

Selected therapeutic methods affecting the health and quality of life of chronically dermatologically ill people

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Abstract

The skin is one of the first organs that manifest disorders of homeostasis occurring in the body. Chronic diseases that manifest themselves as skin problems are often associated with severe stress and the accompanying anxiety, uncertainty and pain, which consequently reduce the quality of patients' lives. Both stress and dermatoses trigger a cycle of neurohormonal reactions in the body that affects the functioning of the nervous, endocrine and immune systems. The data presented in this article indicate a relationship between stress, the functioning of the immune system and the quality of life of patients with chronic dermatological diseases. The article stresses the necessity of a holistic approach to skin problems in cosmetology, which is a very important element of its care and can decrease stress. Therefore, we believe that care and beauty treatments in combination with aromatherapy and music therapy can complement classical therapy. By reducing stress levels and improving the patient's health, they can increase the quality of life.

Keywords: aromatherapy, music therapy, skin, chronic dermatoses, stress, quality of life, immune system

Introduction

Medicine should be psychosomatic in nature and the physicians, physiotherapists and nurses involved in it should take into account the impact of various types of factors – including psychological factors (such as emotions, internal conflicts, mental problems) – on human health, the onset of symptoms of a disease and the course of its treatment [1,2]. In recent years, there has been a significant increase in interest in quality of life issues, which translates into a holistic approach of medical staff to patients and their biopsychosocial problems. The basis for the development of research on the relationship between psychology and somatic

medicine is the confirmed influence of psychosocial factors on treatment results, which is important in the case of many diseases, including chronic dermatological diseases [2-4].

Quality of life of chronically ill people

Scientists who have been dealing with the issue of quality of life for years point to the coexistence of many spheres in human life that can shape the quality of their lives. The concept of 'health-related quality of life' (HRQOL) was introduced by Schipperin the 1990s. He defined it as 'the functional effect of an illness and its consequent therapy upon a patient, as perceived by the patient' [5]. It refers to the impact of health on the biological and psychosocial spheres of human life [2]. Research on the quality of life conditioned by health was initiated by the World Health Organization (WHO). The quality of life in the definition of health developed by the WHO is described as follows: 'health is a state

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of complete physical, mental and social well-being and not merely the absence of disease or infirmity' [6,7]. Another definition (according to Cella and Tulskey) states that HRQOL is 'a patient's appraisal of and satisfaction with their current level of functioning as compared to what they perceive to be possible or ideal' [8]. Therefore, health should be defined dynamically as a variable human capacity in all possible dimensions of functioning. The HRQOL definition takes account of four basic aspects of a patient's functioning: physical condition and mobility, mental state, social situation and economic conditions, as well as somatic sensations [7,9]. A patient's condition therefore depends on the degree of adaptation to a disease and the manner and period of its treatment. Psychological adaptation to a disease is an ongoing process involving many different stressors associated with the disease. The indicators of satisfactory adaptation are: continuation of active involvement in everyday life, the ability to minimise obstacles (disruptions) in fulfilling social roles and the ability to cope with emotional distress [10]. In patients with chronic dermatological diseases, skin problems usually do not pose a direct threat to life, but it has been shown that they can significantly reduce a patient's quality of life by limiting their family and social activity. It is also known that a reduction in a patient's social activity is determined not so much by the extent of skin lesions as by their location. Changes visible to others on the face, hands and neckline are the most unpleasant for patients [11,12].

Looking at the health condition of the population in Poland and worldwide, one can see a life extension trend. On the one hand, a reduction in mortality from acute diseases is observed but, on the other hand, this leads to an increase in the incidence of people with chronic diseases [13]. According to the definition adopted by the American Commission on Chronic Illness, chronic disorders are those disorders or deviations from the norm that have one or more of the following characteristics: they have a long or lasting course; their aetiology, course and treatment are not clearly defined; they leave behind a dysfunction or disability; and they require specialised management. Thus, such people must cope not only with the side effects of treatment in the physical dimension, such as a significant decrease in immunity, general weakness of the body and thus a decrease in physical condition, but also in the mental and social dimensions, such as accepting changes in body appearance and changes in functioning in social roles [14,15].

