

# Chapter 8

## Symptom and Life Quality Management in Oncology Patients



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**Abstract** Quality of life is a multidimensional concept. Therefore, its assessment includes many parameters ranging from happiness and well-being of individuals to environmental quality and ecological structures. A good symptom management is associated with less symptom formation and thus with a better quality of life. Non-pharmacological interventions typically include various psychosocial, behavioral and environmental strategies that can complete traditional treatment to increase the quality of life for cancer patients.

**Keywords** Quality of life · Cancer patients · Symptom management

### 8.1 Symptom and Life Quality Management in Oncology Patients

Quality of life is a multidimensional concept. Therefore, its assessment includes many parameters ranging from happiness and well-being of individuals to environmental quality and ecological structures (Pınar 2012; Mandzuk and Mc Millan 2005). The World Health Organization defined quality of life as the perception of individuals on their goals, expectations, criteria, and social relationships within the cultural structure and values system they live in (Health Organization Quality of Life Assessment (WHO-QOL) 1995). The quality of life related to health signifies how an individual or group perceives their physical and mental health (Eser 2006).

The quality of life in the field of health plays an active role in the evaluation of many cases in healthcare systems. It is used for the purposes like distribution of limited health resources, facilitating clinical decision-making, and helping patients about independent decision-making. In addition, studies on quality of life have begun to be conducted in various disease conditions, in comparing the efficiency of different treatment approaches, and in making suitable treatment decisions for the

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patient (Guyatt et al. 1993). Quality-of-life studies in oncology patients are used in areas such as estimating the survival time, determining the treatment type according to the patient's preferences, comparing the standard treatments with a new medicine, determining cost-effective treatments, and detecting the areas where patients need support.

Chemotherapy, radiotherapy, surgical treatment, or hormone therapies used in oncology patients all affect the functional states of the individual for a short or long term negatively. Quality of life is an important subject for the oncology patients, and it has effects on the quality of survival (Clark et al. 2013). It is known that cancer and cancer treatment negatively affect the physical health, psychological health, and quality of life of the individual.

When the symptoms constituting the side effects of oncological treatments are not managed well, they affect the quality of life, functional status, health perception, healthcare costs, and survival (Brant et al. 2016). A good symptom management is associated with less symptom formation and thus with a better quality of life (White et al. 2019).

Non-pharmacological interventions typically include various psychosocial, behavioral, and environmental strategies that can complete traditional treatment to increase the quality of life for cancer patients (Tong et al. 2014). For example, acupuncture reduces negative symptoms such as pain, fatigue, sleep disorders, and some gastrointestinal disturbances. Therefore, it is stated that the quality of life increases (Tao et al. 2016). In this section, measures and things that can be done to increase the quality of life and decrease the symptoms in symptom management will be focused.

## 8.2 Pain

Pain is one of the most fearful symptoms by the oncology patients and their relatives (Mercadante 2013; Paice 2004). The International Association for the Study of Pain defined pain as an unpleasant sensory and emotional sensation or behavior related to the past experiences of a person and associated with a strong or potential tissue damage originating from a certain part of the body (International Association for the Study of Pain 1979).

Cancer pain is recognized as a serious global problem affecting billions of people worldwide (European Society for Medical Oncology 2013). Pain is seen in 64% of patients with advanced or terminal disease and in 59% of patients receiving cancer treatment (van den Beuken-van Everdingen et al. 2016). WHO and international pain communities define cancer pain as a global pain problem. It is estimated that especially pain prevalence is higher in developing countries due to late diagnosis and major obstacles in accessing opioids and more than 80% of the world's population is not treated sufficiently for moderate or severe pain (Heidrich 2007). Cancer pain affects many aspects of the quality of life of patients including activities of daily

living, social functions, and sleep quality (Grotmol et al. 2018; Ganesh et al. 2018; Nishiura et al. 2015).

