relieving modality should aim to minimize the negative consequences of pain and maximize its positive consequences. The consequences of cancer pain can be used as items for the assessment of the effectiveness of care interventions.

## CONCLUSION

The unique attributes, antecedents, and consequences of cancer pain highlight the necessity of developing and using specific evidence-based interventions for its effective management. The results of this concept analysis can broaden the case manager/health care team and other health care providers' knowledge about cancer pain and help them make better decisions and take more effective interventions for its management. The information in the article can be used to inform the case manager/health care team when it may be time to consider palliative care or even hospice care. Also, the information, itself, is crucial for case managers to understand when a patient has cancer pain. Given the uniqueness and complexity of cancer pain, further studies are still needed for its further clarification through exploring its attributes, antecedents, and consequences in different

settings and societies. Impact of *cancer pain* on the client's daily functions should be examined through the lens of professional case management and health care team. Therefore, qualitative studies are also recommended to them to explore firsthand experiences of cancer pain among patients with different types of cancer, families, and health care providers. *The case management specialists should* develop a treatment plan to relieve, reduce, or manage pain and help patients return to everyday activities.

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