Assessment and management of cancer pain in palliative care

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Abstract:
Cancer is a group of diseases that has over time become the most common cause of death. Incurable cancer requires the symptoms to be treated efficiently enough. Cancer patients in palliative care often suffer from pain that is usually caused by tissue injury or nerve damage. Palliative care is symptomatic, comprehensive and active care of a patient that is being given to a patient when a sickness, such as cancer, that is leading to death is no longer curable. The most important aim of the treatment is to relieve and prevent any physical, mental, social and existential suffering caused by the disease and to cherish the quality of life of the patient. The role of a nurse in the treatment of a cancer patient is important.

The aim of this study is to find out how can a nurse assess the pain of a cancer patient in palliative care and what kind of methods there are methods to ease the pain. This literature review examined two research questions: 1) *How can a nurse assess the pain of a cancer patient in palliative care?* 2) *Are there methods to ease the pain of a cancer patient in palliative care?* The literature used for this study was analyzed by using inductive content analysis. The Comfort Theory by Katharine Kolcaba was used as the theoretical framework. Overall 20 peer-reviewed articles were collected from different databases that were accessed through the Arcada website. The findings of the literature review point out multiple different pain assessment and pain management methods. The most important assessment method was discovered to be self-report, along with different unidimensional and multidimensional tools. The most important pain management method discovered was the combination of a non-opioid analgesic and an opioid. It is important for a nurse to be aware of the different assessment methods so that they can assess the pain of a cancer patient in the best possible way. Each pain management method needs to be based on diverse pain assessment.

Keywords:	cancer, pain management, pain assessment, palliative care, nurse
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Tiivistelmä:

Syöpä on ryhmä sairauksia, joista on ajan saatossa tullut ihmisen yleisin kuolinsyy. Parantumattoman syövän oireita tulee hoitaa riittävän tehokkaasti. Palliatiivisessa hoidossa olevat syöpäpotilaat kärsivät usein kivusta, joka aiheutuu yleisimmin kudos- tai hermovauriosta. Palliatiivinen hoito on potilaan kokonaisvaltaista, oireenmukaista ja aktiivista hoitoa, jota annetaan potilaille silloin, kun kuolemaan johtava sairaus, kuten syöpä, ei ole enää parannettavissa. Hoidon tärkein tavoite on vapauttaa ja ehkäistä sairauden aiheuttamia fyysisiä, henkisiä, sosiaalisia ja eksistentiaalisia kärsimyksiä ja vaalia potilaan elämänlaatua. Sairaanhoitajan rooli syöpäpotilaan hoidossa on tärkeä.

Tämän kirjallisuuskatsauksen tarkoituksena oli selvittää, miten sairaanhoitaja voi arvioida syöpäpotilaan kipua palliatiivisessa hoidossa ja millaisia keinoja on olemassa kivun helpottamiseksi. Tavoitteena oli myös lisätä hoitajien tietoisuutta aiheesta. Tutkimuksessa tarkasteltiin kahta seuraavaa tutkimuskysymystä: 1) *Miten sairaanhoitaja voi arvioida syöpäpotilaan kipua palliatiivisessa hoidossa?* 2) *Onko olemassa keinoja vähentää syöpäpotilaan kipua palliatiivisessa hoidossa?* Tämän systemaattisen kirjallisuuskatsauksen kirjallisuutta analysoitiin induktiivisen sisällönanlyysin avulla. Teoreettisena viitekehyksenä käytettiin Katharine Kolcaban kehittämää Comfort Theory -nimistä teoriaa. Yhteensä 20 tieteellistä artikkelia kerättiin eri tietokannoista, joihin oli pääsy Arcadan nettisivujen kautta. Kirjallisuuskatsauksessa todettiin, että tärkeimmät kipuarviointimenetelmät olivat itsearviointi sekä erilaiset yksiulotteiset ja moniulotteiset kipumittarit. Tärkeimmäksi kivunhoitomenetelmäksi osoittautui särkylääkkeen ja opioidin yhdistelmä. On tärkeää, että sairaanhoitaja on tietoinen eri arviointimenetelmistä, jotta potilaan kipu tulee arvioitua parhaalla mahdollisella tavalla. Jokaisen kivunhoitomenetelmän täytyy perustua monipuoliseen kivun arviointiin.

Avainsanat:	syöpä, kivunhoito, kivun arviointi, palliatiivinen hoito, sairaanhoitaja
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1 INTRODUCTION

Cancer is defined by the National Cancer Institute as ”*a term for diseases in which abnormal cells divide without control and can invade nearby tissues”*. Every third Finn gets sick with cancer at some point of their life. (Syöpäinfo) The number of people getting sick with cancer on a yearly basis has multiplied almost three times in the past fifty years. In the past fifty years the treatment prognosis has also improved and most of cancer patients make full recovery. (Ahonen et al 2017)

Pain is an individual, unpleasant sensory or emotional experience that often makes the life of the patient more difficult. It is an experience that cannot be questioned by anyone. (Estlander 2003) In the Marriam-Webster dictionary pain is defined as usually localized physical suffering associated with bodily disorder, such as cancer.

Palliative care is symptomatic, comprehensive and active care of a patient that is used when a sickness that is leading to death is no longer curable. The most important aim of the treatment is to relieve and prevent any physical, mental, social and existential suffering caused by the disease and to cherish the quality of life of the patient and the people close to them. (Joensuu et al 2015) WHO (2018) has also defined certain aims for palliative care. The aims involve seeing death as a normal process of life and supporting the patient, both mentally and physically, to cherish the remaining time they have.

This topic is important for nursing since cancer is such a common disease worldwide and the proper treatment of late-onset cancer symptoms need to be treated efficiently enough. The law of patients’ status and rights (1992/785) obligates that each patient has a right to receive first-quality medical treatment in order that their individualised needs are considered in the treatment.

The aim of this research is to find out how can a nurse assess the pain of a cancer patient in palliative care and what kind of methods there are methods to ease the pain. This is a literature review that was done by using inductive content analysis. This means that the data was analyzed by coding it and forming categories.
This research was commissioned by the hospital of Suursuo, by the ward 11 that focuses on the treatment of palliative care patients.

2 BACKGROUND

In the background chapter the concepts of the research are explained. Cancer and its epidemiology and treatment are discussed, as well as pain, pain assessment and management and palliative care.

2.1 Epidemiology of cancer

Cancer is a group of diseases which consists of over 2000 different diseases. According to the World Health Organization (2010) cancer has become the most common cause of death. There is a lot of evidence-based information available on cancer, its diagnostics and treatment and the care of cancer patient. Current care guideline (Käypä hoito) has been composed from several different kinds of cancer diseases and research information is very accessible from nursing perspective. Nurses' responsibility is to critically estimate and choose from numerous sources of information those methods that can be used for the treatment of individual patients. (Ahonen et al 2017 p. 138)

When discussing cancer, the word stands for malignant tumors and the common feature of cancer is the uncontrolled division of cells. Tumor starts forming in the cells when some tissues cells start growing abnormally and dividing. Cancer cells do not follow the normal regulation system of the organism and they deviate from the normal structure of the cells. Cancer development in the cells injuries the human body with many aspects. Cancer grows in the cells even though the normal tissue regulation will try to stop it, and the growth will continue even if the activity what originally caused the stimulus ends. When cancer grows it will damage the healthy tissues around it and when it becomes larger it will lead to the derangement of a specific organ's function. As Eriksson and Kuuppelomäki (2000 p. 12) mention, cancer cells are detached from the tumor to the lymph circulation or the blood circulation and they will drift elsewhere to the organism and form metastasis. (Eriksson & Kuuppelomäki 2000 p. 12)

Cancer is a disease that is both a genetic and a somatic. In the development of cancer the permanent DNA changes of the chromosomes proceed to the daughter cells. The appearance of the cancer varies a lot, for example, according to the tissue basis. As a result of mutations, the tumor tissue, that used to be homogeneous, turns heterogeneous.