It is a fact that the use of pharmacological and non-pharmacological methods in pain control is effective in relieving pain (McMeramine 2011; Yildirim 2006a, b). Non-pharmacological methods reduce the emotional response of the patient to pain rather than affecting the underlying pathology, pain perception, and pain feeling (Heidrich 2007). Non-pharmacological treatments decrease the stimulation of the sympathetic nervous system and ensure the release of endogenous pain-relieving agents (e.g., endorphins). It increases the individual sense of control and decreases fatigue/weakness feeling. It increases the activity level and functional capacity, decreases stress and anxiety, and decreases hopelessness and helplessness. Therefore, it reduces pain behavior and focused pain level (Heidrich 2007; Yildirim 2006a, b).

Possible therapeutic benefits of massage, one of the non-pharmacological treatments, are reported to be relaxing the mind and body, reducing fatigue, facilitating falling asleep, reducing heart rate, and reducing pain by stimulating endorphins (Yildirim 2006a; Corbin 2005). Massage is increasingly used in symptom control of cancer patients. Its use is becoming widespread especially in hospice and palliative care areas (Deng and Cassileth 2005). Massage is an intervention allowing relaxation and reduction of perceived pain severity and anxiety perceived in cancer patients (Cassileth and Vickers 2004; Wilkie et al. 2000). In a randomized controlled trial, it was determined that massage had beneficial effects on pain and mental state in advanced cancer patients but these effects were not long-lasting (Kutner et al. 2008). Therefore, it can be thought that massage can be effective in enhancing the quality of life.

It is stated in literature that acupuncture is a popular complementary therapy preferred by oncology patients, its use by cancer patients with chronic pain can be beneficial, and it reduces the pain level (Alimi et al. 2000, 2003; Cohen et al. 2005). As a result of the meta-analysis, it was found to enhance the quality of life (Tao et al. 2016).

In the National Institute of Health's Technology Diagnostic Panel, use of hypnosis in reducing chronic pain conditions such as cancer-related pain was recommended (Monti and Yang 2005). A randomized controlled study showed that hypnotherapy was effective in relieving mucositis pain associated with cancer (Syrjala et al. 1992). It is stated that hypnotherapy can be beneficial in palliative cancer patients. In a systematic review, encouraging evidences were found indicating that hypnotherapy can alleviate cancer pain (Rajasekaran et al. 2005). However, the number and quality of studies that can provide definitive evidence on the subject are still insufficient.

### 8.3 Fatigue

Fatigue related to cancer is one of the important and complex clinical problems commonly reported by oncology patients. Although the rate of patients experiencing cancer-related fatigue varies in the literature, 40% and 100% of all cancer patients generally report that this symptom affects them. The fatigue rate reported especially for patients receiving chemotherapy and radiotherapy treatment is 80% and 90%. It has been found that 22% of cancer patients experience constant and severe fatigue in the years following anticancer treatment (Mitchell 2011; Nail 2004; Koornstra et al. 2014).

Fatigue seen in each individual occurs as a result of many different factors. For this reason, the treatment plan should be multidimensional and individualized. In addition, treatment should be started early to prevent cancer-related fatigue from turning into a chronic problem. Many treatment approaches can be used together by considering the physical, mental, and cognitive state of the patients, the prevalence of functional disorder, and the patient's expression of the problem (Mitchell 2011; Nail 2004; Horneber et al. 2012).

In the meta-analysis and randomized controlled studies, it is stated that exercise is beneficial in fatigue management during cancer treatment or in the follow-up periods of the patients who have breast cancer, solid tumors, and hematopoietic stem cell transplantation (Mitchell 2011; Koornstra et al. 2014; NCCN Guidelines 2014; ONS PEP Guidelines 2014; Mock 2004; Mitchell et al. 2007).

In the randomized controlled studies, it was reported that training interventions helped patients to cope positively with fatigue. It was determined that fatigue states of the patients improved statistically after the care interventions for fatigue such as physical exercise, relaxation techniques, art therapy, being with peer groups, and providing information about cancer and psycho-social effects of cancer and coping strategies but this improvement did not continue in 3–6-month follow-ups (NCCN Guidelines 2014; ONS PEP Guidelines 2014; Mock 2004; Mitchell et al. 2007).