The concept of the quality of life of people struggling with dermatological diseases is extremely important. Due to the chronic nature of skin diseases, patients are aware that the treatment process will last for a long time and that the undesirable symptoms of the disease will recur sooner or later, which causes psychopathological symptoms. A number of studies described in the available literature indicate that chronic dermatological diseases are associated with reduced patient quality of life [16-19].

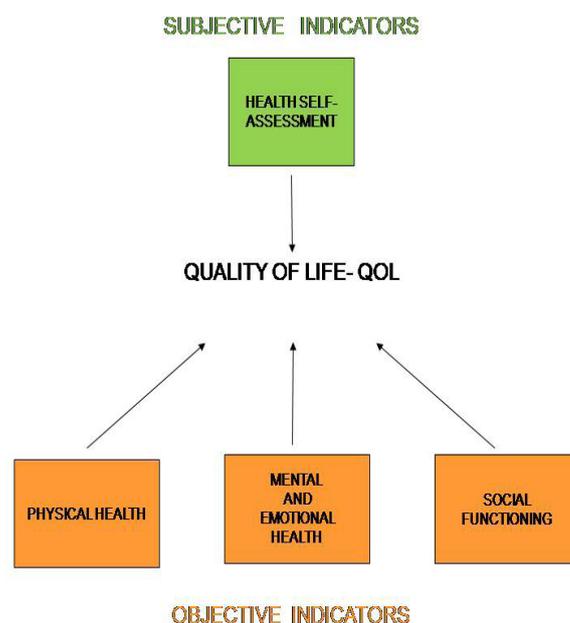


Figure 1. Quality of life indicators (source: own study, based on Kowalewska et al. 2017)

Skin: its structure and the most common dermatoses and their impact on the quality of life of patients

The skin is a unique barrier between the external environment and the body. Due to its structure, it protects the body against excessive water loss as well as the penetration of harmful substances and pathogens [20,21]. It is also an important sense organ,

transmitting information about experienced touch, pain, temperature and other physical stimuli to the central nervous system. In turn, by regulating pilo- and vasomotor functions and thanks to the activity of sweat glands, it plays a role in the body's thermoregulation process [4].

Skin cells: keratinocytes, fibroblasts, melanocytes and receptor cells also cooperate with the immune cells present in the skin. This has made it possible to distinguish the skin immune system (SIS), whose structures are classified as so-called skin associated lymphoid tissue (SALT) [22]. In turn, SALT is an element of mucosa-associated lymphoid tissue (MALT) [23]. Immune system cells may be present permanently in the skin but may also flow into the skin during inflammation from other organs. In the epidermis, 90% of which is keratinocytes, there are Langerhans cells and $T\alpha\beta$, $T\gamma\delta$ lymphocytes responsible for the absorption and presentation of antigens [24,25,26]. In turn, in intact dermis, next to the most frequently occurring fibroblasts, there are also macrophages, mast cells, dendritic cells, natural killer (NK) cells, natural killer T (NKT) cells, as well as T lymphocytes [21,22,26]. The dermis also contains numerous blood and lymphatic vessels, nerve endings and skin glands. However, adipocytes as well as fibroblasts occur mainly in the subcutaneous tissue [27].

It is worth recalling here that the T lymphocyte population includes: i) T helper cells (Th) have $CD4+$ markers and support/direct the action of other lymphocytes; ii) T cytotoxic cells (T_c) have $CD8+$ markers, which are also involved in killing cells infected with viruses and cancer cells; and iii) $CD25+$ T regulatory cells (Treg), which suppress the immune response [24,26,28]. It should also be mentioned that at least three subpopulations of lymphocytes: Th1, Th2 and Th17, are currently distinguished in the Th lymphocyte population. The first of these, that is, Th1, promotes the cell-type response and enhances macrophage killing activity by secreting interferon-gamma ($IFN\gamma$) among others. Th2, in turn, supports the humoral-type response, that is, the secretion of specific antibodies by B lymphocytes [24,25,26]. The role of Th17 helper cells is mainly to defend the body against bacteria and fungi. Th17 helper cells are also important cells involved in the effector mechanisms of autoimmune and allergic diseases [29]. In turn, the main tasks of NK are to participate in the early stages of a non-specific response and immune surveillance (control of cancer cells). NK are able to both stimulate and inhibit the immune response process itself, affecting macrophages and endothelial cells, among others [24,25,26].