Several subpopulations that differ from each other can be separated by their karyotype, immunogen and ability to metastasize. As Eriksson & Kuuppelomäki (2000 p. 12) mention, the molecular genetic changes that occur in cancers are usually broad and multiform and there are several converted cancer genes. They can help the development and growth of cancer by making the function of the regulation mechanism unable to proceed. Each cancer is unique and the path of different kinds of cancers differ considerably. Two same type of cancers that are even spread alike can differ a lot within each person: one patient's treatment will be curable and the growth of the cancer will stop but the other patient's cancer can continue growing even though the treatment was identical. The recurrence time of cancer types also differs between patients. (Eriksson & Kuuppelomäki 2000 p. 12-13)

2.1.1 Cancer in Finland

As people age the amount of new cancer cases inevitably increases. Every third Finn gets sick with cancer at some point of their life. Annually already about 30 000 people get sick with cancer. (Syöpäinfo) "The diagnostic, treatment and monitoring of cancer are based on national or international recommendations" (Ahonen et al 2017 p. 138) However, thanks to more effective treatment methods that are being improved all the time, the amount of deaths caused by cancer increases only a little. As it shows in Figure 1, over 32 000 new cancer cases were diagnosed in Finland in 2015 (Finnish Cancer Registry). (Ahonen et al 2017 p. 141)

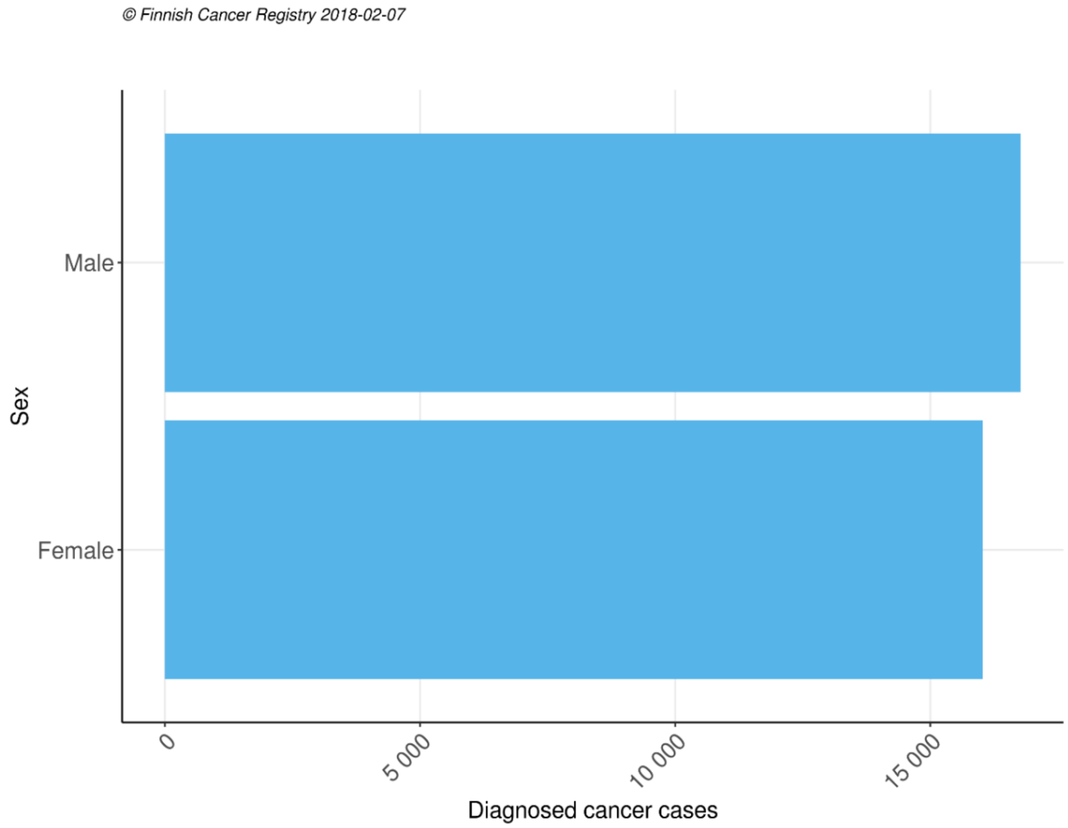


Figure 1: Number of new cancer cases in Finland in 2015 (Syöpärekisteri)

The number of people getting sick with cancer on a yearly basis has multiplied almost three times in the past fifty years. However, in the past fifty years the treatment prognosis has also improved and most of cancer patients make full recovery. As Ahonen et al state in the book Kliininen Hoitotyö (p. 141), the danger of getting sick with cancer increases rapidly after the age of 50: the middle age of people who get sick with cancer is 67 years in Finland. Annually over 12 000 people die because of cancer (Finnish Cancer Registry) and it is the foundation reason of the death of over every fifth Finn. Pulmonary cancer is the reason of most deaths. (Ahonen et al 2017 p. 141)

2.1.2 Treatment of cancer

Treatment of cancer can be divided into two parts: local treatment (surgery and radiation therapy) and systemic treatment (hormone, cytostatic and immunologic treatment) (Ahonen et al 2017 p. 145). Removing the tumor by surgery is often enough for the treatment of small cancer types but in some cases the best treatment, instead of surgery, can be radiation therapy or pharmacological treatment. (Joensuu et al 2015 p. 132)

Different kinds of combinations of surgeries, radiation therapy and pharmacological treatment are nowadays used increasingly, particularly in the treatment of large size tumors. Surgery is often the first-aid of cancer. Unfortunately it is possible that the cancer has already spread into the body with blood or lymph circulation and in that case surgery cannot be the only treatment way in order to cure the patient. (Joensuu et al 2015 p. 132)

Radiation therapy is another local way of cancer treatment along with surgeries. Most of the times radiation therapy demolishes even a large tumor if the tumor is sensitive to radiation. Some cancer types are less sensitive to radiation and in the treatment of these cancer types, radiation therapy is often combined with surgery and pharmacological treatment. Treatment of cancer can be either curative (curing treatment) or palliative (relieving symptoms). The aim of curative treatment is total recovery of the patient. Palliative care focuses on relieving the patient’s symptoms, as there is no chance of recovery. (Joensuu et al 2015 p. 132 & Ahonen et al 2017 p. 145)

A doctor is the one who makes a care plan of the treatment process for the cancer patient and a nurse is responsible for planning how and when the treatment will actually take place. The nurse will guide the patient through the treatment process and is responsible for educating the patient. The nurse will assess the cancer patient’s symptoms and general well-being on a regular basis. (Ahonen et al 2017 p. 155-156)

2.2 Pain

Pain is something that the individual experiences. It is an unpleasant sensory or emotional experience that often makes the life of the person more difficult. Pain is an experience that cannot be questioned by anyone. Pain can be expressed in multiple ways in the person’s behaviour: talking about the pain, rubbing the aching spot, crying and so on. This is how other people become aware of the pain. (Estlander 2003 p. 9) Pain is also described as an unpleasant experience associated with tissue injury or its threat or described in the concepts of tissue damage. It can also be caused by nerve damage. (Käypä hoito 2018)

Pain can be divided into acute pain, subacute pain and chronic pain. Acute pain lasts less than a month. Subacute pain lasts from one to three months and chronic pain, also referred to as long-term pain, is pain that lasts for over three months. (Käypä hoito 2018) Acute pain is short-term pain that can be treated intensively. It is the organism’s alarm sign that often eases quickly when the tissue injury gets better. Chronic pain restrains the patient’s ability to function in everyday life, weakens the quality of life, has a negative impact on relationships and on the health care and society, as in increasing the expenses. Chronic pain is usually not a symptom of a sickness but it has become an illness itself over time. (Estlander 2003 p. 16-18)

2.2.1 Pain assessment

Treatment of pain is based on diverse pain assessment. There are a lot of pain assessment tools available. The location of the pain can be assessed by asking the patient to draw the location on a piece of paper or by asking them to point it out on their body. It is important that a nurse is aware of the location of the pain since it can vary remarkably, for instance in case of undiagnosed mesastasis. (Eriksson & Kuuppelomäki 2000 p. 116)

Patient’s self-report of the pain that they are experiencing is important when a nurse is assessing the pain. Everything that the patient brings up about the pain, for example in a conversation between the nurse and the patient, and how they describe the pain by their own words, is considered self-report. (Eriksson & Kuuppelomäki 2000 p. 116-117 & Estlander 2003 p. 96-97) The patient is the only one who can describe the pain they are experiencing. (Eriksson & Kuuppelomäki 2000 p. 116)

A nurse can assess the severity of the pain only through the patient’s own perception of pain. Different pain assessment tools can be used in the assessment of pain severity: VAS (visual analogue scale), NRS (numeric rating scale) and VRS (verbal rating scale). VAS is usually a line the lenght of 10 centimeters that describes pain, the tip of the left side stands for no pain at all and the number zero and the tip of the right side stands for the worst pain imaginable and the number ten. The patient can mark the point of the line that best describes the pain they are experiencing and then a nurse can calculate the the severity of the pain by measuring the distance from the tip of the left side. NRS can be used with different numbers: for example from zero to ten and from zero to 100. The number zero always stands for no pain at all and the biggest number is the worst pain imaginable. NRS can be used both verbally and as a line. VRS is a scale that has different words describing the pain, from which the patient chooses the one that best describes the pain. Usually the pain assessment tool that the patient has used before is the one that the nurse uses with the patient, but in case they have not used one earlier, the nurse will introduce the tools and the patient will choose the most pleasant one. (Eriksson & Kuuppelomäki 2000 p. 116-117 & Estlander 2003 p. 131-133 & Mustajoki et al 2013 p. 362)