Approaches such as structured rehabilitation, reiki, art, music, animal therapy, therapeutic touch, psychotherapy, distraction, hypnosis, yoga, relaxation techniques, and stress-reducing interventions are evaluated as pilot studies in small sample groups and prior evidences about the effects of these methods on relieving the fatigue of cancer patients have been obtained. Since these studies include small sample group and have not been planned as control group studies, it is hard to accept their results about their competencies as reliable. Despite these limitations, studies support that these complementary therapies can be potentially used in the fatigue treatment of cancer patients (NCCN Guidelines 2014; ONS PEP Guidelines 2014; Mitchell et al. 2007). Therefore, it is believed that the complementary treatments stated above that will be applied along with pharmacological methods for the underlying cause in coping with fatigue will be beneficial in enhancing the quality of life.

## 8.4 Change in Taste and Smell

The sense of taste and smell has an important place in maintaining human life. The sense of taste and smell affects the individual's appetite by affecting his/her food preferences. In addition, these senses function in protecting the individual against harmful food and environmental toxins (Hong et al. 2009; Peregrin 2006; Jonathan and Elisa 2014).

The treatment process starting with the cancer diagnosis negatively affects the sense of taste and smell in many patients as well as their nutrition and food preferences and causes inadequate and unbalanced nutrition and weight loss. This may lead to the development of malnutrition which is a cause of morbidity in some oncology patients. Changes in taste and smell, which develop as complications related to the disease and treatment, reduce the quality of life of patients and their compliance to the treatment and cause a decrease in their response to treatment (Hong et al. 2009; Steinbach et al. 2009; Comeau et al. 2001; Halyard 2009).

In order to reduce/eliminate the severity of taste and smell changes developing due to cancer and its treatments, some suggestions can be made to patients and their families about the preparation and consumption of foods. Eating small amounts and, often, preferring popular foods and eating with family and friends can be recommended. When the patient feels good, he/she should prefer new foods. For those who have a metallic taste, the use of plastic forks, spoons, and glasses can be recommended. The use of sugar-free/flavored gum or mint sugar and consumption of fresh vegetables and fruits can be recommended. It can be recommended to consume foods with lemon, vinegar, or pickles if there is no wound in the mouth or throat. The use of spices for flavoring foods, the use of onion/garlic to add flavor, and consumption of meat with sauce can also be recommended. Consuming protein-rich foods such as eggs, fish, chicken, and cheese can be recommended if there is a difficulty in eating red meat. It may be recommended to consume food at room temperature or cold, as it may reduce the taste and odor of the food. Adding fresh fruits in ice cream or yogurt, drinking beverages thought to be smelling with a straw, and consuming the food uncooked if the smell is disturbed can be recommended. It may be recommended to consume cool/cold fruits such as melon, grape, orange, and watermelon. Preparing meals by others and not eating in very hot or airless environments may be recommended (Algorithm Dysgeusia in Adults with Cancer 2014; American Cancer Society 2014; National Cancer Institute 2014).

## 8.5 Mucositis

Mucositis is defined as inflammatory and/or ulcerative lesions of the oral and/or gastrointestinal system. High-dose chemotherapy and radiotherapy applied in cancer treatment are the main causes of mucositis. The World Health Organization (WHO) reports that three or five mucositis are seen in 85% of patients receiving radiotherapy

(60–70 Gy) due to head and neck cancer (Peterson et al. 2015). Mucositis comes to the fore as an inevitable problem to manage by affecting the social relations of the individual seriously, and as the severity of mucositis increases, it prevents the patients from being fed orally and may cause the development of opportunistic infections in the mouth. Therefore, it is a problem affecting the quality of life of patients.

MASCC (Multinational Association of Supportive Care in Cancer) and ISOO (International Society of Oral Oncology) published a guideline on the treatment of oral mucositis (Peterson et al. 2015; Jensen and Peterson 2013; Mucositis Study Group Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) 2013). According to this guideline, while mouthwashes containing benzydamine (radiotherapy over 50 Gy) are recommended to prevent oral mucositis in patient receiving head-neck cancer treatment, mouthwashes containing sucralfate are not recommended in preventing or treating mucositis (Peterson et al. 2015; Jensen and Peterson 2013; Mucositis Study Group Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) 2013). Similarly, ESMO guidelines recommend the use of benzydamine mouthwash to prevent oral mucositis in patients receiving medium-dose radiation treatment up to 50 Gy (Peterson et al. 2015). In both guidelines, oral protocols are recommended for all age groups to prevent mucositis. Low-level laser therapy (wavelength approx. 632.8 nm) is recommended in order to prevent mucositis (Peterson et al. 2015; Jensen and Peterson 2013; Mucositis Study Group Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) 2013). In MASCC and ISOO guidelines, zinc sulfate is also recommended for preventing mucositis (Peterson et al. 2015; Jensen and Peterson 2013; Mucositis Study Group Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) 2013). In ESMO guidelines, it was reported that systemic zinc supplements applied orally can be beneficial in preventing oral mucositis in oral cancer patients receiving radiation treatment or chemotherapy (Peterson et al. 2015).