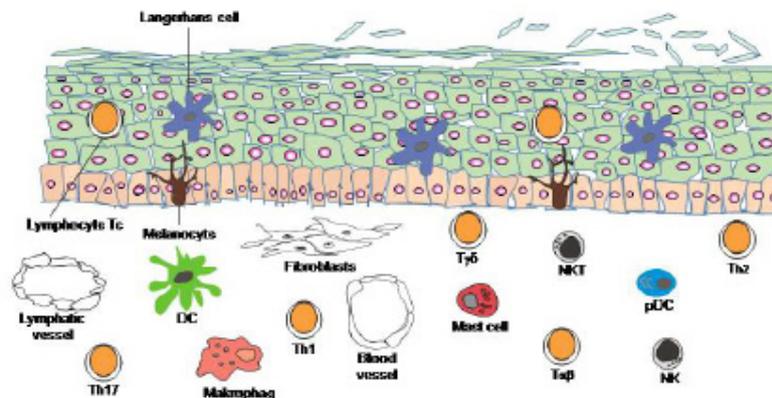


Figure 2. Skin immune system cells (source: own study, based on Jakóbiński et al. 2017)

Skin disorders lead to diseases called dermatoses. One of the most common dermatological diseases is acne, which can leave scars in its course. It is characterised by a chronic, often recurrent and unpredictable course associated with seborrhoea and acne eruptions, such as blackheads, papules, pustules, infiltrates, cysts, fistulas and scars [30,31]. These changes occur in different age groups, in both men and women, and may have varying degrees of severity. The aetiology of the disease is multifactorial. Among the likely factors causing acne are changes in the microbiome of the skin [32]. Acne develops in the hair-sebaceous unit with excessive seborrhoea, and the obstruction of the sebaceous glands is usually the event initiating the changes. This obstruction may be the re-

sult of excessive keratinisation of the epithelium of the hair-sebaceous units and may lead to tissue hypoxia. Low oxygen levels lead to intensive bacterial growth (most often *Propionibacterium acnes*), which in consequence initiates the development of an inflammatory reaction [33]. $CD4+$ T cells and macrophages infiltrate the hair-sebaceous units and the level of proinflammatory cytokines including interleukins 1 and 6 ($IL-1$, $IL-6$) is increased. In turn, the excessive presence of *P. acnes* and the ongoing inflammation cause keratinisation disorders, changing the production and composition of sebum [34].

In addition to physical changes in the skin's appearance, acne also contributes to debilitating psychosocial symptoms that re-

duce the quality of life of those struggling with this condition [14,33]. These symptoms may include behaviour such as embarrassment, shame or, on the contrary, anger, aggression and, as a consequence, disturbed interpersonal relations. The severity of these symptoms often correlates with the severity/exacerbation of the skin lesions [35].

Another equally common chronic skin disease is psoriasis, which can sometimes also lead to motor disability, as in the case of psoriatic arthritis. In a simplified way, it can be said that in this disease, abnormal Th17 helper cells found in psoriatic skin lesions affect keratinocyte hyperproliferation, initiating neutrophil influx and the production of proinflammatory cytokines (including IL-17A, IL-22 and IFN- γ), chemokines and antimicrobial peptides. The activation and differentiation of abnormal Th17 are maintained by IL-23 secreted by dendritic cells [36]. As a result of the psychological burden associated with the skin symptoms of the disease, particularly in the head, neck and hands, psoriasis can lead to a significant deterioration in patients' quality of life [37,38]. Namely, these changes are often a source of severe stigmatisation, frequently reinforced by negative social behaviour. People with psoriasis are accompanied by a sense of stigmatisation, primarily in intimate relationships, leading to feelings of uncertainty, anxiety and rejection, and thus sexual problems [17]. These people stigmatise themselves by disliking their appearance and believing that others perceive them as they see themselves. They also often hide their illness from their surroundings, which prevents them from meeting important life needs and thus reducing their quality of life [37].

Atopic dermatitis (AD) is also characterised by chronic inflammation, eczema and pruritus [39]. AD is primarily associated with an increased abnormal Th response to environmental antigens, but may also be associated with innate immunity defects and microbiome changes. Many of these abnormalities can occur as a result of epidermal dysfunction [40].

