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International Journal of Family & Community Medicine

Research Article

Open Access

The influence of nutritional status and food consumption in psoriasis

Abstract

Psoriasis is a non-contagious, chronic inflammatory skin disease that manifests itself in people of all ages and both sexes, affecting both men and women alike. This condition is characterized by the appearance of pink or reddish lesions, covered with whitish and dry scales that alternate in acute periods with improvement and reappearance phases, about 2 to 3% of the world population are affected by cutaneous disease and, from these , 20 to 40% have joint involvement. Facing the theme, an integrative, descriptive and exploratory review was conducted with the overall objective of identifying if the nutritional status and dietary intake of individuals with psoriasis may interfere in the improvement or worsening of symptoms, evaluating how nutrition may contribute to quality of life of individuals with psoriasis. Nutrition can exert a great influence on the signs and symptoms of psoriasis. In nutritional treatment functional supplementation may include substances such as eicosapentaenoic acid, vitamin A, folic acid, vitamin D, aloe vera, quercetin, selenium, sarsaparilla, enzymes, zinc, capsaicin, probiotics, vitamin B12, methionine, cysteine and choline; each having different effects on the disease. Thus, it is questioned whether the nutritional status and the food consumption can aid in the control of psoriasis. It is assumed that psoriasis sufferers experience improvements in their health when maintaining weight and adequate nutrient intakes. Most studies have shown that individualized nutritional care in the care of patients with psoriasis promotes greater clinical stability to these individuals, preventing the chronic non-communicable diseases associated with the disease and providing greater longevity with quality.

Keywords: psoriasis, food consumption, nutritional status, nutrition, disease, chronic inflammation, skin, body patterns, seek information, herbs, special diets, psoriasis, epidermal hyperplasia, T-cell-mediated disease, frustrating nature

Volume 2 Issue 4 - 2018

Joelson Freitas do Nascimento Junior,[1] Janilson Avelino da Silva[2]

[1]Nutricionista, Pós-Graduado em Nutrição Esportiva, Pós-Graduando do Curso de Especialização em Nutrição Clinica e Funcional pela Faculdade Internacional da Paraíba – FPB, Brazil
[2]Doutorando em Ciências da Nutrição pela Universidade Federal da Paraíba-UFPB, Professor do Centro Universitário Unifacisa, Brazil

Correspondence: Janilson Avelino da Silva, Doutorando em Ciências da Nutrição pela Universidade Federal da Paraíba-UFPB. Professor do Centro Universitário Unifacisa, Brazil, Tel +55 83 9 9936-8000, Email janilsonsilva@globomail.com

Received: June 26, 2018 | **Published:** August 22, 2018

Introduction

Psoriasis is a disease known since antiquity and has been confused for many years with leprosy, which has led to the isolation of many of its carriers in the Middle Ages. Typical lesions of psoriasis were described in mummified bodies at the beginning of the Christian Era.[1] It is a chronic and recurrent inflammatory disease of unknown cause, characterized by epidermal hyperplasia and inappropriate immune activation that affects the skin and also the joints. On average, 2 to 3% of the world's population are affected by cutaneous disease, and of these, 20 to 40% have joint involvement, although there are differences in prevalence, depending on the population studied.[2] It is characterized by erythematous-scaly lesions, with variable body patterns and distribution, with several distinct phenotypes: vulgar, inverted, guttate, erythrodermic and pustular forms. It can present ungual and articular involvement in 5 to 20% of the affected individuals.[3,4] It is a T-cell-mediated disease, more frequent in man, and one of the most common autoimmune diseases, with chronic inflammation of the skin, but not confined to it.[5] Given the chronic evolution and the frustrating nature of psoriasis, it is common for patients to seek information about complementary and alternative therapy. Several studies have characterized the use of alternative treatments, and the conclusion is that this is a common practice (43%-69% prevalence). Herbs, special diets, and dietary supplements are the most commonly used modalities in combination with traditional medications in an effort to do everything possible to control the disease.[6,7] Nutrition can exert a great influence on the signs and symptoms of psoriasis. In the nutritional treatment of the psoriatic patient, functional supplementation may include substances such as eicosapentaenoic acid (EPA), vitamin A, folic acid, vitamin D, aloe vera, quercetin, selenium, sarsaparilla, enzymes, zinc, capsaicin, probiotics, vitamin B12, methionine , cysteine and choline; each having different effects on the disease.[8] The role of nutrition in the treatment of psoriasis has been studied for several years. More recently, the observation of comorbidities associated with psoriasis has stimulated the interest in nutrition as a way to improve them, conditions in addition to the underlying skin disease.[9,10]