For the assessment of the pain of a cancer patient in palliative care it is important for a nurse to be aware of the history of the pain: when has it begun, how has the severity changed and so on. It is important for a nurse to find out how different factors have an impact on the pain, for example does exercise worsen or relieve the pain. It is also important that a nurse creates a caring relationship with the patient. When a patient is unable to communicate about the pain, a nurse or the patient's family should try to assess the pain through, for example, the patient's facial expressions or their position. The family members are usually good in this because they know the patient the best. (Eriksson & Kuuppelomäki 2000 p. 120-121)

2.2.2 Pain management

The law of patients' status and rights (1992/785) obligates that each patient has a right to receive first-quality medical treatment in order that their individualised needs are considered in the treatment. Every patient is entitled to good treatment of pain. Confidential care relationship between a nurse and a patient is important in good pain management. When the care relationship has been formed, the treatment of pain will be fulfilled in a safe environment and the impact of care will be utilized. (Mustajoki et al 2013 p. 361)

The pain relief ladder by WHO, that is seen in the figure 2, is often used as the basis of cancer pain management. Most of the pain caused by cancer can be managed with simple pharmacological treatment that follows the WHO pain ladder. The medication is chosen by the severity of the pain. Paracetamol and NSAID-drugs (non-steroidal anti-inflammatory drugs) are used for mild pain, with the help of an adjuvant drug that can be also used as a pain reliever. Adjuvant drugs are, for example, antidepressants and anticonvulsants. For moderate pain an opioid is used with or without a non-opioid (Paracetamol or NSAID-drugs) and an adjuvant drug. The third ladder reflects moderate or severe pain that is treated with an opioid and with or without a non-opioid and an adjuvant drug. However, every patient is an individual and experiences pain differently which is why an individualised plan for the pain management must be created for each patient. (Ahonen et al 2017 p. 166 & Eriksson & Kuuppelomäki 2000 p. 99-101 & Mustajoki et al 2013 p. 361-362)

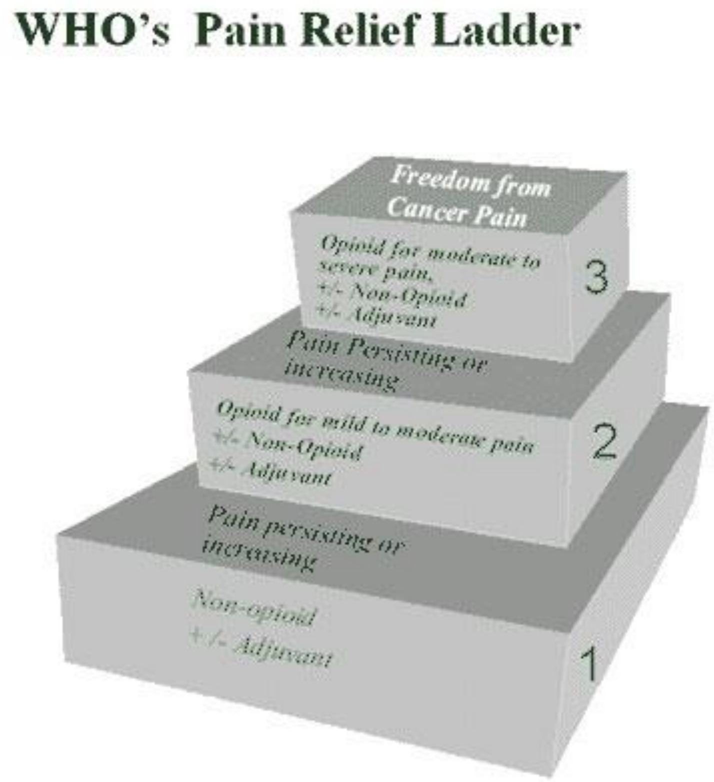


Figure 2: Pain relief ladder (WHO)

In hospitals and wherever medical treatment is given to patients, a doctor is the one who makes the decisions concerning the treatment and medications and a nurse is most often the one who actually fulfills the treatment and gives the medications to the patient. It has been defined by law that making the decisions about pharmacological treatment is something that a doctor is responsible for. Nurses are responsible not only for giving out the medications but also for checking that the pharmacological treatment is safe for the patient. (Valvira 2017) In the pain management of a cancer patient in palliative care drugs are often given intravenously. In order for a nurse to fulfill pharmacological treatment intravenously and for example through an epidural catheter, they must go through an education and get a license for it. These licenses are only valid for a certain period of time, for example three years, and then they must be validated again. This also increases patient safety. (Valvira 2017)

Non-pharmacological pain management methods are used along with pharmacological methods. They can never replace pharmacological treatment but they can enhance the effect of pain medication. For example reading, visualizating and listening to music can help a patient ignore the pain. (Eriksson & Kuuppelomäki 2000 p. 124) Different kind of relaxation exercises. acupuncture, as well as hot and cold therapies are also used in the pain management. (Ahonen et al 2017 p. 167)

2.3 Palliative care

The word palliative care originally comes from Latin language, from the word ”*pallium*” which stands for ”*cloak*”. It indicates that palliative care is like a cloak of comfort that provides protection and warmth to the patient and their loved ones. (Heikkinen et al 2004 p. 18) In the book Syöpätaudit (2015 p. 915) it is said that palliative care is symptomatic, comprehensive and active care of a patient that is administered when a sickness that is leading to death is no longer curable. In palliative care settings, there must be a doctor, who gives out the orders about the treatment, medications and so on, and several nurses that actualize the treatment of the patient. (Grönlund et al 2008 p. 29)

The most important aim of the treatment is to relieve and prevent any physical, mental, social and existential suffering caused by the disease and to cherish the quality of life of the patient and the people close to them. Supporting the families of the patients is also an important part of palliative care. (Joensuu et al 2015 p. 915) WHO (2018) has also defined certain aims for palliative care. The aims involve seeing death as a normal process of life and supporting the patient, both mentally and physically, to cherish the remaining time they have (WHO). For good quality treatment and for the needs of the patient it would be important that they had their own nurse during the treatment period. A nurse in palliative care needs to be present and able to listen to the patient’s needs. (Grönlund et al 2008 p. 26)

