



TO ANALYZE THE DIETARY INTAKE AND DISEASE SEVERITY IN PSORIASIS PATIENTS

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Abstract

BACKGROUND: The most prevalent chronic inflammatory skin disease, psoriasis affects 0.5 to 4% of the population depending on the location. It is well known that psoriasis and metabolic syndrome increase each other's risk when they coexist. It has been discovered that the autoimmune, inflammatory, and proliferative diseases of the epidermis have a polygenic genesis in psoriasis. One type of immune-mediated inflammatory illness is psoriasis. The enormous potential of gene polymorphism is outside the scope of this preview, and the critical role of epigenetics in nutritional biology is expounded upon. Nutrition has long been linked to skin integrity, health, and aging through a variety of skin biology-related processes and cofactors. Numerous nutrients have been found to provide skin photoprotection, and adequate dietary supplementation has been demonstrated to improve the appearance, maintain the integrity of the skin, and support skin health. It has been proposed that dietary patterns and behaviors have a significant impact on the development and clinical course of a number of common skin illnesses, including acne, psoriasis, atopic dermatitis, and hair loss.

AIM: The aim of the present study was the dietary intake and severity of disease in patients with psoriasis.

MATERIAL AND METHOD: In the Department of Dermatology, the current cross-sectional, observational, and analytical study was carried out. The study included 200 psoriasis patients, both male and female, who visited a dermatologist clinic. The values of the daily intake of dietary nutrients are the independent variables, also known as exposure variables. There are several macro and micronutrients among them. The clinical categories based on disease severity scores are the dependent variable. The study employed a structured questionnaire to gather data on the sociodemographic characteristics of the participants. Personal interviews were conducted with each patient to get information about their name, age, sex, place of residence, religion, and employment.

RESULTS: In all, 200 psoriasis patients were included in the study. Based on three clinical classifications of patients with varying disease severity—Mild, Moderate, and Severe—a comparison of the observed parameters was conducted. 82.16% of the daily food intake amount that is advised was represented by the median of the observed daily calorie consumption. Overall, it was shown that as the disease severity increased, low-calorie intakes were more frequent and progressive. There was no discernible difference in the distributed frequency of instances around the median calorie consumption value throughout the illness severity categories. The recommended daily dietary intake of 40 grams of fiber per day was 93.26% of the total median consumption of dietary fiber. There was no discernible correlation between the various disease severity categories and the pattern of fiber consumption.

CONCLUSION: The results obtained from this investigation are mostly in line with reports from laboratory, clinical, and epidemiological investigations. The synthesis of nutrient intake data is an attempt to define important perspectives for the necessary follow-up work toward the development of

specific dietetic recommendations in psoriasis, in light of developments in pathogenic understanding. To develop specific dietary recommendations for psoriasis, focused studies on large-scale epidemiological and clinical perspectives predicted from the current study are necessary. Conducting scientific trials may never be possible due to the complex biology and subtle impacts of nutrition.

KEYWORDS: Psoriasis, Micronutrients and Omega-3 Polyunsaturated Fatty Acids

Introduction

The inflammatory skin illness psoriasis is caused by T cells and is typified by increased proliferation and decreased differentiation of epidermal keratinocytes. enhanced metabolic activity in skin lesions and cellular metabolism reorganization to maintain the enhanced rate of proliferation with an increase in sets of implicated enzymes are signs of a hypermetabolic state in psoriasis. Numerous nutritional losses, particularly those of micronutrients, are caused by skin shedding. The ensuing modifications affect renal, endocrine, hemodynamic, and thermoregulatory systems in addition to general metabolism. Enteropathy with malabsorption affects the small intestine and contributes to the overall outcome.¹

A significant non-communicable chronic inflammatory skin condition, psoriasis affects 0.5% to 4% of the population nationwide. Gene-related predispositions play a major role in the etiology of disease. The risk of chronic illness is influenced by dietary and lifestyle choices. Resolving these issues appropriately would lower the prevalence and intensity of sickness. The meaning of pathogenic triggers and how they work in psoriasis indicates the possibility of successful treatment.² Psoriasis patients have been found to have aberrant dietary habits that include excessive consumption of bad fat, inadequate intakes of micronutrients, and ensuing metabolic disturbances. The etiology and pathophysiology of psoriasis have been proposed to involve both the overall diet and specific food components. Certain studies have linked improvements to fasting periods, vegetarian diets, and diets high in omega-3 polyunsaturated fatty acids from fish oil. As a result, dermatologists should promote both increased physical activity and

weight loss in overweight psoriasis patients.³ It also emphasizes screening for smoking and alcohol misuse. The deviation of nutrients including antioxidant micronutrients, vitamin D, and polyunsaturated fatty acids has not received much attention in research. There is still much to be determined in order to provide specific dietary advice for psoriasis. The latter should be included to enhance the results of traditional therapy. By encouraging patient involvement in his disease treatment, the integrative approach may also help the patient reduce his reliance on costly and possibly dangerous medication therapies. Dietary and lifestyle modifications may also lessen the effects of co-morbidities and predisposing factors.⁴ There were no such obvious correlations between sigmoidoscopy scores and micronutrient or macronutrient intake according to traditional dietary coding (WISP). It was therefore believed that traditional dietary analysis was overlooking significant trends in dietary data, leading to the development of a novel nutritional evaluation technique.⁵