As a consequence of the chronic inflammation caused by the disease in the skin and joints, individuals with psoriasis are believed to undergo systemic changes in the body, such as insulin resistance, changes in lipid profile, obesity and increased cardiovascular risk.[11] The literature indicates that the nutritional treatment applied to patients with psoriasis (associated with the control of anthropometric and biochemical variables) gives more clinical stability, prevention related to chronic noncommunicable diseases (CDNT), and provides long term quality of life. In other words, weight control improves the prognosis of psoriasis.[9] A bibliographic study was carried out with the general aim of identifying if the nutritional status and the food consumption of individuals with psoriasis can interfere in the improvement or worsening of the symptoms, evaluating how the nutrition can contribute to the quality of life of individuals with psoriasis. psoriasis.

Material and methods

The present study is an integrative, descriptive and exploratory review of the literature regarding the relationship between nutrition and psoriasis. For the development of the work, we resorted to review of original and anal articles with results of research on nutrition and psoriasis in academic Google, published in journals indexed in Scientific Electronic Library Online - SCIELO, Science Direct, Pubmed and Medline in the period 1982 to 2014. The advanced search mechanisms that allow the combination of terms and the application of limits were used to carry out the research, using the following descriptors: psoriasis (psoriasis), nutrition (nutrition), obesity (obesity, obesity), nutrients (nutrients, nutrients), gluten (gluten, gluten). Regarding the results of the studies, special focus was given to the identification of evidence of the interrelationship between the indicators of psoriasis, nutrients, and disease control. Six articles fit the pre-established inclusion criteria. Some original articles were included in researches with human beings, independent of the age group, and also those of bibliographical revision that dealt with subjects pertinent to the search terms.

Results and discussion

Diet and nutrition

Studies have shown that diets rich in fresh fruits and vegetables are associated with a reduced risk of psoriasis, as they may increase the antioxidant capacity of plasma in humans. However, there are no controlled, double-blind studies, although such diets improve the overall health of psoriasis patients.[12,13] Fish oils and oil supplements appear to induce a significant improvement in mild to moderate psoriasis patients, but the data are still controversial. It appears that one of the anti-inflammatory actions of fish oil is to decrease the production of TNF-alpha, so patients who have high sensitivity to TNF-alpha would be the most benefited.[14] Fish oil can be a supportive therapy to other therapies. In this sense, a study with 18 patients with stable plaque psoriasis demonstrated a significant decrease in the total surface area of psoriasis when treatment with low dose of UVB was combined with fish oil in relation to the isolated use.[15] Also, in patients treated with low doses of etretinate, eicosapentaenoic acid supplementation reduces the time required for a favorable treatment response.[16] Psoriasis is common in people who have high insulin resistance. A significant relationship was found between insulin secretion and the PASI score.[17] Indirectly, there is evidence that diets with a high glycemic index appear to increase insulin levels and increase peripheral resistance to insulin. Therefore, in patients with metabolic syndrome, a diet that produces low postprandial insulin levels, decreases gene expression, and a diet with high postprandial insulin rates increases the expression of inflammation-related genes in the subcutaneous tissues, cytokines, interleukins and oxidative stress, which trigger or worsen psoriasis.[18] Thus, although there is no evidence yet from controlled studies, it appears that the diet is beneficial to psoriasis patients and may function as an adjuvant therapy, in addition to improving other aspects of the patient's health such as metabolic syndrome, diabetes, hypertension, obesity and thus indirectly psoriasis. Diet would therefore be an important factor to be implemented in the general care of patients with psoriasis.