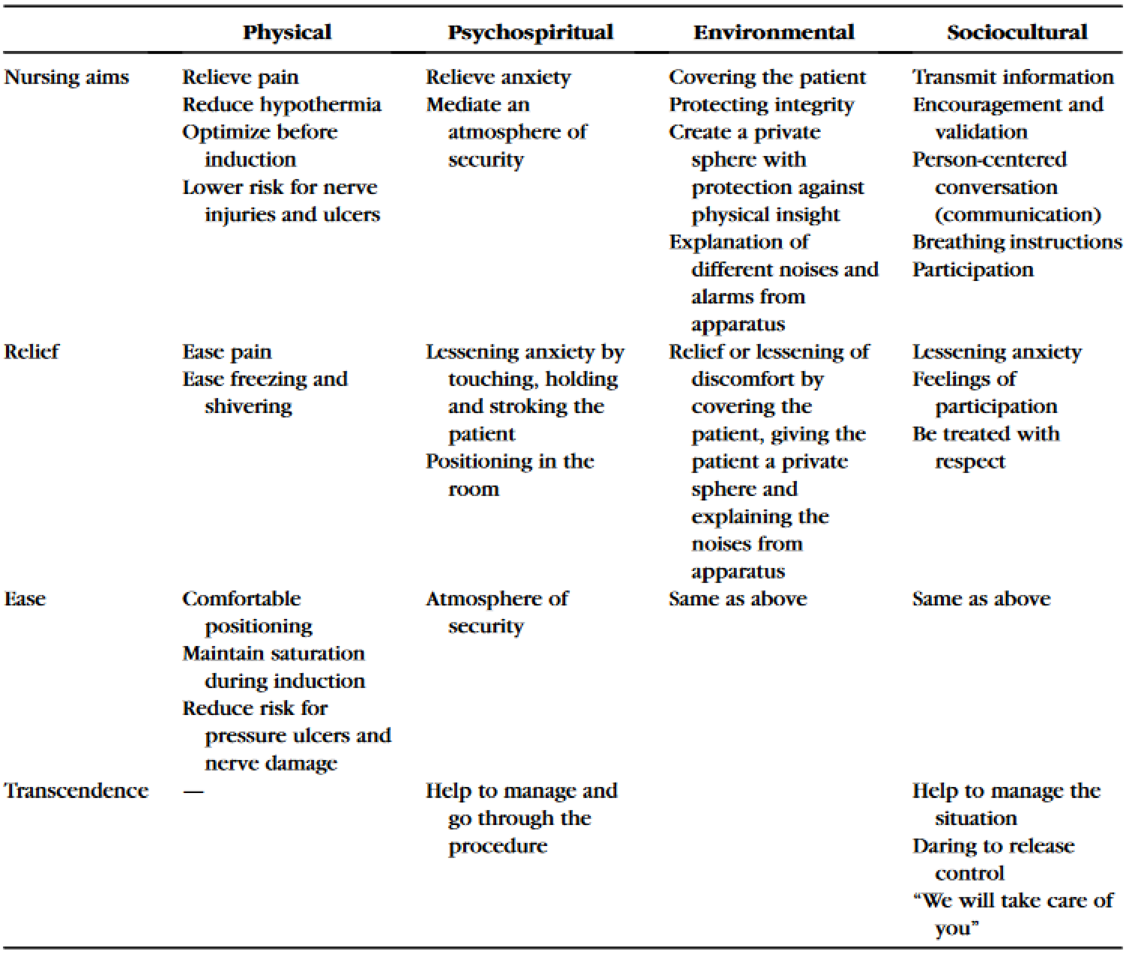
Palliative care is a challenge to the multi-professional care work. Even though the medicine has developed a lot and treatment methods are being improved all the time, some conditions just are not curable. The care work of a dying patient is demanding. The dignity of the patient must be taken into consideration and be respected throughout the treatment process and also after the patient has passed away. (Heikkinen et al 2004 p. 16)

3 THEORETICAL FRAMEWORK

In this research the Comfort theory by Professor Katharine Kolcaba, that was developed in the 1990’s, was decided to be used as the theoretical framework. It is a theory for health care, education and research that emerged when Kolcaba investigated the meaning of comfort in several different disciplines, for example in nursing, medicine, psychology and psychiatry. According to Kolcaba’s comfort theory with a holistic perspective, there are three forms of comfort: ease, relief and transcendence. ”The state of being strengthened by having needs for relief, ease, and transcendence met in 4 contexts of experience (physical, psychospiritual, sociocultural, and environmental)” (Bergström et al., 2016) If those three comfort needs are fulfilled, the patient will feel reliefed. Ease considers comfort in a state of complacency and serenity and can be also described as the ”absence of discomfort” as Bergström et al (2016) points out. (Nursing Theory & Bergström et al 2016)

In nursing, the aim of Kolcaba’s comfort theory is to try to keep incidences that will cause discomfort from occuring. Having no symptoms at all is described as relief in nursing care. Transcendence is a state, where the patient feels pain or discomfort but is able to lift him- or herself above the situation. (Nursing Theory & Bergström et al, 2016)

Kolcaba’s Theory of Comfort was decided to be used because in nursing, providing comfort to the patient is one of the most important things, maybe even the most important. With the help of this theoretical framework it was made sure that there is a nursing perspective in the research.



	Physical	Psychospiritual	Environmental	Sociocultural
Nursing aims	Relieve pain Reduce hypothermia Optimize before induction Lower risk for nerve injuries and ulcers	Relieve anxiety Mediate an atmosphere of security	Covering the patient Protecting integrity Create a private sphere with protection against physical insight Explanation of different noises and alarms from apparatus	Transmit information Encouragement and validation Person-centered conversation (communication) Breathing instructions Participation
Relief	Ease pain Ease freezing and shivering	Lessening anxiety by touching, holding and stroking the patient Positioning in the room	Relief or lessening of discomfort by covering the patient, giving the patient a private sphere and explaining the noises from apparatus	Lessening anxiety Feelings of participation Be treated with respect
Ease	Comfortable positioning Maintain saturation during induction Reduce risk for pressure ulcers and nerve damage	Atmosphere of security	Same as above	Same as above
Transcendence	—	Help to manage and go through the procedure		Help to manage the situation Daring to release control "We will take care of you"

Table 1. Matrix of the Four Contexts, the Aim of Each Action and the Three Comfort Areas (Bergström et al, 2016)

The table above describes the Theory of Comfort well. It shows all the four contexts: physical, psychospiritual, environmental and sociocultural. It has the nursing aims fitted for each context and it shows what, for example, transcendence means in the psychospiritual and sociocultural context.

The four contexts of comfort describe how the patient is being viewed by the holistic dimensions. All the contexts have an influence on each other and they are relevant in assessing the patient’s pain levels and when trying to manage the pain. The physical context means what the person is feeling physically, for example pain or nausea cam be one of these kinds of things. The psychospiritual context is about what is going on in the mind of the patient. In the field of nursing it can be expressed as anxiety or fear, for example. The sociocultural context is about what is happening around the person, for instance traditions or religion. In the field of nursing it can be expressed through some kind of ritual behavior or being concerned about what will happen after death. The environmental context is about the appearance that comes through as an active stimulus. In nursing settings, the environmental context can be seen for example as an uncomfortable bed or not being able to experience the nature. (Bergström et al 2016 & Nursing Theory)

"In the model, nursing is described as the process of assessing the patient's comfort needs, developing and implementing appropriate nursing care plans, and evaluating the patient's comfort after the care plans have been carried out. Nursing includes the intentional assessment of comfort needs, the design of comfort measures to address those needs, and the reassessment of comfort levels after implementation." (Nursing Theory) Assessment of the comfort can be either objective or subjective. Objective assessment means, for example, watching whether a wound is getting better or not and subjective indicates, for example, asking a patient to rate their pain intensity. (Nursing Theory)

4 AIM AND RESEARCH QUESTIONS

The aim of this research is to find out how can a nurse assess the pain of a cancer patient in palliative care and what kind of methods there are methods to ease the pain.
This research examined two research questions.

Research question number 1:
How can a nurse assess the pain of a cancer patient in palliative care?

Research question number 2:
Are there methods to ease the pain of a cancer patient in palliative care?

5 METHODOLOGY

This thesis is a literature review. 10 articles were chosen for both authors. The 20 articles were analyzed by forming categories and subcategories.

5.1 Data collection

The chosen 20 articles were found from different databases, such as Academic Search Elite (EBSCO), Science Direct and PubMed. The searches were performed by using key words from each question. With the first research question “How can a nurse assess the pain of a cancer patient in palliative care?” the following search words were used: pain assessment, cancer, nursing, palliative care. This provided 364 hits in PubMed, in EBSCO 53 hits and in ScienceDirect first 5005 hits but after choosing only “open access” articles, it provided 197 articles. These were narrowed down by searching only articles that were published after year 2000, written in English, discussed only adult patients and that were available in full text. After the exclusion process and reading through the articles, four ones were chosen from PubMed, three from EBSCO and three from ScienceDirect.

With the second research question “Are there methods to ease the pain of cancer patients in palliative care?” the following search words were used: pain management, palliative care, cancer. In Finnish websites, such as Duodecim, the search words were similar, but in Finnish language. In EBSCO the following search: cancer AND palliative care AND pain management provided 183, in ScienceDirect 921 hits and in PubMed 221 hits of articles. In Medic the same search words in Finnish provided 14 hits. In Duodecim website only search word “palliative care” was used and it provided 80 hits. The ones that did not discuss cancer patients and pain management were excluded. The ones that discussed pain management of adult cancer patients in palliative care, were written in between years 2000 and 2018 and were available in full text either in Finnish or English were included. After the process four articles were chosen from Duodecim, two from Medic, two from EBSCO, one from PubMed and one from ScienceDirect.