Growing research indicates that nutrition impacts may be mediated by epigenetic pathways, which could be the root cause of illness development. Studies on exposures to modified intake of individual nutrients entail many unknowns regarding dosage, duration, and—most importantly—exposure during early developmental time windows.⁶ This highlights the ongoing need for extensive research on the relationship between nutrition and psoriasis. Nutritional epidemiology studies using traditional methodologies are risky due to the disease's dominant genetic etiology. Erroneous assessments of the relationship between nutrition and disease may result from the controls lacking disease having few genes in

common with the patients.⁷ The aim of the study was to assess the nutritive value of DFRs of psoriasis vulgaris patients and to compare it with that of DFRs of patients with other chronic inflammatory disorders, as well as to examine the relationship between the intake of selected nutrients and the severity of clinical picture psoriasis.

the viewpoint of useful practical knowledge in the field of nutrition and disease, encompassing the functions of bioactive non-nutrient elements and macro- and micronutrients. The most practical environmental component for appropriate alteration with regard to disease prevention and amelioration is dietetics.⁸

MATERIAL AND METHODS

In the Department of Dermatology, the current cross-sectional, observational, and analytical study was carried out. The study included 200 psoriasis patients, both male and female, who visited a dermatologist clinic. The values of the daily intake of dietary nutrients are the independent variables, also known as exposure variables. There are several macro and micronutrients among them. The clinical categories based on disease severity scores are the dependent variable. The study employed a structured questionnaire to gather data on the sociodemographic characteristics of the participants. Personal interviews were conducted with each patient to get information about their name, age, sex, place of residence, religion, and employment. A structured questionnaire was used to document the history of the illness, including the length of the sickness, any family history of the condition, and any history of smoking, drinking, or drug addiction.

Inclusion criteria

- Aged 12-65 years
- Both sexes Agree after informed consent to participate.

Exclusion criteria

Patient with evident co-morbidity or medication for any other than the skin disease

Assessment of Parameters

The Psoriasis Area Severity Index (PASI) score, the patients' nutritional condition, and their dietary nutrient intake pattern were used

to assess the disease's severity directly with the patients.

Assessment of Dietary Habits and Dietary Intake

Using the 24-hour dietary recall approach, the assessment of dietary intake was utilized to gather quantitative and descriptive data about typical food consumption patterns. The patients were instructed to recollect as much information as they could about the foods, they had consumed in the previous 24 hours. The researcher's proportion size, which took into account various food item weights and sizes as well as common measuring tools, was used to estimate portion size. With the use of digital photos, it was evaluated by asking the patients to help with more precise portion size. Patients saw pictures of little, medium, and big sections that had been taken. The image that most closely matched the patients' usual portion size was selected. Giving them a new page to enter their dietary information from the previous day was the standard method used to record this approach every morning.

Food Frequency Questionnaire (FFQ)

Respondents (patients) to the meal frequency questionnaire were also asked to describe how frequently they typically consumed each item on a list for a given time period. Frequency data was gathered, but not much information was gathered about other aspects of the items as consumed, such as preparation techniques or meal combinations. Portion sizes questions, or questions that included exact portion sizes, were included in this FFQ. To estimate the daily intake of nutrients, dietary components, and food groupings, the total foods were summed, and the products of the reported frequency of each item were divided by the quantity of nutrient in a defined (or assumed) serving of that food. Getting a rough idea of overall intakes during a certain 12-month period was the aim of the FFQ.

STATISTICAL ANALYSIS

An electronic data spreadsheet was created in Excel 70 and imported to SPSS 16.0 version. The variables as per need were grouped before doing the analysis. Moods median test was then used to compare intake profiles of clinical

severity groups categorized as mild, moderate, and severe. The statistical significance of differences was analyzed by the Chi-square test.

RESULT: -

A total of 200 patients with Psoriasis were enrolled in this study. A comparison of observed parameters was made on the basis of three clinical categories of patients with different disease severity viz. Mild, Moderate, and Severe.

Table 1: Variation of Disease Severity with Calorie and Dietary Fiber Intake

50 th percentile of percent intake of recommended		Status					
		Mild		Moderate		Severe	
		No.	%	No.	%	No.	%
82.16%	≥82.16%	18	9	39	19.5	41	20.5
	<82.16%	12	6	36	18	54	27
93.26%	Dietary Fiber						
	≥93.26%	15	7.5	41	20.5	43	21.5
	<93.26%	16	8	40	20	45	22.5

82.16% of the daily food intake amount that is advised was represented by the median of the observed daily calorie consumption. Overall, it was shown that as the disease severity increased, low-calorie intakes were more frequent and progressive. There was no discernible difference in the distributed frequency of instances around the median calorie consumption value throughout the illness severity categories. The recommended daily dietary intake of 40 grams of fiber per day was 93.26% of the total median consumption of dietary fiber. There was no discernible correlation between the various disease severity categories and the pattern of fiber consumption.