According to the systematic review conducted with patients receiving head-neck chemoradiotherapy, the effectiveness of amifostine in preventing mucositis is controversial (Nicolatou-Galitis et al. 2013). Glutamine is a natural protein, and it was reported in the studies that it reduces the incidence of grade 2, 3, and 4 mucositis as well as delays the formation of mucositis. However, there is no information about the evidence level in the guidelines yet (Sayles et al. 2016). The effectiveness of black mulberry molasses on mucositis has been investigated in different laboratory studies, and it has been shown that it has antifungal activity especially on *C. albicans* from *Candida* species (Sohn et al. 2004; Khalid et al. 2011). In another randomized controlled study conducted on patients receiving head-neck radiotherapy, it was expressed that black mulberry molasses prevented the mucositis development by 38% (Demir Doğan et al. 2017). Since there are no enough evidences, black mulberry molasses is not included in the guidelines.

## 8.6 Nausea and Vomiting

One of the symptoms that is hard to control and seen frequently in advanced cancer patients is the nausea and vomiting. Although different treatment strategies have been developed in the management of this problem that affects quality of life and daily life activities of patients negatively, it is still hard to control it in some patients (Ang et al. 2010; Hamling 2011; Gordon et al. 2014).

The management of nausea and vomiting is planned based on the patient's level of being affected and the cause of the nausea-vomiting. While the use of distracting approaches such as music therapy, relaxing exercise, massage, yoga, and meditation along with food regulation is sufficient in mild nausea and vomiting, pharmacological treatment may need to be started in the management of more severe nausea and vomiting. In addition, acupressure, hypnosis, and acupuncture application can be made. Informing the patient and his/her family about the nausea-vomiting development process and coping strategies can be an effective coping approach especially in the management of chemotherapy-related nausea and vomiting (Reville et al. 2009; Rhodes and McDaniel 2001; Gu and Lil 2016).

In a study, self-care methods used for coping with nausea-vomiting were investigated. In the study, consuming fat-free and light foods; eating small amounts and, frequently, consuming plenty of fruit; consuming liquid foods such as soup and fruit juice; getting fresh air; not being in the environment where the food is prepared and staying away from the smelly foods; smelling lemon or orange when suffering from nausea; deep breathing; relaxation and mediation; acupuncture and acupressure; distraction methods such as watching television and listening to music; sucking mint and ginger sugar; consuming ginger; and finding something to be busy (housework, gardening, etc.) were reported as the other applied methods. It has been also reported that these approaches have a low level of reducing nausea and vomiting (Lou et al. 2014).

The studies have shown that ginger is a safe medication and has no severe side effects (Lou et al. 2014). The effectiveness of ginger in the management of nausea and vomiting has been investigated in many studies, but it is not possible to decide its use for antiemetic purposes since the obtained results are controversial and do not cover the advanced cancer patients (Ansari et al. 2016; Sanaati et al. 2016; Arslan and Özdemir 2015; Pillai et al. 2011; Panahi et al. 2012; Lee and Oh 2013).

In different studies, the effect of music therapy and guided imagery (Karagozoglu et al. 2012), relaxation (Sahler et al. 2003), and a special music program called as Nevasic (Moradian et al. 2015) has been examined. It was determined in these studies that the approaches providing relaxation for the patient significantly reduced the nausea-vomiting and the use of antiemetic.