Adult cancer pain: An evidence based update	Arnstein, P.	Journal of Radiology Nursing, 2018, Vol. 37, pages 15-20
Assessing cancer pain	Dalal, S. & Bruera, E.	Current Pain and Headache Reports, 2012, Vol. 16, pages 314-324
Assessment and Management of Pain in Palliative Care Patients	Perron, V. & Schonwetter, R.	Cancer Control, 2001, Vol. 8, pages 15-24
Assessment and management of pain in older patients receiving palliative care	Hughes, L.	Nursing Older People, 2012, Vol. 24, pages 23-29
Assessment of pain	Breivik, H., et al.	British Journal of Anaesthesia, 2008, Vol. 101, pages 17-24
Cancer pain part 2: assessment and management	Chapman, S.	Art & Science, 2012, Vol. 26, pages 44-49
How nurses assess breakhrough cancer pain, and the impact of this on patients's daily lives - Results of a European survey	Rustøen, T., et al.	European Journal of Oncology Nursing, 2013, Vol. 17, pages 402-407
Managing Pain From Advanced Cancer in the Palliative Care Setting	Ferrel, B. & Levy, M. & Paice, J.	Clinical Journal of Oncology Nursing, 2008, Vol. 12, pages 575-581
Pharmacological pain management at the end of life	Stitzlein Davies, P.	The Nurse Practisioner, 2016, Vol. 123, pages 26-37
The Measurement of Pain	Frampton, C.L. & Hughes-Webb, P.	Clinical Oncology, 2011, Vol. 23, pages 381-386

Table 2: Articles chosen for the first research question

Assessment and management of pain in older patients receiving palliative care	Hughes, L.	Nursing Older People, 2012, Vol. 24, pages 23-29
Cancer pain part 2: assessment and management	Chapman, S.	Art & Science, 2012, Vol. 26, pages 44-49
Kipu palliatiivisessa hoidossa	Hamunen, K. & Heiskanen, T. & Hirvonen, O.	Duodecim, 2013, Vol. 129, pages 385-392
Kuolevan potilaan hoito	Korhonen, H. & Poukka, P.	Duodecim, 2013, Vol. 129, pages 440-445
Oireiden hoito elämän loppuvaiheessa	Hänninen, J. & Rahko, E.	Duodecim, 2013, Vol. 129, pages 433-439
Palliatiivinen sedaatio – viimeinen keino kärsimyksen hoidossa	Hänninen, J.	Duodecim, 2007, Vol. 123, pages 2207-2213
Palliative medicine: medical and psychological aspects	Presswood, E. & Noble, S.	Surgery, 2017, Vol. 36, pages 117-121
Pharmacological pain management at the end of life	Stitzlein Davies, P.	The Nurse Practitioner, 2016, Vol. 41, pages 26-37
Syöpäkivun hoidon kolme tasoa	Hamunen, K. & Heiskanen, T. & Idman, I.	Suomen Lääkärilehti, 2009, Vol. 41, pages 3413-3421
Syöpäpotilaan palliatiivinen hoito	Nal, H. & Pakanen, V.	FinnAnest, 2001, Vol. 34, pages 381-386

Table 3: Articles chosen for the second research question

5.2 Data analysis

Content analysis is a way of analyzing data in qualitative researches. It is often used in nursing research. It is an approach that can be used to analyze documents objectively and systematically. With the help of content analysis categories and concepts can be formed. Content analysis can be done either as an inductive or deductive analysis. In inductive content analysis the analysis is based on the material only. In deductive content analysis an analysis frame is created based on earlier knowledge and things, that match the frame, are being searched from the material. Usually it depends on the research and its purpose which one, inductive or deductive content analysis, is being used. (Kyngäs et al 2011) This study is a literature review that was done by using inductive content analysis. The 20 chosen articles were read through and the frequently mentioned concepts were marked with a certain color. These colors were marked as their own codes and the most frequently discussed codes were used to create the main categories. This way the most important themes were discovered. The thesis had two authors and there was a research question for each of them. The first main categories formed from the ten chosen articles answered to the first research questions and the second main categories that were formed from the other ten chosen articles, also answered to the second research question. The subcategories were formed in relation to the main categories and each research question. A table of the main categories and subcategories is available under the chapter results, in the pain assessment and pain management parts.

5.3 Ethical aspects of the research study

Prior to initiating the literature review the authors got to know the ethical guideline of Arcada carefully. The paper “Good scientific practice in studies at Arcada” is an ethical guideline to all student performances and it has to be observed in each written report that is produced while studying at Arcada. The research is a literature review, as stated already in the beginning, so no ethical permission was needed. Only peer-reviewed, scientific sources and articles were used in the research, which makes it reliable and ethical. The data was collected and evaluated by methods accepted by the scientific criteria.

6 FINDINGS

In this chapter the findings of the literature review are presented. The ten articles chosen for each research question answered the question.

6.1 Pain assessment

The ten articles chosen answered the question number 1: How can a nurse assess the pain of a cancer patient in palliative care? The aim was to study what kind of methods and tools are the most used in pain assessment. In the ten articles that were reviewed, there were a lot of pain assessment methods discussed but for this research they were narrowed down to the ones that were mentioned most often. From the most often mentioned assessment tools and methods three main categories and subcategories were found and focused on. There is a table below that shows the main categories and subcategories that were analyzed for this research, based on the ten chosen and reviewed articles.

Main category	**SELF REPORT**	**UNIDIMENSIONAL TOOLS**	**MULTIDIMENSIONAL TOOLS**
Subcategory		VAS, NRS, VRS	Brief pain inventory, McGill pain questionnaire, Edmonton symptom assessment scale

SELF-REPORT

Self-report as a pain assessment method was discussed in eight of the ten chosen articles by Frampton & Hughes-Webb (2011), Schonwetter & Perron (2001), Arnstein (2018), Breivik et al (2008), Stitzlein Davies (2016), Hughes (2012), Chapman (2012) and Dalal & Bruera (2012). Self-report was stated to be the gold standard for pain assessment with patients that have no bigger communication problems because pain is a subjective and private experience and it is different with every human being. Self-report refers to everything that the patient brings up about the pain, for example in a conversation between a nurse and the patient. (Breivik et al 2008 & Hughes 2012 & Frampton & Hughes-Webb 2010 & Dalal & Bruera 2012) Assessing the pain of a patient who is not able to communicate and therefore cannot self-report is a ”special concern”, as Stitzlein Davies (2016) mentions.

Self-report of pain includes everything the patient also patient records and the history of pain of the patient. It is important for a health care professional to know what kind of pain the patient has at the moment and has had in the past, what pharmacological and non-pharmacological pain management methods they have tried and how well have they worked out. The patient must provide the nurse specific information about the pain: for example, intensity, duration and location. This can happen in a conversation or for example by keeping track of it in a personal diary and marking the location of the pain on paper. (Arnstein 2018 & Breivik et al 2008 & Chapman 2012 & Dalal & Bruera 2012 & Perron & Schonwetter 2001)

UNIDIMENSIONAL TOOLS

The unidimensional pain assessment tools include visual analogue scale (VAS), numeric rating scale (NRS) and verbal rating scale (VRS) (Dalal & Bruera 2012) were the most often mentioned tools in the ten chosen articles. They were discussed in seven of the following articles by Frampton & Hughes-Webb (2011), Schonwetter & Perron (2001), Ferrel et al (2008), Breivik et al (2008), Chapman (2012), Dalal & Bruera (2012) and Rustøen et al (2013). Each of these pain assessment tools show a great effect in helping patients express what kind of pain they are experiencing and how intensive the pain is (Perron & Schonwetter 2001).

The numeric rating scale NRS is the most used pain assessment tool among the unidimensional tools. It is usually a numeric scale from 0 to 10, with 0 being no pain at all and 10 being the worst pain the patient can imagine. It is considered that a number from 1 to 3 is mild pain, a number from 4-7 moderate pain and a number between 8 and 10 is severe pain. NRS is stated to be the most practical pain assessment tool because it is easier to understand by patients and therefore produces more valid results. NRS can also be used for the measurement of pain relief by comparing the number the patient sets their pain into before and after pain intervention. Because each patient is different, they also experience pain individually. That is way it is important for a nurse to remember to use clinical judgement. (Breivik et al 2008 & Dalal & Bruera 2012 & Ferrel et al 2008 & Frampton & Hughes-Webb 2011 & Perron & Schonwetter 2001)

The visual analogue scale (VAS) is a line, usually the lenght of 100 millimeter (Frampton & Hughes-Webb 2011) that helps to define the intensity of the patient's pain (Perron & Schonwetter 2001). The edge of the left side represents no pain whatsoever. The right side indicates the worst pain the patient can possibly imagine. With the help of VAS the pain intensity is measured by the patient pointing at a point that they feel like represents their perception of pain and measuring the distance between that point and the left side, no pain at all. VAS is considered to be a more precise pain assessment tool and reported to be used most often by clinical personnel according to the research by Rustøen et al (2013) published in the European Journal of Oncology Nursing. VAS is used not only to assess the pain intensity, but also, for example, the frequency and relief of pain. (Frampton & Hughes-Webb 2011)