As in psoriasis, AD skin changes are associated with epidermal growth, T cell and dendritic cell infiltration and increased production of inflammatory mediators. However, cytokine expression analysis has revealed that T cells derived from early disease lesions in AD produce cytokines characteristic of Th2: IL-4, IL-5 and IL-13 [40,41]. In turn, these cytokines stimulate monocytes and dendritic cells to produce large amounts of chemokines binding to the CCR4 chemokine receptor, further enhancing the recruitment of Th2 into the skin. Cytokines produced by Th2 also significantly affect keratinocytes and destabilise the skin's barrier function. They inhibit the expression of skin antimicrobial peptides, which significantly increases the susceptibility of AD patients to bacterial and viral infections. In this case, skin colonisation by pathogens, such as *Staphylococcus aureus*, can be additionally supported by the IL-4-induced increased expression of fibronectin and fibrinogen, which act as adhesion molecules for

these bacteria [41].

Very severe symptoms in the form of pruritus occurring in AD are often the cause of insomnia, leading to chronic fatigue and associated mood disorders. This can increase feelings of dissatisfaction, anxiety and even lead to depression. In the case of this disease, patients also have a sense of stigmatisation, although the environment does not stigmatise them at all. The subjective impression of social stigma, without any objective signs, is associated significantly with reduced self-esteem of the affected person [11,42,43].

A separate group of dermatological patients are people during or after cancer treatment. As a result of oncological treatment (radiation or chemotherapy), they often experience skin disorders of varying severity. The most commonly reported dermatological changes in patients undergoing radiation therapy are: skin hypersensitivity, excessive dryness, itching, pigmentation disorders, erythema, pain and, consequently, depressed mood [44]. In turn, due to chemotherapy, the hand-foot syndrome may appear during which the skin on the hands and feet of the patient become red, hypersensitive, swollen and burning. All of these symptoms significantly limit the daily activity of patients, which is an additional burden for their already strained psyche, contributing to a decrease in their quality of life [45]. Sometimes the severity of undesirable symptoms of therapy is so great that it is the reason not only for the modification of the doses used in the treatment, but even the discontinuation of the treatment in some cases.

It seems, therefore, that the proper prevention and skin care of people struggling with chronic dermatoses resulting from an underlying or comorbid disease, as is the case with oncological patients, is aimed at improving not only the skin condition, but also the quality of life of patients. Care for these patients requires a holistic approach and commitment to the treatment process of dermatologists, psychologists, oncologists and cosmetologists.

Stress and the state of health of people with chronic dermatological diseases

Chronic disease is always a difficult and stressful situation for a patient. Chronic stress associated with chronic disease and the accompanying bad, unacceptable appearance can lead to disturbances in the homeostasis of the body at a mental level associated with disintegration and mental disadaptation [46]. In turn, depletion of the reserves used to maintain homeostasis and adaptation of the body caused by long-term stress can lead to the dysfunction of other systems and organs, including the skin [46]. In recent years, there have been many studies indicating the relationship between skin health, the immune system, the nervous system and the level of stress experienced by patients. On the one hand, the presence of lesions and the need for their constant treatment is a source of strong stress for many patients. On the other hand, stress itself is

a very important factor exacerbating the course of many chronic diseases with skin symptoms [33,46,47]. Based on their research, some scientists have suggested that success in the fight against chronic disease may depend on the patients effectively coping with stress and emotions [48,46]. Therefore, the restoration of normal functions to the skin should be comprehensive and include both the body and the psyche.

Studies in the field of psychoneuroimmunology prove the existence of a relationship between skin problems and the functioning of the nervous and immune systems [49,50]. The exchange of information between these systems has an anatomical basis, because lymph tissue is innervated, and the skin, immune and nervous systems show the occurrence and actions of joint neuromediators and neurohormones (NICE model: neuro-immuno-cutaneous-endocrine) and cytokines that react with specific receptors on cells [46,50,51,52]. Most of these factors within the skin are neuropeptides. It has been shown that they not only perform regulatory functions within individual systems, but also play a role in mutual communication between these systems. The most important neuropeptides that play a role in the interaction between the skin, the immune system and the nervous system include, among others, substance P, a vasoactive intestinal peptide (VIP), neuropeptide Y and neurotensin [46,53]. Most endings of neuropeptide secreting nerve fibres are located near the sweat glands and hair follicles of the dermis layer. As a result of stress and the associated emotional arousal, the autonomic nervous system is activated and neuropeptides are released, leading to physiological changes in the skin [54].