D vitamin

Currently, vitamin D and its prohormones have been the target of a growing number of studies, demonstrating their function beyond calcium metabolism and bone formation, including their interaction with the immune system, which is not surprising in view the expression of the vitamin D receptor in a wide variety of body tissues such as brain, heart, skin, gut, gonads, prostate, breasts and immune cells, as well as bones, kidneys, and parathyroid.[19] The action of vitamin D and its derivatives are well defined. Vitamin D is a hormone, which can be produced from 7-dehydrocholesterol by moderate exposure of the skin to solar energy from ultraviolet rays, and whose deficiency causes rickets, arising from the insufficient absorption of calcium in the diet. In foods, it is found in abundance in: saltwater fish, eggs, milk and cod liver oil. Its biologically active form is produced by hepatic hydroxylation, mainly in the kidney. Alongside its importance in calcium homeostasis and bone metabolism, the active form of vitamin D, 1,25-dihydroxyvitamin D3 [1,25 (OH) 2 D3; calcitriol], has effects through its receptor in more than thirty different tissues, including the skin, since keratinocytes have receptors for it.[9] Deficient vitamin D values are common, basically in places where there is a decrease in solar radiation at certain times of the year. In addition to the risk factor for low exposure to sunlight, diseases that alter vitamin D metabolism and skin aging also decrease production, so that vitamin D deficiency is even more prevalent in older people.[20] The gold standard for the diagnosis of hypovitaminosis D is the serum 25-hydroxyvitamin D dosage, and values below 50 nmol / L would be sufficient to cause an increase in the serum concentration of the parathyroid hormone and bone loss.[21]

A study carried out with North Americans participating in the NHANES III (Third National Health and Nutrition Survey Survey) between 1988 and 1994 evaluated the concentrations of vitamin D {[25-hydroxyvitamin D 25 (OH) D] with other health indicators. The results showed an inverse association between vitamin D concentrations and prevalence of abdominal adiposity, hypertriglyceridemia and hyperglycemia. Thus, the study suggests a relationship between vitamin D deficiency and prevalence of metabolic syndrome, comorbidity associated with psoriasis.[22] In the intervention of psoriatic lesions, vitamin D is generally used in topical corticosteroids and nutrient analogs, the latter being considered first-line and well tolerated treatments, even in the long term.[9] Its action is by union with the specific receptor member of the superfamily of receptors of nuclear hormones and by the action in the regulation and cellular growth, differentiation and immune function. Vitamin D also inhibits the proliferation of keratinocytes and modulates epidermal differentiation, and prevents the production of various proinflammatory cytokines by T-cell psoriatic clones, including Interleukin 2 (IL-2) and IFN-γ;[9] In this paper, we present the results obtained by Rothke et al. Oral supplementation of vitamin D should be considered in patients with psoriasis who do not take topical treatment with vitamin.[8] In psoriasis, blockade of catelicidin human peptide expression (LL-37) may inhibit dendritic cell activation and cutaneous inflammation. Interestingly, paradoxically, vitamin D3 analogues have been used for a long time as a treatment for psoriasis. These compounds bind to the vitamin D receptor, activating it, thereby elevating the levels of cathelicidin in keratinocytes and, presumably, worsening inflammation. However, what happens is exactly the opposite: improvement of cutaneous inflammation and reversion of morphological alterations of the injured skin.[23]

The use of vitamin D3 and its analogues for the treatment of psoriasis has been studied for several years, demonstrating the effect of calcitriol on the improvement of psoriatic lesions. However, the use of these agents in the long term is limited due to the effects of

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DOI: 10.15406/ijfcm.2018.02.00086

hypercalcemia and hypercalciuria. These findings led to the research of other vitamin D3 analogs that could present the antipsoriatic effects of vitamin D3 without the undesirable effects on calcium homeostasis. One such compound, calcipotriene (also known as calcipotriol), has an effect of differentiation and inhibition of keratinocyte proliferation in vitro, while the effects on calcium metabolism were 100 to 200 times lower than those that occurred with calcitriol. Synthetic vitamin D analogues, in their topical form, represent one of the safest and most effective alternatives for the treatment of mild to moderate psoriasis, comparable to topical high-potency corticosteroids.[24,25]

Gluten free diet

It is believed that there is a relationship between psoriasis and a sensitivity to gluten, but a clear association has not yet been established between the former and celiac disease. Both conditions are known to involve the release of cytokines in their developmental process. Most of the time gluten sensitivity is manifested latently, with little or no symptoms. In this case, for the detection of sensitive patients, antibody tests are initially used, since plasma cells produce IgA and IgG against various antigens, including gliadin, transglutaminase, endomysium and reticulin. A study by Woo et al., with one hundred and thirty psoriasis patients using systemic immunosuppressants, detected a significantly higher proportion of individuals with elevated antibodies to celiac disease, although they did not present symptoms of the condition and found normal intestinal villi . These markers indicate possible sensitivity to gluten, which may occur even without the enteropathy itself. But, according to the author, the possibility of celiac disease evolution in the long run is not eliminated.