Table 2: Variation of Disease Severity with Vitamin-B12 and Vitamin-C Intake.

50 th percentile of percent intake of recommended		Status					
		Mild		Moderate		Severe	
		No.	%	No.	%	No.	%
110%	≥110%	24	12	42	21	50	25
	<110%	10	5	38	19	36	18
202%	Vit C						
	≥202%	30	15	35	17.5	32	16
	<202%	11	5.5	41	20.5	51	25.5

The mean dietary consumption was 110% of the suggested dietary consumption (1μg/d). Less severe types had reduced consumption, with the light sickness category having the highest prevalence of surplus consumption. There found a correlation between vitamin B12 and varying severity groups. The median vitamin C intake was found to be 202% overall, which is double the recommended dietary intake of 40 mg/d. There is an extremely substantial correlation between the prevalence of excess vitamin C consumption and the severity of the disease. Confounding factors

may affect the bivariate study of the relationship between illness severity and macronutrient and micronutrient intakes. Micronutrients like vitamin C and vitamin B12 have shown to be highly significant.

DISCUSSION

Psoriasis has a complex pathogenesis with prominent genetic and epigenetic factors. The etiology and progression of the illness are associated with both autoimmune and hyperactive innate immunity. Such a chronic illness bears a major dietary component. Male to female ratios in psoriasis patients under

study are roughly 2:1, which runs counter to women's normally higher propensity for autoimmune diseases. These results indirectly highlight the importance of environmental elements like nutrition.

Gonzalez-Reimers et al. 2014⁹, and **Sun et al. 2012¹⁰** studied Alcohol and tobacco habits that were lowest in those with intermediate disease severity, but more in early and late stages with mild and severe disease respectively. This is in line with these lifestyle factors' stimulating effects on inflammation.

Dietary intakes are either unbalanced or balanced. They only work in tandem with illness prevention or incitement. They hardly ever directly have new effects on the way a disease manifests. As nutrients differ from medications, diet is the sole scientific way to examine the biology of nutrients. Each nutrient acts in interdependence or synergy with one or more other nutrients, e.g.: Vit.D + Calcium, Iron + Vit. C + Folic acid + B12, etc.¹¹ Long-term studies on large populations are required to uncover details about the biology of nutrients. This stands in stark contrast to brief pharmacological clinical trials. A straightforward method to assess the sufficiency of consumption is to consult the recommended dietary allowances (RDA) specific to that group. Genetic factors have a primary role in the etiology of psoriasis. One of the key environmental elements influencing precipitation prevention is nutrition. Long-term changes in the balance of nutrients are required to affect the majority of chronic illnesses with a variety of intricate etiologies.¹²

Gonzalez et al. 2014⁹, and **Homsy et al. 1986¹³** showed that Reduced calorie intake is beneficial to downgrade inflammation because inflammation is an energy-spending phenomenon. There is less evidence to support the hypothesis that calorie restriction in humans has anti-inflammatory properties. The majority of research on this topic has focused on obese individuals because calorie restriction is an effective strategy for promoting weight loss in this demographic.

Hao et al. 2004¹⁴ studied that Fiber consumption is particularly important as

psoriasis is considered to involve gut-lymphoid activation and abnormal gut flora. The two substances that provide qualitatively better protection against the onset of autoimmunity are soluble fiber and oligosaccharides. Reduced fiber consumption could indicate a nutritional deficiency associated with psoriasis. The principal metabolic products of the fermentation of anaerobic bacteria in the intestine are the short-chain fatty acids (SCFAs), acetate (C2), propionate (C3), and butyrate (C4). These fatty acids have been identified as potential mediators in the impact of gut microbiota on intestinal immune function, in addition to their crucial role as fuel for intestinal epithelial cells.

Catani et al., 2005¹⁵ showed that Vitamin C is a non-enzymatic antioxidant and also important in the transcriptional process in protection against stress. It is involved in repairing gene damage. **Christophere's 2006¹⁶** research showed that the role of dietary factors in psoriasis gained interest because of the co-existence of other inflammatory diseases with psoriasis (e.g. arthritis, Crohn's disease) and the increased risk of ischemic heart disease

Wolters et al. 2005¹⁷ showed that the vegetarian and low-energy diet with restriction of animal fatty acids benefited from low arachidonate (pro-inflammatory) intake. In order to map potential synergies and dyssynergies among the nutritional constellations needed for typical, varied metabolic processes, the nutrient evaluation must be comprehensive. In order to avoid and control psoriasis, this final compulsion suggests turning to a range of natural food items.

CONCLUSION:

To develop specific dietary recommendations for psoriasis, focused studies on large-scale epidemiological and clinical perspectives predicted from the current study are necessary. Scientific clinical trials may never be possible because of the synergistic biology of nutrients and their gradual and subtle impacts. However, the animal research may expand on the type of clues offered by the current study and thereafter serve as the focus of several epidemiologic inquiries.

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