The verbal rating scale (VRS) consists of certain types of lists that usually have up to five different factors that differ according to the intensity of the pain. From these factors the patient needs to choose the one that best describes the pain that they are feeling. The factors have their own scores, from which the clinical personnel form a score of pain intensity. VRS is considered to be an easy pain assessment tool to use in nursing. For the proper use of VRS it is required that the personnel and the patient speak the same language, which may cause difficulties sometimes. (Frampton & Hughes-Webb 2011)

MULTIDIMENSIONAL TOOLS

"*Multidimensional pain assessment tools enable assessment of other core features of pain, such as affective, cognitive, social and spiritual dimensions*" (Chapman 2012). They include a lot of different kind of tools, but the ones that were most often mentioned and discussed in the analyzed articles were Brief pain inventory (BPI), McGill pain questionnaire (MPQ) and Edmonton symptom assessment scale (ESAS). BPI was discussed in six of the articles by Breivik et al (2008), Dalal & Bruera (2012), Chapman (2012), Arnstein (2018), Ferrel et al (2008) and Frampton & Hughes-Webb (2011). MPQ was discussed in the following four articles by Dalal & Bruera (2012), Breivik et al (2008), Chapman (2012) and Frampton & Hughes-Webb (2011). The third one, ESAS, was discussed in three of the articles by Dalal & Bruera (2012), Breivik et al (2008) and Rustøen et al (2013).

The Brief pain inventory (BPI) is a standard pain assessment tool that assesses the severity of pain and can be used on a regular basis in assessing the pain of a cancer patient (Chapman 2012). However, in the article by Arnstein (2018), it is stated that the BPI is often not fully appropriate in some nursing settings, but more used in research. It is the most commonly used multidimensional tool in the research settings and it was invented exactly for being used among cancer patients (Frampton & Hughes-Webb 2011). It assesses the pain by using a numeric rating scale from 0 to 10 and by asking the patient to rate their perception of pain in the last 24 hours by marking down the worst, least and average pain level. The BPI has also a body figure, where the patient is asked to mark the location of the pain. It is available in various languages and in both shorter and wider versions. (Breivik et al 2008 & Frampton & Hughes-Webb 2011)

As well as the Brief pain inventory, the McGill pain questionnaire (MPQ) is also a standard tool in assessing the pain of a cancer patient and can be used on a regular basis. (Chapman 2012) It was stated also about the MPQ that it is more used in cancer related research settings than in nursing settings (Arnstein 2018). The MPQ was mentioned to be the gold standard of pain assessment and it evaluates the pain in three different dimensions: sensory, affective-emotional and evaluative. It is a questionnaire that includes a body chart for locating the pain, a pain intensity verbal rating scale from 0 to 5 and 20 classes of adjectives that describe the pain in the above-mentioned three different dimensions. The MPQ is also available in various languages and also as shorter and wider forms. It does not provide assessment if the patient is very sick or unable to communicate. (Breivik et al 2008 & Frampton & Hughes-Webb 2011)

The Edmonton symptom assessment system (ESAS) was discovered to be the third most used pain assessment tool among nurses in certain European countries and especially used in palliative care settings (Rustøen et al 2013). It is used not only for the assessment of pain, but it also assesses eight other physical and psychological dimensions, such as nausea, appetite, anxiety and depression. It provides a more holistic picture of the patient and can be adjusted to the needs of the patient. However, the ESAS has been criticized because of some difficulties in interpreting it and officially it has not yet been validated. (Breivik et al 2008 & Dalal & Bruera 2012 & Rustøen et al 2013)

6.2 Pain management

The ten articles chosen answered the research question no. 2: Are there methods to ease the pain of cancer patients in palliative care? The aim of the research was to figure out what pharmacological and non-pharmacological pain management ways there are. In the ten articles there were a lot of pain management methods discussed but in this research five main categories were found and focused on. Below there is a table showing the main categories and sub-categories that were found in this research based on the ten articles.

Main category	**NON-OPIOID ANALGESICS**	**OPIOIDS**	**ADJUVANT DRUGS**	**PALLITIVE SEDATION**	**NON-PHARMACOLOGICAL METHODS**
Sub-category	Paracetamol, NSAID-drugs (Ibuprofen, Naproxen)	Morphine, Codeine, Dihydrocodeine, Tramadol, Oxycodone, Fentanyl, Hydromorphone	Antidepressants, anticonvulsants, corticosteroids, bisphosphonates, psychosis drugs	Benzodiazepines (Midatsolam, Lorazepam), Haloperidol, Propofol	Physiotherapy, psychotherapy, occupational therapy, acupuncture, massage, relaxation, relaxation, distraction techniques, education, guided imagery

NON-OPIOID ANALGESICS

Non-opioid cancer pain management methods were discussed in eight of the ten chosen articles by Hughes (2012), Chapman (2012), Hamunen et al (2013), Korhonen & Poukka (2013), Presswood & Noble (2017), Stizlein (2016), Hamunen et al (2009), Nal & Pakanen (2001).

The non-opioid analgesics that were found mentioned most often and that were focused on in each eight articles were Paracetamol and NSAID-drugs (non-steroidal anti-inflammatory drugs) which include for example Ibuprofen and Naproxen. Also nitrous oxide was mentioned, but in just one of the articles by Presswood and Noble (2017).

Paracetamol and NSAID-drugs are perfect for the treatment of mild pain. They can be administrated also in many different ways, for example by oral administration, intravenously or administrating to the rectum. (Heiskanen et al 2013 & Hamunen et al 2009) It is important to analgesics like Paracetamol and NSAID-drugs that they are given to the patient at a regular basis according to the pain level the patient is feeling (Chapman 2012).

The World Health Organization WHO has developed a tool for the management of pain among cancer patients that is called by the name of pain ladder. Pain ladder was discussed in three of the articles by Presswood & Noble (2017), Hughes (2012) and Nal & Pakanen (2001). The pain ladder is divided into three different steps. On the first step non-opiod +- adjuvant drug is being used. On the second step opioids for mild to moderate pain can be used with or without non-opioids and/or adjuvant drugs. On the third step there are opioids for moderate to severe pain with or without non-opioid and/or adjuvant drugs. According to this, non-opioid drugs are really important in the management of cancer pain. (Hughes 2012) In the article by Nal and Pakanen (2001) it was mentioned that the pain medication is to be chosen according to the intensity of the pain and by following the pain ladder by WHO and in the article by Hughes (2012) it was stated that a lot of the pain management directions are originally based on the pain ladder. However, in the article from the year 2017 by Presswood & Noble, it was stated that the evidence of the WHO pain ladder being used for treating cancer pain is poor.

NSAID-drugs are also useful in the treatment of cancer pain caused by metastasis in the bone. That is because in bony metastasis prostaglandin is formed and it makes the pain sensing more sensible. (Korhonen & Poukka 2013 & Nal & Pakanen 2001).

OPIOIDS

One of the main categories is opioids. Opioids were discussed in eight of the ten articles by Hughes (2012), Chapman (2012), Hamunen et al (2013), Korhonen & Poukka (2013), Presswood & Noble (2017), Stizlein (2016), Hamunen et al (2009), Nal & Pakanen (2001).

In the articles multiple different kind of opioids were discussed. The most common ones of them were Morphine, Oxycodone, Fentanyl, Codeine, Dihydrocodeine, Tramadol, Hydromorphone, Methadone and Oxymorphone. As Davies (2016) states, opioids are the basis of treatment of pain in palliative care. Usually the best response to managing moderate or intense pain is achieved from the combination of an opioid and either Paracetamol or Ibuprofen. (Heiskanen et al 2013) Opioids are a great option in managing cancer pain also because they have no ceiling affect, which means that the dose of an opioid can maximized 30% each time if the response is not satisfactory, until the right level of pain management is reached or until the side effects become too much to handle (Hamunen et al 2009 & Stitzlein Davies 2016). Morphine is the most common opioid used in the control of pain among cancer patients in palliative care and it is popular also because it is the most researched one, low in cost and available in so many different forms (Hamunen et al 2009 & Stitzlein Davies 2016 & Heiskanen et al 2013 & Nal & Pakanen 2001).

ADJUVANT DRUGS

The use of adjuvant drugs in the treatment of cancer pain was discussed in six of the ten chosen articles: Hughes (2012), Chapman (2012), Hamunen et al (2013), Stizlein (2016), Hamunen et al (2009), Nal & Pakanen (2001). There were a lot of different kinds of adjuvant drugs mentioned, but the most important and most commonly mentioned were chosen for this research: antidepressants, anticonvulsants, corticosteroids, bisphosphonates and psychosis drugs.