In 1976 Bazex et al. apud Humbert et al.,[26] examined 16 patients with severe psoriasis and found that 11 of them showed clear atrophy of the intestinal mucosa. Already Addolorato et al.,[27] described the case of a patient with rapid improvement of skin lesions after initiation of a gluten-free diet. Michaëlsson et al.,[28] submitting thirty-seven patients - part of them in systemic treatment - with psoriasis aged between eighteen and seventy years to a gluten-free diet for three months showed clinical improvement of their sample in patients with gliadin antibody, including significant histological changes. The positive changes were extended to participants who had another type of treatment in addition to the gluten-free diet, some of which had no response to previous dietary regimens, so that the proliferative cells involved were significantly reduced after the diet in the whole group of patients. It was also observed that the previous increase in tissue transglutaminase levels decreased by 50%. Through these data, it can be affirmed that the exclusion of gluten from the diet influences the treatment of psoriasis and confirms the relation between both to the diseases. However, according to the authors, the role of tissue transglutaminase in the pathogenesis of psoriasis needs further investigation.

Polyunsaturated fatty acids

Oral supplementation of polyunsaturated fatty acids omega-3 EPA (eicosapentaenoic acid) or DHA (docosahexaenoic acid) or both have been reported as beneficial in the treatment of psoriasis.[9,10] Dietary fats, incorporated into the cell membrane, act as precursors for prostaglandins and leukotrienes, since fish oil's omega-3 fatty acids convert inflammatory mediators into their odd classes. The odd eicosanoids tend to counteract the more inflammatory mediators, with consequent reduction of total inflammation, which theoretically is therapeutically useful in inflammatory diseases such as psoriasis.[29] Danno e Sugie,[15] conducted a randomized open-label study with forty patients with stable chronic vulval psoriasis treated for twelve weeks with either low-dose retinoid [etretinate (20 mg)] alone or in combination with 1800 mg EPA. In this, three representative plaques were selected (trunk, arms, legs) for analysis, using to evaluate the PASI score. The cases were rated as "excellent" in cases where there was a decrease in PASI score by 75%, "moderate" from 74% to 50%, "mild" from 49% to 25% or "minimal" when up to 24% improvement. The results showed that there was a greater and faster improvement with the combination therapy when compared to etretinate monotherapy. Side effects were mild and all attributed to retinoid, stating the possibility that an association regimen therefore has a satisfactory effect on psoriasis with no additional reactions.

Elevated concentrations of AA and its pro-inflammatory metabolites have been observed in psoriatic lesions, as well as in other autoimmune and inflammatory disorders. Therefore, a therapeutic option in psoriasis would be the replacement of arachidonic acid with an alternative fatty acid, especially eicosapentaenoic acid, which may be metabolized by the same enzymatic pathways as arachidonic acid.[9]

Antioxidants

People with psoriasis have several oxidative stress markers that show impairments in their antioxidant status, with increased concentrations of malondialdehyde - a marker of lipid peroxidation in plasma and red blood cells -, decreased plasma levels of β-carotene and α -tocopherol, as well as serum selenium levels.[30,31] The association between selenium levels and psoriasis was assessed in pilot studies and many open trials, demonstrating that these may be depressed in patients with the disease. Selenium in both high and low doses has an inhibitory effect on DNA synthesis and a stimulatory effect on cell proliferation, and is also known for its protective role on ultraviolet A (UVA) and ultraviolet B (UVB) rays, and by antioxidant and anti-inflammatory action.[10] When evaluating the effect of selenium and vitamin E on glutathione peroxidase levels in patients with depression - being eight participants with psoriasis and presenting low levels of selenium -, it increased their values after 6-8 weeks of supplementation. However, the effects on skin lesions were indeterminate.[32] More recently, a pioneering randomized, controlled study conducted Kharaeva et al.,[33] (50 mg / day) and vitamin E (alpha-tocopherol, alpha-tocopherol, and alpha-tocopherol) and vitamin E (alpha-tocopherol) 50mg / day) combined with conventional therapy on the disease. It can be verified that the supplementation resulted in significant improvements of the clinical conditions and the rapid normalization of the markers of oxidative stress, suggesting the viability of the supplementation of these antioxidant nutrients in the treatment of severe forms of psoriasis. An Italian control case study conducted with three hundred and sixteen patients with psoriasis and another three hundred sixty-six controls, assessed dietary intake through a semi-quantitative frequency questionnaire, adjusting the data were according to age, gender and BMI. The risk of psoriasis was inversely proportional to the intake of carrot, tomato and fresh fruit as well as ß-carotene, suggesting that vegetable and fruit consumption may be beneficial in psoriasis because of its high content of various antioxidants such as carotenoids, flavonoids and vitamin C.[12]