## 8.7 Diarrhea and Constipation

In oncology patients, diarrhea may be a side effect of the agent used in chemotherapy, and it may be developed depending on pelvic and abdominal radiotherapy (Teo et al. 2015), enteral feeding, overdose laxative use, infection, and other medication treatments (Teo et al. 2015; Stein et al. 2010; Oncology Nursing Society 2018).

If this problem, which negatively affects the quality of life of patients, cannot be managed effectively, it may lead to dehydration, electrolyte imbalance, and malnutrition and increase the hospitalization frequency of patients and even death (Colleen and Loryn 2012). It was seen in the studies that glutamine is an effective approach in the management of radiotherapy-related diarrhea. Since the number of patients included in the study is low, more studies are needed in order to recommend the use of glutamines in the management of diarrhea associated with radiotherapy (Kucuktulu et al. 2013).

It is stated that the prevalence of constipation in oncology patients is between 2 and 10% (Economou 2010). Although it is not a life-threatening condition, constipation is one of the main problems negatively affecting the quality of life of both the patient and his/her family by negatively affecting the advanced cancer patients physically, psychologically, and economically (Larkin et al. 2008).

Since there are various risk factors causing constipation, the treatment type and the patient's response to the treatment are individual. Therefore, there is no rule set for the effective way of constipation management (Economou 2010). In the literature, it was reported that it is important to conduct patient trainings to acquire correct bowel habits (Itano et al. 2016) as well as pharmacological approaches in the management of constipation (Candy et al. 2015). It was reported that the training was effective when it was done by considering the individual characteristics of the patients, health history, medications used, and medical treatment, following a certain training program and possibly one-to-one (average 20–30 min), and focusing on the problem (Smith 2001; Hanai et al. 2016; Mollaoğlu and Erdoğan 2014; Ayaz and Hisar 2014). The number of studies conducted with the participation of oncology patients is very limited. The results of the studies conducted with the participation of general population have showed that increasing the intake of foods with fiber, water, and magnesium is an effective approach in reducing the incidence of constipation (Murakami et al. 2007) and constipation symptoms (Dukas et al. 2003). In the literature, the recommended daily water consumption is between 1500 and 3000 ml (Larkin et al. 2008; Itano et al. 2016; Ayaz and Hisar 2014; Fox et al. 2017; Holroyd 2015), and the recommended daily fiber amount is between 15 and 35 g (Larkin et al. 2008; Ayaz and Hisar 2014; Franklin et al. 2012; Christodoulides et al. 2016; Thomson et al. 2016; Yang et al. 2012). It has been reported in the studies that daily moderate-intensity exercise reduces chronic constipation by 44% (Dukas et al. 2003). Women who are physically active daily and get about 20 g fiber per day have three times lower constipation prevalence compared to women who rarely exercise and get about 7 g fiber per day (Dukas et al. 2003). Therefore, including physical activity and exercise programs into the treatment plan of the



individuals with constipation has been reported to be effective in preventing constipation (Orhan et al. 2015).

## 8.8 Hand-Foot Syndrome and Nail Change

Hand-foot syndrome also called as acral erythema, palmar plantar erythema, Burgdorf reaction, and toxic erythema on hands and feet is a condition where there are tingling, burning, redness, and pain in the palms and soles. Although its etiology is not fully known, it is one of the cutaneous toxicities seen in patients using chemotherapy drugs and target drugs (Goodman 2004; Gandy-Webster et al. 2007). Incidence of hand-foot syndrome depends on the medication given, its dosage, and the mode of administration. For example, it is most frequently seen in 5-fluorouracil infusion therapy (Goodman 2004). Treatments applied for hand-foot syndrome have no 100% effect. However, the use of results of evidence-based studies conducted on symptom management can be effective in preventing this problem (Gandy-Webster et al. 2007; Lacouture et al. 2008).

The incidence rates of nail changes are reported as 25–30% in patients using weekly paclitaxel and 19–23% in those who use doxorubicin and cyclophosphamide due to breast cancer (Miller et al. 2014). Nail changes associated with chemotherapy cause cosmetic problems, pain, and infection and affect the quality of life of patients. Nail changes can be seen in a few nails or in all 20 nails. Some nail changes are asymptomatic and may only result in cosmetic problems. In addition, other changes can cause pain and discomfort and impairment in daily life activities. Nail changes induced by drugs occur as a result of acute toxicity in the nail epithelium (Gilbar et al. 2009; Gupta et al. 2008).