Antidepressants are basic medications in the treatment of neuropathic cancer pain. The most commonly mentioned antidepressants were Amitriptyline and Nortriptyline. Antidepressants have a sedating effect as well which makes it useful to take them before going to sleep, in order to improve the quality of sleep. They also help if the patients is feeling symptoms of depression. (Heiskanen et al 2013 & Stitzlein Davies 2017 & Hughes 2012 & Chapman 2012 & Hamunen et al 2009)

Anticonvulsants are medications that are originally meant to be used for treating epilepsy but are also effective in the treatment of neuropathic cancer pain (Hughes, 2012). The anticonvulsants that were mentioned most often in the research material were Gabapetin that was mentioned in five articles and Pregabalin that was mentioned in three articles. These two drugs are well tolerated and have a great effect in the treatment of neuropathic pain (Chapman 2012 & Stitzlein Davies 2017 & Hughes 2012) as well as in the treatment of pain caused by bony metastasis (Stitzlein Davies 2017 & Chapman 2012). Anticonvulsants may also ease pain that is involved with anxiety (Hamunen et al 2009).

In the article by Stitzlein Davies (2017) it was stated that corticosteroids are a good way to reduce pain, ”presumably by reducing inflammation”. Most common corticosteroids used are Dexamethasone and Prednisone. As they reduce pain, they also improve appetite and mood. Dexamethasone is a drug commonly used in the field of palliative care. (Stitzlein Davies 2017 & Chapman 2012 & Nal & Pakanen 2001)

Bisphosphonates were mentioned by Stitzlein Davies (2017), Hughes (2012) and Chapman (2012) and they all stated that bisphosphonates are used for reducing the pain caused by metastasis in the bone. The usage of psychosis medications was mentioned in the articles by Heiskanen et al (2013) and Hamunen et al (2009). Both of the articles state that the drug Olanzapine can be used in cases where the patient suffers from anxiety and it also effects by calming the patient down and making their pain tolerance higher.

PALLIATIVE SEDATION

Palliative sedation was discussed only in three of the ten articles chosen but since it is the last way of ending the suffering of a cancer patient in palliative care, it was chosen to be one of the main categories. Palliative sedation is used only when all other pain management ways have been tried out and none of them have been effective enough. Common medications used for sedating a patient are Midazolam or Lorazepam that are both benzodiazepines. Even Propofol, that is a drug commonly used in anaesthesia, can be used in palliative sedation. (Hänninen 2007 & Hänninen & Rahko, 2013 & Stitzlein Davies, 2017)

NON-PHARMACOLOGICAL METHODS

Non-pharmacological approaches to managing cancer pain in palliative care were discussed in four of the ten chosen articles by Nal & Pakanen (2001), Presswood & Noble (2017), Hughes (2012) and Chapman (2012).

Non-pharmacological pain management methods are most effective when combined with pharmacological treatment. Hughes (2012) states in his article that there has been evidence that non-pharmacological pain management ways have showed effectiveness. It is also stated that non-pharmacological pain management methods need to be based on pain assessment and combination of different pain management approaches. However, these non-medical methods do not work as effectively as they do with healthy people because cancer patients in palliative care are dying as a consequence of the disease. (Chapman 2012 & Hughes 2012)

Physical therapies can help a patient reduce pain, maximize their functional reserve and improve the quality of everyday life. Physical therapies can be, for example, occupational therapy and physiotherapy and can include therapeutic exercises. Therapies, such as psychotherapy, can reduce pain, improve how they sense the pain by relieving anxiety and the feeling of stress. They can also make the patient feel more prepared for death and make them accept the fact. The patient’s attention can also be distracted from pain, for example in uncomfortable procedures such as cannulation by listening to music, reading or counting in mind or out loud. Nurse-patient relationship is also a key factor in helping patients cope with pain: it helps if a nurse can acknowledge the pain the patient is going through and can help a patient cope with pain. (Hughes 2012 & Chapman 2012)

Other non-pharmacological pain management methods stated were acupuncture, religious contact, positioning, TENS (transcutaneous electrical nerve stimulation), guided imagery and patient education. Educating the patient and giving them information about the treatment process makes it possible for the patient to be a part of making decisions about the pain management plan and can also reduce anxiety. It can be a factor that makes the difference between efficient and inefficient pain management. (Chapman 2012 & Hughes 2012 & Nal & Pakanen 2001 & Presswood & Noble 2017)

7 DISCUSSION

The aim of this research is to find out how can a nurse assess the pain of a cancer patient in palliative care and what kind of methods there are methods to ease the pain. There were two research questions that both had ten articles answering to them. Research question no. 1: How can a nurse assess the pain of a cancer patient in palliative care? Research question no. 2: Are there methods to ease the pain of cancer patients in palliative care?

7.1 Pain assessment

The main categories of pain assessment that were found from the articles were self-report, unidimensional tools and multidimensional tools. Pain is subjective and it is always a personal experience, as Estlander (2003) also acknowledges. In the articles it was found that self-report is considered as the gold standard for assessing pain among cancer patients in palliative care that have no bigger communication problems. (Breivik et al 2008 & Hughes 2012 & Frampton & Hughes-Webb 2010 & Dalal & Bruera 2012) Self-report is not only what the patient states out loud but what is found in their patient records and generally the history of the pain. For the nurse it is important to know what kind of a pain history the patient has and what pain management methods have been used prior to this treatment period. The communication between the nurse and the patient is the key concept in self-report. (Chapman 2012)

The unidimensional pain assessment tools that were found in the research were VAS (visual analogue scale), NRS (numeric rating scale) and VRS (verbal rating scale). This is also supported by the background chapter and Käypä hoito. VAS is a line that helps to define the pain intensity by the left side meaning no pain at all and the right side the worst pain imaginable. (Perron & Schonwetter 2001). It is used to assess the pain and also, for example, the frequency and relief of pain. (Frampton & Hughes-Webb, 2011) NRS was found to be the most used pain assessment tool among the unidimensional tools. It is usually an 11-point scale from 0 to 10, with 0 being no pain at all and 10 being the worst pain imaginable. It was found that NRS is the most practical tool because it is easy to understand. However, each patient is an individual that experience pain differently which is why a nurse must use clinical judgement in interpreting the NRS. (Breivik et al 2008 & Dalal & Bruera 2012 & Ferrel et al 2008 & Frampton & Hughes-Webb 2011 & Perron & Schonwetter 2001) VRS is usually a list of different pain describing factors from which a patient chooses the best describing one. Each factor has a score from which a score of pain intensity can be formed. VRS was found to be considered an easy pain assessment tool that however is language dependent. (Frampton & Hughes-Webb 2011)

The third main category that was found in the research was multidimensional pain assessment tools. This includes three tools: BPI (the Brief pain inventory), MPQ (McGill pain questionnaire) and ESAS (Edmonton symptom assessment system). The BPI was found to be a standard tool to assess the severity of the pain (Chapman 2012). It was found that it is actually more often used in research settings, than in nursing (Arnstein 2018). BPI was developed exactly for being used among cancer patients (Frampton & Hughes-Webb 2011). It functions by using an NRS, by asking questions about the pain and having a figure where to locate the pain. (Breivik et al 2008 & Frampton & Hughes-Webb 2011)

The MPQ was found to be used in both research and nursing settings, however more commonly in cancer related research settings. (Arnstein 2018) It is also an important tool that evaluates the pain in three different dimensions: sensory, affective-emotional and evaluative. It is a questionnaire with a pain location chart, a VRS from 0 to 5 and various groups of pain describing adjectives. (Breivik et al 2008 & Frampton & Hughes-Webb 2011) The ESAS was found to be used to assess pain and numerous other physical and psychological dimensions, which makes it a tool that provides more of a holistic picture of the patient. It is not yet an official tool and there have been difficulties in interpreting it, which is why it has been criticized. (Breivik et al 2008 & Dalal & Bruera 2012 & Rustøen et al 2013)

The theoretical framework chosen for this research is the Comfort theory by professor Katharine Kolcaba. The theory supports the findings of the pain assessment chapter of this research. The comfort theory is a holistic theory that describes comfort in three forms: ease, relief and transcendence. It describes the experiences of a patient in four contexts: physical, psychospiritual, sociocultural and environmental. The four contexts of comfort describe how the patient is being viewed by the holistic dimensions. All the contexts have an influence on each other and they are relevant in assessing the pain levels of the patient. The physical context of the comfort theory means what the patient is feeling physically, for example the feeling of pain, and the psychospiritual context is about what is going on in the mind of the patient, for example anxiety. Assessment of the comfort can be either objective or subjective. (Bergström et al 2016 & Nursing Theory) Different pain assessment methods discovered in the research assess the physical and psychospiritual contexts of comfort both objectively and subjectively. Subjective comfort and pain assessment is being used in both unidimensional and multidimensional tools that were discovered in the research.