Depending on the duration, type and severity, stress can inhibit or stimulate the immune response by changing the type of this response, as well as affecting autoimmune phenomena [55,56]. At the same time, acute stress in some cases stimulates immunity and mild stress usually causes a shift of cytokine secretion towards a humoral-type response involving Th2 [56,57]. At the same time, mild stress leads to a decrease in the number of CD4+ and CD8+ lymphocytes and a decrease in the proliferation response of T lymphocytes correlated with increased cortisol levels [58]. Other studies have indicated that mental stress causes increased production of proinflammatory cytokines, including IFN- γ . It has also been shown that long-term stress has an immunosuppressive effect on the body, increasing the body's susceptibility to bacterial and viral infections, as well as the occurrence of autoimmune diseases, including psoriasis [60,61]. Stressful situations may also lead to skin reactions, such as redness, sweating or exacerbation of already existing skin lesions. For example, studies conducted among patients with stable psoriasis have shown that after a stress stimulus, they experience a significant increase in the number of TCD3+ lymphocytes and in particular TCD4+ [62,63]. It is worth mentioning here that patients with psoriasis are included in the group of so-called high stress reactors, which means that they are

more sensitive to stress factors compared to healthy people [11].

In turn, in AD patients, stress causes an increase in the number of CD8+ Tc and eosinophils in the peripheral blood, leading to an exacerbation of the disease [64]. Stress is also one of the most important factors initiating the formation of acne. Chronic stress has been shown to increase the secretion of adrenal androgens, stimulate the production of proinflammatory cytokines, such as IL-1 IL-12 and IL-18, and also stimulate the growth and increased activity of sebaceous glands [65,66,67]. In turn, Chiu et al. have proved that the severity of acne changes clearly correlates with the level of emotional stress [33,68].

The severity of anxiety and depression may also affect the parameters of the immune system of people with cancer. For example, it has been shown that stress associated with the process of diagnosing cancer and surgical treatment leads to a reduction in the number of NK [69,70]. Gapik et al. have even shown that stress associated with a planned surgery affects NK activity in women suffering from breast cancer [69].

Aromatherapy, music therapy and the health status of people with chronic dermatological diseases

The current progress in the knowledge of skin biology suggests that structural and functional disorders within the epidermis may be key factors aggravating undesirable skin symptoms or even initiating dermatological diseases [40,71]. Therefore, maintaining a proper skin barrier is the main goal of preventive and therapeutic treatment in many dermatological diseases and, supportively, in oncological treatment. In the course of chronic skin diseases, or as a result of oncological treatment, there is damage to the skin barrier leading to epidermal water loss, irritation by external factors, and penetration of pathogens while contributing to the activation of the immune system and in particular skin immunisation [72,73]. All these reports give scientists reasons to develop new prevention strategies that focus precisely on the skin barrier. The skin barrier may also be strengthened by some properly performed cosmetic procedures with soothing effects: moisturising, oiling, softening or protective [74]. The main purpose of using cosmetic procedures is primarily to eliminate defects resulting from the ageing process of the body. However, an equally important, if not more important aspect of their use is the removal, alleviation and reduction of skin defects resulting from dermatological diseases or skin lesions occurring as a result of a chronic treatment process, wound healing, irritation or burns. As it turns out, cosmetic procedures can work on many levels, improving not only the condition/appearance of the skin, but also the poor mental state of a patient caused by long-term illness [74,75,76,77,78]. Namely, modern cosmetology offers a wide range of care, beauty and relaxation treatments that can be extended to include senso-

ry sensations, including aromatherapy and music therapy, which increase a patient's sense of comfort, peace and relaxation [77]. Such comprehensive action may have a positive effect on the functioning of some human systems, including the immune, nervous, hormonal and circulatory systems and, as a consequence, also on the skin condition and quality of life of the patient [77,79].