Protective measures should be taken to prevent hand-foot syndrome and nail changes. While washing dishes or bathing, contacting hands and feet with hot water should be avoided, and if possible, cold shower should be recommended (Lacouture et al. 2008; Conway 2010; BC Cancer Agency 2013; Mangili et al. 2008). Dealing with intense chemicals in activities such as house cleaning and laundry should be avoided. While cleaning with hot water, rubber gloves should be avoided as rubber conduct heat easily to the skin (Conway 2010; BC Cancer Agency 2013). Individuals should not stay in front of a window in the sauna, sunbathing or sunny weather (Minisini et al. 2003) and should use sunscreen creams (BC Cancer Agency 2013). Long walks, aerobic exercise, friction to the feet and hands, or activities requiring excessive forces should also be avoided (Lacouture et al. 2008; BC Cancer Agency 2013). Works that could damage the hand skin (such as gardening, typewriting, screwing, etc.) should be avoided (BC Cancer Agency 2013; Moos et al. 2008). Existing calluses should be checked regularly, and if possible, hyperkeratotic areas and calluses should be treated prophylactically with the help of manicure or pedicure before and during treatment (Lacouture et al. 2008; Zhang et al. 2011; Wood et al. 2010). Pressure points in the hands and feet and areas sensitive to pressure should be protected, and shoes that do not squeeze and have soft soles should be preferred

(Lacouture et al. 2008; Zhang et al. 2011; Wood et al. 2010). Overweight patients should be consulted with an orthopedist/physical therapist about using an assistive device (Lacouture et al. 2008). Hands, feet, and all skin surface should be washed with warm water and dried thoroughly. The skin should not be left sweaty and moist (BC Cancer Agency 2013). Nails should be cut short. Chemicals and detergents that may damage the nails and the areas around the nails should not be used. Patients with delicate nails should be advised to soak their hands in water with vitamin B every day. The patients should be informed about not using nail polish, and if they use, they should be informed about being careful when using acetone if the nail bed is open (Miller et al. 2014; Gilbar et al. 2009; Gupta et al. 2008).

## 8.9 Lymphedema

Surgery, radiotherapy, and chemotherapy used in the treatment of breast cancer can prolong the patient's life expectancy and cause problems that can negatively affect the quality of life (such as infection, nausea, vomiting, pain, skin burns, lymphedema, and depression). Lymphedema, one of these problems, is the accumulation of protein-rich liquid in the interstitial area due to insufficiency in lymphatic system. It is one of the most common complications encountered after breast cancer treatment. The incidence of lymphedema after axillary dissection varies between 15 and 47% (Biffaud 2013; Demir 2008; Kebudi et al. 2005). Lymphedema causes insufficiency for the individual for fulfilling his/her daily activities and his/her caregiving roles in the family, weakness, functional insufficiency in the arm, deterioration in body image, and decreased self-esteem and quality of life (Sakorafas et al. 2006; Rodrick et al. 2013).

The development risk of lymphedema continues throughout life, and there is no definitive treatment approach when it develops; the best treatment is to prevent its development. In the literature, the use of different approaches such as patient training (Fleysher 2010; Thomas-MacLean et al. 2005; Ridner et al. 2011), starting arm exercises after surgery (McNeely et al. 2010; Kilbreath 2011), weight control, and using a pressure arm-band during flight (Kilbreath et al. 2010) has been recommended, and the effectiveness of these approaches has been evaluated in different studies. However, there is no definitive evidence yet so that we can say that any application is effective.

## 8.10 Radiotherapy Skin Reactions

Radiation treatment has many long- and short-term side effects. One of these side effects is radiotherapy-related skin reactions. Skin reactions, which can be seen in different severity in 85% of patients, develop depending on the changes formed in the normal cell division and regeneration of the skin with the effect of radiotherapy

(Salvo et al. 2010). These losses, which show themselves with the skin reactions, usually begin 2–3 weeks after the initiation of radiotherapy and reach a peak with the end of treatment (Bruner et al. 2005). Development of skin reactions caused problems in the planned treatment and negatively affects the daily life activities and quality of life of the individual. Individuals have difficulties in choosing clothes, self-care, and self-efficacy in relation to the affected area (McQuestion 2011; D'haese et al. 2010).