Brown et al.,[34] (Psoriasis Severity Scale) and intestinal permeability of five patients presenting with chronic plaque disease (two men and three women, mean age 52 years, range 40-68 years)) submitting

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DOI: 10.15406/ijfcm.2018.02.00086

them to ten days of a diet rich in fresh fruits and vegetables, teas, small amounts of protein from fish and poultry, fiber supplements, olive oil, and with restrictions on red meat, processed foods and refined carbohydrates. The results showed that the five cases, ranging from mild to severe at baseline, improved in all aspects assessed over the six-month period when PASI (pre and post-test mean was 18.2 and 8.7 , respectively), PSS (mean pre- and post-test were 14.6 and 5.4, respectively), and the lactulose / mannitol test of intestinal permeability (pre and post-test mean values were 0.066 to 0.026, respectively).

Vitamins and minerals

Vitamins and minerals are considered trace elements in the diet and are responsible for various functions in the body, including formation of bone tissue, muscle contraction and acting as cofactors for various enzymes. They are still responsible for mediating and regularizing the metabolism, allowing the transport and absorption of various substances. Many vitamins and minerals act as potent antioxidants, reducing oxidative stress and EROS production, especially in the presence of systemic inflammation, as in the case of psoriasis.[6] Studies with patients with rheumatoid arthritis, psoriasis and systemic lupus erythematosus have shown that these individuals have a strong tendency to develop deficiency of vitamin B12, folic acid, vitamin B6 and iron.[35,36] Possibly, as a consequence of nutritional deficiencies and malabsorption caused by the autoimmune mechanisms of the disease itself and the presence of inflammatory markers such as α-TNF.[37] In addition, individuals with psoriasis could present an imbalance in the concentrations of selenium, magnesium, potassium, beta-carotene and alpha tocopherol, which play an important role in the defense against the action of EROS.[38] When checking the food consumption of 316 patients with psoriasis, by means of a semiquantitative questionnaire, Naldi et al.,[12] observed a reduction in the consumption of vitamins and minerals of all patients evaluated. The same authors suggest that increased intake of carotenoids, flavonoids, selenium, vitamin A, C and E, are of great relevance to patients with psoriasis because they have the capacity to reduce EROS production and tissue inflammation, favoring cell membrane stability and repair of epidermal lesions.

Unfortunately, the study by Naldi et al.,[12] did not compare the results found in patients with psoriasis with healthy individuals, therefore, there is no evidence that the relationship between low vitamin and mineral intake and worsening of disease activity . Thus, it is suggested that more epidemiological studies be developed to analyze the relationship between habitual food intake and clinical and laboratory parameters of this population. The Prey review;[39] demonstrated that folic acid supplementation in patients with psoriasis and rheumatoid arthritis using methotrexate, an immunosuppressive agent commonly used in the care of these patients, reduced the incidence of hepatic toxicity caused by the drug. In clinical practice, administration of folic acid ranges from 1 to 5 mg / day, along with methotrexate. It is still considered that supplementation with B vitamins, specifically B12, could improve digestive symptoms and prevent symptoms of anemia. In view of this, diets with high consumption of antioxidant substances could mitigate the effect caused by inflammation and improve specific nutritional deficiencies. Research developed by[40] verified the influence of the Mediterranean diet (rich in fish, olive oil and cooked vegetables), compared to a standardized hospital diet, evaluating 56 patients with rheumatoid arthritis. After three months of intervention, subjects who were submitted to the experimental diet showed a significant improvement in disease activity and quality of life, as assessed by the Disease Activity Score (DAS28) and Health Survey of quality of life (SF-36), respectively.

These findings corroborate the results reported by, Brown et al.,[34] who found a significant improvement in PASI and Psoriasis Severity Scale (PSS) in patients with moderate / severe psoriasis when submitted for 10 days to a diet rich in fish, whole foods , fruits, vegetables, oilseeds and herbal teas. However, further studies should be performed in this area in order to verify the applicability and safety of these elements in the diet, alone or concomitantly. Thus, behavioral factors are par excellence the triggers or aggravating of psoriasis. It is the environment interacting with the predisposing genetic factors. Therefore, it is necessary to have a lifestyle change approach, focusing on the previously mentioned aspects, as it will be beneficial not only for psoriasis itself, but also for the comorbidities associated with it.