7.2 Pain management

In the research five main categories of pain management of a cancer patient in palliative care were found. The main categories were non-opioid analgesics, opioids, adjuvant drugs, palliative sedation and non-pharmacological pain management methods. Confidential care relationship between a nurse and a patient is a key factor in good pain management. When the care relationship has been formed, the treatment of pain will be fulfilled in a safe environment and the impact of care will be utilized. (Mustajoki et al 2013 p. 361)

In the research the most often discussed non-opioid analgesics were found to be Paracetamol and NSAID-drugs. These drugs were found to be the the best for the management of mild pain. They can be administrated via many different routes and it is essential that they are given on a regular basis. (Heiskanen et al 2013 & Hamunen et al 2009 & Chapman, 2012) NSAID-drugs were found to be useful also in the treament of cancer pain caused by metastasis in the bone. (Korhonen & Poukka 2013 & Nal & Pakanen 2001)

The pain ladder by WHO, that is seen in figure 2 on page 14 was discovered to be often used as the basis in cancer pain management. It was discovered that most of the pain caused by cancer can be managed with simple pharmacological treatment that follows the pain ladder. Medication is chosen by the severity of the pain. The pain ladder is divided into three different steps. On the first step non-opiod +- adjuvant drug is being used. On the second step opioids for mild to moderate pain can be used with or without non-opioids and/or adjuvant drugs. On the third step there are opioids for moderate to severe pain with or without non-opioid and/or adjuvant drugs. (Ahonen et al 2017 p. 166 & Eriksson & Kuuppelomäki 2000 p. 99-101 & Hughes 2012 & Mustajoki et al 2013 p. 361-362 & Nal & Pakanen 2001 & Presswood & Noble 2017)

The second main category found was opioids, for example Morphine, Oxycodone, Codeine and Tramadol. Opioids were found to be the basis of pain management in palliative care. (Davies 2016) It was discovered that the best response to managing moderate or intense pain is achieved by the combination of an opioid and Paracetamol or Ibuprofen. (Heiskanen et al 2013) The dose of an opioid can be maximized 30% at a time until the response is satisfactory or the side effects become too much, because opioids do not have a ceiling affect. (Hamunen et al 2009 & Stitzlein Davies 2016)

Underneath the main category ‘adjuvant drugs’ multiple subcategories were formed: antidepressants, anticonvulsants, corticosteroids and bisphosphonates. In palliative care settings antidepressants and anticonvulsants are most often used for the treatment of neuropathic cancer pain. Antidepressants also have a sedating effect and help if the patient has any symptoms of depression. Anticonvulsants also help with reducing pain caused by metastasis in the bone and may ease pain that is involved with anxiety. (Chapman 2012 & Stitzlein Davies 2017 & Hughes 2012 & Heiskanen et al 2013 & Hamunen et al 2009) Corticosteroids were found to be a good way to reduce pain by reducing inflammation and they also have other positive impacts: they improve appetite and mood. Dexamethasone is a corticosteroid commonly used in palliative care. (Stitzlein Davies 2017 & Chapman 2012 & Nal & Pakanen 2001) Bisphosphonates are also used to treat pain caused by bony metastasis (Stitzlein Davies 2017 & Hughes 2012 & Chapman, 2012). It was also found that psychosis drugs, Olanzapine, can be used in cases where the patient suffers from anxiety and it also affects by calming the patient down and making their pain tolerance higher (Heiskanen et al 2013 & Hamunen et al 2009)

Palliative sedation was one of the main categories and it is an important subject, because it is the last way of ending the suffering of a patient. It is used only when all other pain management options have been tried out and none of them have showed enough effectiveness. It was found that the most common medications used in palliative sedation are benzodiazepines Midazolam and Lorazepam and Propofol. (Hänninen 2007 & Hänninen & Rahko 2013 & Stitzlein Davies 2017)

The medical treatment and decisions of the drugs that are given to the patient are always made by doctor and it is also defined by the law. A nurse is most often the one who actually fulfills the treatment and gives the medications to the patient. Nurses are responsible not only for giving the medications to the patient but also for checking that the pharmacological treatment is safe for the patient. (Valvira 2017) In the pain management of a cancer patient in palliative care drugs are given via many different routes, for example orally, but also intravenously. In order for a nurse to fulfill pharmacological treatment intravenously they must go through an education and get a license for it. These licenses are only valid for a certain period of time, for example three years, and then they must be validated again. This also increases patient safety. (Valvira 2017)

Non-pharmacological pain management methods were found to be the most effective when combined with pharmacological treatment. Non-pharmacological pain management methods need to be based on pain assessment. (Chapman 2012 & Hughes 2012) They can never replace pharmacological treatment but they can enhance the effect of pain medication (Eriksson & Kuuppelomäki 2000 p. 124). Physical therapies were discovered to help a patient reduce pain. Other therapies, such as psychotherapy, can also reduce pain and they have a lot of psychological effects as well: they relieve anxiety and the feeling of stress and can help the patient accept the fact that they are about to lose their life. Other non-pharmacological pain management methods discovered were distraction from pain, acupuncture, guided imagery and patient education. (Chapman 2012 & Hughes 2012 & Nal & Pakanen 2001 & Presswood & Noble 2017) In the background chapter it was also discovered by Eriksson & Kuuppelomäki (2000 p. 124) that for example reading, visualizating and listening to music can help a patient ignore the pain.

The theoretical framework chosen for this research is the Comfort theory by professor Katharine Kolcaba. The theory supports the findings of the pain management chapter of this research. The comfort theory is a holistic theory that describes comfort in three forms: ease, relief and transcendence. It describes the experiences of a patient in four contexts: physical, psychospiritual, sociocultural and environmental. The four contexts of comfort describe how the patient is being viewed by the holistic dimensions. All the contexts have an influence on each other and they are relevant in managing the pain that the patient is experiencing. If the three forms of comfort are fulfilled, the patient will feel relieved, as what having no symptoms at all is described in nursing care. The aim of the comfort theory by Kolcaba is to try to keep incidences that cause discomfort from occuring at all, which can be described as the aim in pain management of a cancer patient in palliative care as well. (Bergström et al 2016 & Nursing Theory)

8 CONCLUSIONS

The aim of this research was to find out how can a nurse assess the pain of a cancer patient in palliative care and what kind of methods there are methods to ease the pain. The chosen theoretical framework, the comfort theory by Katharine Kolcaba, supported the findings of the study.

The findings of the literature review point out multiple different pain assessment and pain management methods. It is important for a nurse to be aware of the different assessment methods so that they can assess the pain of a cancer patient in the best possible way. Self-report was discovered to be the most important pain assessment method. Unidimensional tools were also found to be generally used pain assessment scales in nursing, whereas multidimensional tools were found to be used to assess pain in multiple different features, such as in affective, cognitive, social and spiritual dimensions. A nurse must know the basics of each pain assessment tool in order for them to be able to explain each tool to a patient who then needs to pick the most appropriate tool for them.

Each pain management method needs to be based on diverse pain assessment. Every patient is an individual, which is why there must always be an individualized pain management plan for each patient. It was discovered in the literature review that non-opioid analgesics are suitable and often used in the treatment of mild pain. The combination of a non-opioid analgesic and an opioid usually provide the best response to moderate or intense pain. Opioids were also found to be the basis of pain management in palliative care. In nursing care the nurses are responsible for administrating the medication to the patient, which is why they need to know each medicine and what they are used for. The non-pharmacological methods studied in this literature review work the best when they are combined with pharmacological methods.

8.1 Strengths, limitations and recommendations

The authors used peer-reviewed articles in the research which makes the results reliable. However, with having just 20 articles reviewed in this literature review, it was not possible to cover all important information regarding the subject of the thesis. Although the authors tried to cover all the major concepts in the content analysis of the research, there are still possibilities and needs for further discussion of the subject. No information was found on how to assess the pain of a patient who cannot communicate themselves in the chosen articles, which would have also been an important aspect. That is something that also requires more research. The pain management part of the thesis focused almost entirely on pharmacological methods which made it difficult to find nursing perspective to it. Therefore, further research on this topic is needed.

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