In the course of many dermatoses and during the oncological treatment period, it is inadvisable to perform stimulus procedures, including physical procedures, due to the increased blood supply and stimulation of the body, which can potentially affect the development of the disease [80,81,82]. Until recently, skin complications associated with chemotherapy and radiotherapy were often neglected as not clinically significant. At the moment, however, there is a significant increase in interest in these issues, including among cosmetologists who still look for the right care solutions that will non-invasively and safely strengthen the skin's protective barrier, improving its condition and thus the quality of life of the chronically ill [45].

Due to the continuous increase in the incidence of chronic diseases and the side effects of therapies applied, there is a growing interest in the immunomodulatory effects of compounds of plant origin, including essential oils (EO). Until recently, research focused mainly on the anti-inflammatory effect of EO, whereas the immunomodulatory effect was studied to a lesser extent [83]. Therefore, in recent years there has been a renewed interest in natural (plant) substances as potential medicines in the prevention and therapy of many diseases. Particularly patients with chronic diseases increasingly use adjuvant therapies to reduce the symptoms and side effects of the diseases [79,84,85].

Aromatherapy is a field of alternative medicine that uses the healing effects of specially prepared plant extracts/oils from the flowers, leaves, seeds, roots and bark of plants [18]. Numerous

scientific studies indicate a significant influence of EO on physical and mental health [83]. Two mechanisms of the action of EO are currently distinguished. While the first is the result of the typical pharmacokinetic and pharmacodynamic properties of EO, the other one is based on their modulatory effect on the olfactory system, the brain and, in particular, the limbic system [86].

EO obtained in the distillation process are often used as supplements for various treatments, including cosmetic ones. Currently, more than 60 types of EO of plant origin are known that are used to relieve pain, regulate blood circulation and heal skin lesions [85,87,88,89]. Classic aromatherapy involves the introduction of natural plant oils into the body through the respiratory tract (indirect aromatherapy) or the skin (direct aromatherapy). EO may be administered during inhalation and, in direct aromatherapy, diluted EO are applied to the skin in the form of baths, compressors or greasy carriers used for massage [18]. Oils used in the right doses improve the blood supply to the skin and, if the skin is exposed to them for a long time, they also penetrate the bloodstream. This accelerates metabolic processes and leads to the more efficient absorption of the active ingredients of the oils into all cells of the body [90,91,92]. It should also be emphasised that when using aromatherapy applied to the skin, oil vapours are simultaneously inhaled and so direct aromatherapy is therefore accompanied by inhalation aromatherapy [18,93]. A very important aspect of the EO action is their modulatory effect on the nervous and immune systems [86,91,94]. Among the EO that affect the nervous system and at the same time have relaxing and soothing effects on the mental state of patients are lavender, melissa, lemon, rosemary and sandalwood. In turn, EO such as orange, geranium, jasmine and lavender have anxiolytic, anti-stress and anti-depressant effects. On the other hand, rosemary, sage, thyme, rose and lemon thyme oils have a relaxing effect [83,95-99].

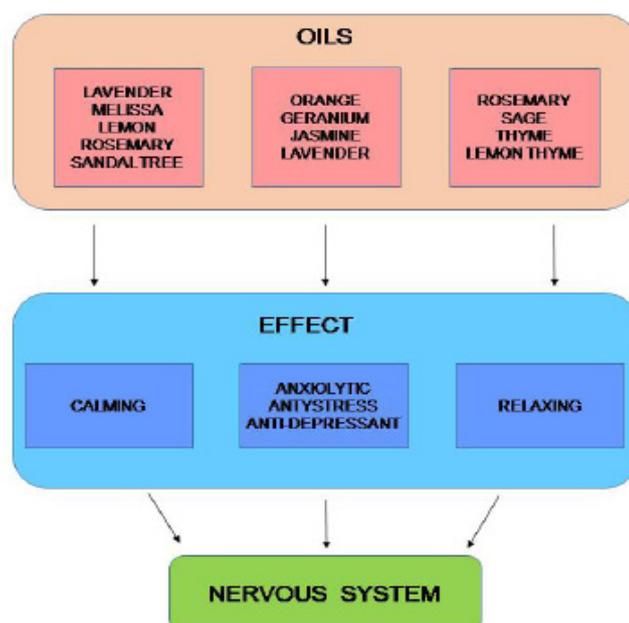


Figure 3. The effect of essential oils on the nervous system (source: own study based on Plant et al. 2019)