Hypocaloric diet

Considering that the accumulation of body fat - especially visceral, a potent source of TNF-α synthesis - is directly related to the severity of psoriasis, weight loss and obesity control can lead to an improvement in the severity of the disease, parallel changes in the levels of neurohormones and cytokines.[41] Gisondi et al.,[42] in a randomized six-month study with sixty-one obese patients (BMI between 30 and 45 kg / m²) evaluated the effect of weight loss in patients with moderate to severe psoriasis in use of cyclosporin. In this study, participants were divided into two groups, so that the first one used 2.5 mg of cyclosporine per kg of body weight per day, while the second one used the same drug in a hypocaloric diet (500 kcal less than the Rate Metabolic Basal). PASI (Psoriasis Area and Severity Index), used to evaluate the severity of the disease and may vary from 0 to 72, was used as an instrument of evaluation. Rates above 18 mean severe disease. results demonstrated that a low calorie diet, with weight loss between 5% and 10% of body weight, promoted an increase in sensitivity to the drug, suggesting the hypocaloric diet as an adjuvant to the treatment of the disease in obese patients who use drug.

Also Huang et al.,[43] investigated the relationship between obesity levels and clinical severity of psoriasis in a cross-sectional study of 399 patients in Taiwan, who found similar results because they showed that overweight was significantly associated with increased risk of more severe forms of psoriasis when compared to patients with normal BMI. Thus, the authors suggest that in patients with psoriasis lesions, obesity is associated with more severe forms of the disease. Puig et al.,[44] argues that the response of psoriasis treatment with biological agents is lower in obese patients, and attributes the effect of weight on the clearance of the drug as a negative factor[9] reports that the severity and prevalence of psoriasis have been diminished during periods of fasting, observing that hypocaloric diets lead to improvement of symptoms. Although several mechanisms are discussed, the direct cause of these positive effects on the symptoms of the disease is still unknown. The most important and probable explanation is the decrease in the intake of arachidonic acid (AA), which results in lower production of inflammatory eicosanoids. In addition, during fasting, the reduction in the activation of TCD4 cells and elevation in the number and / or function of interleukin 4 (anti-inflammatory cytokine) also reduces oxidative stress.[8] Thus, even with satisfactory conclusions, evaluating the effect of low calories in the treatment of psoriasis lesions, more studies are needed to prove its benefits over a prolonged period of time and further clarification about the direct cause of these positive effects.[45–48]

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DOI: 10.15406/ijfcm.2018.02.00086

Final considerations

the research, it can be affirmed that nutrition plays an important role in the treatment of psoriasis and its comorbidities, since the change in healthy eating habits contributes to the control of body weight and in the most effective intervention in the treatment or prevention of development obesity and chronic noncommunicable diseases. In view of this scenario, the selections of scientific evidence support the development of specific nutritional care for patients with psoriasis, since they play a major role in the treatment. Despite the lack of consensus and guidelines that establish a specific diet for these patients, the evidence in the literature suggests a significant improvement in disease activity when it stimulates the consumption of foods rich in vitamins and minerals, fiber and polyunsaturated fat in adequate amounts . Thus, individualized nutritional care in the care of patients with psoriasis promotes greater clinical stability to these individuals, preventing NCDs associated with the disease and providing greater longevity with quality.

Acknowledgements

None.

Conflict of interest

The author declares there is no conflict of interest.