There are many factors in radiotherapy affecting the development of skin reactions. It is possible to investigate these factors under two groups associated with the patient and treatment. Surgical interventions made during and before radiotherapy, other treatments such as applied chemotherapy and biotherapy, drugs used, chronic and acute diseases affecting the healing process, systemic infections, and exposed environmental factors are also the causes affecting severity of skin reactions.

Although the interventions for skin reactions are limited, they are mostly for its prevention or management. The preventive strategies include avoiding skin irritation, keeping the treatment area clean, minimizing friction, reducing the frequency of washing, avoiding to use soap, avoiding to use creams and deodorants with irritating features, and avoiding from sun exposure (Salvo et al. 2010; McQuestion 2011; D'haese et al. 2010; Chan et al. 2014).

In the published meta-analysis, systematic review, and clinical guidelines, it has been stated that washing skin or hair during radiotherapy is generally beneficial for the patient and their restrictions do not reduce the severity of skin reactions (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014; Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010). In the guidelines of the Oncology Nursing Society and MASCC (Multinational Association of Supportive Care in Cancer), routine skin care and the use of deodorant are among the recommended practices. There is no data on the frequency of use, but the generally accepted approach is “maintaining routine practice” (Wong et al. 2013; Deborah Feight et al. 2011).

Although the studies investigating the topical steroids do not provide very strong evidences, they are believed to be effective particularly in reducing the discomfort experienced by patients (Wong et al. 2013; Deborah Feight et al. 2011). In clinical guidelines and other systematic reviews, the use of topical steroid creams against symptoms such as itching and burning sensation is recommended (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014; Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010).

In clinical guidelines and other systematic reviews, it was expressed that creams containing hyaluronic acid and its combinations may be useful but more studies are needed (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014; Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010). Although there are some studies showing that trolamine may be beneficial, the general evaluations mention that trolamine is not useful (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014;

Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010).

Although there are some studies stating that aloe vera may be beneficial, the general impression is that it is not effective in radiotherapy skin reactions (Wong et al. 2013; Deborah Feight et al. 2011). The general evaluation made in clinical guidelines and other systematic reviews is that aloe vera is not beneficial (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014; Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010). The general evaluation in the clinical guidelines and other systematic reviews is that there is no enough evidence to express that sucralfate is useful (Salvo et al. 2010; McQuestion 2011; Chan et al. 2014; Wong et al. 2013; Deborah Feight et al. 2011; Glover and Harmer 2014; Kumar et al. 2010; Zhang et al. 2013; Andrade et al. 2012; Chan et al. 2010).

## 8.11 Peripheral Neuropathy

“Peripheral neuropathy” is the dose-limiting toxicity caused by many chemotherapy and biotherapy drugs. Peripheral neuropathy developing due to cancer treatment can cause the change or termination of the treatment. In addition, it causes the deterioration of the patient’s functions, prevention of daily life activities, and impairment of the quality of life and negatively affects the treatment process of the patient and increases health expenses (Tofthagen 2010; Hershman et al. 2014; Argyriou et al. 2014; Kolak et al. 2013).

Different non-pharmacological approaches have been used in the management of peripheral neuropathy: reflexology (Nicholas et al. 2007; Ihn 2006), massage (Nicholas et al. 2007; Ho and Roblew 2011), and acupuncture (Nicholas et al. 2007; Ho and Roblew 2011). However, the effectiveness of these approaches has been shown in the management of peripheral neuropathy due to diabetes and HIV in particular (Nicholas et al. 2007; Ihn 2006; Ho and Roblew 2011), but the number of randomized studies investigating the effectiveness of these approaches is few. In a limited number of studies conducted with cancer patients, the effectiveness of acupuncture (Donald et al. 2011; Schroeder et al. 2012), exercise (Wampler et al. 2005), and massage (Cunningham 2011) was evaluated or presented as case reports. Although these results are not sufficient for conclusive evidence, it is believed that these approaches can be effective in reducing peripheral neuropathy.

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