Massage is the most common direct aromatherapy treatment. Choosing the right EO is crucial in each type of massage enriched with aromatherapy [18]. It has been demonstrated that aromatherapy with light massage can be beneficial for both the immune system and the mental state of cancer patients undergoing chemotherapy. The results of many studies have shown that aromatherapy massage increases the total number of peripheral blood lymphocytes and, at the same time, causes a decrease in the severity of pain as well as the symptoms of fatigue and anxiety in oncological patients [83,100-102]. Other studies have shown that aromatherapy massage increases the number of CD16+ NK and CD8+ T cells in blood [79,104]. Hernandez-Reif et al. have also shown that massage performed in oncological patients twice a week for a period of 12 weeks increases the number of NK in the peripheral blood and the cytotoxicity of CD8+ T cells [100]. Other authors have also noted the reduction of muscle tone, fatigue and even the reduction of nausea in oncological patients [79,101,103,104]. Therefore, it can be expected that the effects achieved with aromatherapy massage may result in the improved functioning of the immune system, thus protecting the oncological patient's body more effectively against infections. Also, a study conducted on a group of women in the early stages of breast cancer has shown that aromatherapy massage applied three times a week for five weeks reduced their levels of anger, anxiety and depression. These patients also had an increased number of NK in the peripheral blood [102]. Other studies conducted on dermatological patients infected with HIV have revealed significantly increased numbers of CD8+ T cells and CD16+ NK in the peripheral blood after a series of massages with the use of EO. Cells whose increased numbers have been observed take part in rapid, non-specific immune processes [104,105]. Moreover, Ćwirlej et al. have shown that massages with the use of EO give better analgesic results compared to the use of classic massage alone. This is especially important in cases where pharmacological and analgesic medications are not recommended for pain relief or even must not be administered [85,90,93].

Over the past decade, research into the health benefits of music has also expanded rapidly [106, 107]. This branch of art is extremely closely related to human nature. It plays an important role in influencing people both on the psychological (quality of life) and physiological (health) levels. The use of music therapy makes it possible to induce specific physiological reactions and biochemical changes taking place in the body [108]. It turns out that listening to music stimulates the release of endorphins that give a feeling of euphoria and relaxation, which has been proven to also have an analgesic effect [109-111]. Research results also indicate that music in line with a listener's preferences can reduce stress levels even when it does not have a typically calming nature [108]. The heartbeat, breathing and conduction of impulses in the nervous system can synchronise with the rhythm of music, which

in turn translates into the level of muscle tension, secretion of hormones, neurotransmitters, lower blood pressure and improved immunity [109,110,112,113]. Reduced secretion of stress hormones – adrenaline, noradrenaline and cortisol has been shown in patients undergoing relaxing music therapy [114-116]. Knight et al. have shown that sessions of music therapy prevented the reduction of NK, CD4+ and CD8+ T cells in the peripheral blood [117]. The results of the study are also confirmed by studies carried out by other scientists who have described an increased number of CD4+ T cells in the blood, but without a simultaneous increase in the number of CD8+ T cells [118,119]. The impact of music on the human body is determined not only by the type of music piece, but also by the individual characteristics and the current mental and somatic state of the listener [107]. It can therefore be presumed that care treatments in the described group of patients, during which clients/patients listen to the music they prefer, will bring better and more tangible results.

Conclusions

At present, studies describing the beneficial effects of aromatherapy and music therapy focus primarily on their calming, anxiolytic, relaxing and analgesic effects in patients with chronic diseases. There is no data in the available literature on the conducted research, which is aimed at combining the discussed therapies and their impact on the skin effects of cosmetic procedures in people with chronic dermatoses. However, taking account of the beneficial effects of aromatherapy and music therapy on the nervous, immune, hormonal and circulatory systems, it can be assumed that, both individually and combined, these therapies will bring greater benefits in achieving the intended effects of care and beauty treatments in this group of patients. Therefore, it seems important to constantly acquire knowledge in the direction of a holistic approach to chronically ill patients in order to consciously make decisions regarding the selection and effectiveness of the cosmetic procedures used.

The collected information only suggests that treatments with the use of EO and music suited to a patient's mood can have a real impact on the overall health and, consequently, also on the skin condition and quality of life of the patient.

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