References

1. Crissey JT, Parish LC. Two hundred years of dermatology. *J Am Acad Dermatol*. 1998;39:1002–1006.
2. Christophers E. Psoriasis-epidemiology and clinical spectrum. *Clin Exp Dermatol*. 2001;26(4):314–320.
3. Kormeili T, Lowe NJ, Yamauchi PS. Psoriasis: immunopathogenesis and evolving immunomodulators and systemic therapies; U.S. experiences. *Br J Dermatol*. 2004;151(1):3–15.
4. Schön MP, Henning WB. Psoriasis. N Engl J Med. 2005;352(18):1899–1912.
5. Davidson A, Diamond B. Autoimmune diseases. *N Engl J Med*. 2001;345(5):340–350.
6. Bjorneboe A, Smith A, Bjorneboe G, et al. Effect of dietary supplementation with n-3 fatty acids on clinical manifestations of psoriasis. *Br J Dermatol*. 1988;118(1):77–83.
7. Gudjonsson JE, Elder JT. *Psoriasis*. In: Wolff, Klaus et al. edotors. Fitzpatrick Treaty of Dermatology - volume 1. 7. edition. Rio de Janeiro: Revinter. 2011;169–193.
8. Araujo MLD, Burgos MGPA, Moura ISC. Nutritional influences on psoriasis. *An Bras Dermatol*. 2009;84(1):90–92.
9. Wolters M. Diet and psoriasis: experimental data and clinical evidence. *British Journal Of Dermatology*. 2005;153(4):706–714.
10. Ricketts JR, Rothe MJ, Grant-Kels JM. Nutrition and psoriasis. Clinics In Dermatology, Farmington, 2010;28(6):615–626.
11. Sterry W, Strober BE. Menter A. Obesity in psoriasis: the metabolic, clinical and therapeutic implications. Report of an interdisciplinary conference and review. *Br J Dermatol*. 2007;157(4):649–655.
12. Naldi L, Parazzini F, Peli L, et al. Dietary factors and the risk of psoriasis. Results for an Italian case-control study. *British Journal of Dermatolgy*. 1996;134(1):101–106.
13. Cao G, Booth SL, Sadowski JA, et al. Increases in human plasma antioxidant capacity after consumption of controlled diets high in fruit and vegetables. *Am J Clin Nutr*. 1998;68(5):1081–1087.
14. Grimble R, Howell W, O'reilly G. et al. The ability of fish oil to suppress tumor necrosis factor alpha production by peripheral blood mononuclear cells in healthy men is associated with polymorphism ingenes that influence tumor necrosis factor alpha production. *AM J Clin Nutr*. 2002;76(2):454–492.
15. Danno K, Sugie N. Combination therapy with low-dose etretinate and eicosa-pentaenoic acid for psoriasis vulgaris. The Journal of Dermatology. 1998;11(25):703–705.
16. Gupta AK, C Tellne, F Anderso, et al. Double-blind, placebo-controlled study to evaluate the efficacy of fish oil and low dose UVB in the treatment of psoriasis. *Br J Dermatol*. 1989;120:801–807.
17. Boehncke S, Thaci D, Beschmann H, et al. psoriasis patients show signs of insulin resistance. *Br J Dermatol*. 2007;157(6):1249–1251.
18. Reynoso-von Drateln C, Martínez-Abundis E, Balcázar-Muñoz BR, et al. Lipid profile, insulin secretions, and insulin sensitivity in psoriasis. *J Am Acad Dermatol*. 20003;48(6):882–885.
19. Jones BJ, Twomey PJ. Issues with vitamin D in routine clinical practice. *Rheumatology*. 2008;47(9):267–268.
20. Zitterman A. Vitamin D in preventive medicine: are we ignoring the evidence? *The British Journal of Nutrition*. 2003;5(89):552–572.
21. Premaor MO, Furlanetto TW. Hypovitaminosis D in adults: understanding better the presentation of an old illness. *Brazilian Archives of Endocrinology & Metabology*. 2006;50(1).
22. Ford ES, Umed A Ajani, Lisa C. McGuire, et al. Concentrations of Serum Vitamin D and the Metabolic Syndrome Among U.S. Adults. *Diabetes Care*. 2005;28(5):1228–1230.
23. Lebwohl M, Manuel Sánchez Regaña, Pau Umbert Millet, et al. Combination therapy to treat moderate to severe psoriasis. *J Am Acad Dermatol*. 2004;50:416–430.
24. Carrascosa JM. Update of the topical treatment of psoriasis. *Actas Dermosifiliogr*. 2009;100(3)190–200.
25. Ashcroft DM, Po AL, Williams HC, et al. Systematic review of comparative efficacy and tolerability of calcipotriol in treating chronic plaque psoriasis. *BMJ*. 2000;320(7240):963–997.
26. Humbert P, Annie Bidet, Pierre Treffel, et al. Intestinal permeability in patients with psoriasis. Journal of Dermatological Science, Besançon. 1991;2(4):324–326.
27. Addolorato G, Parente A, de Lorenzi G, et al. Rapid regression of psoriasis in a coeliac patient after gluten-free diet: a case report and review of the literature. *Digestion*. 2003;68(1):9–12.
28. Michaëlsson G1, Ahs S, Hammarström I, et al. Gluten-free Diet in Psoriasis Patients with Antibodies to Gliadin: Results in Decreased Expression of Tissue Transglutaminase and Fewer Ki67z Cells in the Dermis. Acta Dermato-venereologica, 2003;83(6):425–429.
29. Treloar Valori. Integrative dermatology for psoriasis: facts and controversies. *Clinics In Dermatology*. 2010;28(1):93–99.
30. Briganti S, Picardo M. Antioxidant activity, lipid peroxidation and skin disease. What's new. *Journal of the European Academy of Dermatology and Venereology*. 2003;17(6):663–669.
31. Serwin AB, Sokolowska M, Chodynicka B. Tumor necrosis factor alpha (TNF-alpha) -converting enzyme (TACE) and soluble TNF-alpha receptor type 1 in psoriasis patients treated with narrowband ultraviolet B. *Photodermatol Photoimmunol Photomed.* 2007;23:130–134.

32. Juhlin L, Edqvist LE, Ekman LG, et al. Blood glutathione-peroxidase levels in skin diseases: effect of selenium and vitamin E treatment. *Acta Dermato-venereologica*. 1982;62(3):211–214.

33. Kharaeva Z. Clinical and biochemical effects of coenzyme Q10, vitamin E, and selenium supplementation to psoriasis patients. Nutrition. 2009;25(3):295–302.

34. Brown AC, Hairfield M, Richards DG, et al. Medical nutrition therapy as a potential complementary treatment for psoriasis - five case reports. *Altern Med Rev*. 2004;9(3):297–307.

35. Giordano N, Cecconami L, Marcucci P,. The role of iron, vitamin B12, folic acid and erythropoietin in the anemia of rheumatoid arthritis. *Clin Exp Rheumatol*. 1992;10(2):201–202.

36. Chiang EP, Smith DE, Selhub J, et al. Inflammation causes tissue-specific depletion of vitamin B6. *Arthritis Res Ther*. 2005;7(6):1254–62.

37. Dyer NH, Kendall MJ, Hawkins CF. Malabsorption in rheumatoid disease. *Ann Rheum Dis*. 1971;30(6):626–630.

38. Kokcam I, Naziroglu M. Antioxidants and lipid peroxidation status in the blood of patients with psoriasis. *Clin Chim Acta*. 1999;289(1-2):23–31.

39. Prey S, Paul C. Effect of folic acid supplementation on methotrexate-associated safety and efficacy in inflammatory disease: a systematic review. *Br J Dermatol*. 2009;160(3):622–628.

40. Skoldstam L, Hagfors L, Johansson G, An experimental study of a Mediterranean diet intervention for patients with rheumatoid arthritis. *Ann Rheum Dis*. 2003;62(3):208–214.

41. Duarte GV, Follador I, Cavalheiro CM, et al. Psoriasis and obesity: literature review and management recommendations. An Bras Dermatol. 2010;85(3): 355-360.

42. Gisondi P, Del Giglio M, Cozzi A, et al. Psoriasis, the liver, and the gastrointestinal tract. *Dermatol Ther*. 2010;23(2):155–159.

43. Huang YH. Relationships between obesity and the clinical severity of psoriasis in Taiwan. *Journal of the European Academy of Dermatology and Venereology*. 2010;24(9):1035–1039.

44. Puig L. Obesity and psoriasis: body weight and body mass index influence the response to biological treatment. *Journal of the European Academy of Dermatology and Venereology*. 2011;25:1007–1011.

45. Segal R, Baumoehl Y, Elkayam O, et al. Anemia, serum vitamin B12, and folic acid in patients with rheumatoid arthritis, psoriatic arthritis, and systemic lupus erythematosus. *Rheumatol Int.* 2004;24(1):14–19.

46. Smith N, Weymann A, Tausk FA, et al. Complementary and alternative medicine for psoriasis: a qualitative review of the clinical trial literature. *Journal of the American Academy of Dermatology*. 2009;5(61):841–856.

47. Stwart DB, Lewis H. Vitamin D analogues and psoriasis. *J Clin Pharm Ther*. 1996;21:143–148.

48. Akbulut S, Gür G, Topal F, et al. Coeliac disease-associated antibodies correlate with psoriasis activity. *Ann Dermatol*. 2004;151(3):891–894.

Citation: Junior JFN, Silva JA. The influence of nutritional status and food consumption in psoriasis. *Int J Fam Commun Med.* 2018;2(4):238–243.
DOI: 10.15406/ijfcm.2018.02.00086