

**TO ANALYZE PATIENTS WITH PSORIASIS'S DIETARY INTAKE AND DISEASE SEVERITY****Dr. Thakar Rajendra Kirtikumar**

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**ABSTRACT****BACKGROUND:**

Psoriasis, the most common chronic inflammatory skin condition, affects 0.5 to 4% of people worldwide, depending on the area. It's common knowledge that having both metabolic syndrome and psoriasis increases the likelihood of the other condition. It has been found that psoriasis shares a polygenic genesis with the autoimmune, inflammatory, and proliferative diseases of the epidermis. Psoriasis is one kind of inflammatory disease that is immune-mediated. This preview does not cover the full potential of gene polymorphism, nor does it discuss the crucial role that epigenetics plays in nutritional biology.

**MATERIAL AND METHOD:** The current cross-sectional, observational, and analytical investigation was conducted in the Department of Dermatology. Two hundred male and female psoriasis patients who attended a dermatology clinic were included in the study. The values of the daily dietary nutrient intake—also referred to as exposure variables—are the independent variables. Among them are a number of macro and micronutrients. The dependent variable is the clinical categories determined by disease severity scores.

**RESULTS:** The trial included 200 psoriasis patients in total. A comparison of the measured parameters was done using three clinical classifications of patients with different disease severity: mild, moderate, and severe. The median of the observed daily calorie consumption was 82.16% of the recommended daily food intake amount. Overall, it was demonstrated that low-calorie intakes were more common and progressive as the disease severity rose.

**CONCLUSION:** The majority of the investigation's findings are consistent with data from clinical, laboratory, and epidemiological studies. In view of advances in pathogenic understanding, the synthesis of nutrient intake data is an attempt to establish critical aspects for the necessary follow-up work toward the development of specific dietetic recommendations in psoriasis. Focused investigations on large-scale epidemiological and clinical perspectives—which are anticipated from the current study—are required to create specific dietary recommendations for psoriasis.

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

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**INTRODUCTION**

T cells are the cause of the inflammatory skin condition psoriasis, which is characterized by excessive proliferation and impaired differentiation of epidermal keratinocytes. Signs of a hypermetabolic state in psoriasis include increased metabolic activity in skin lesions and cellular metabolism reconfiguration to sustain the increased rate of proliferation with an increase in sets of implicated enzymes. Skin peeling is the cause of many nutritional losses, especially those of micronutrients. The resulting changes impact general metabolism as well as the renal, endocrine, hemodynamic, and thermoregulatory systems. The small intestine is impacted by enteropathy with malabsorption, which influences the total result.<sup>1</sup>

Psoriasis is a major chronic inflammatory skin illness that is not communicable and affects 0.5% to 4% of the population in the country. Predispositions associated to genes are a major factor in the etiology of disease. Decisions on diet and lifestyle have an impact on the likelihood of chronic illness. Resolving these problems effectively would reduce the frequency and severity of

illness. The definition of pathogenic triggers and their mechanism of action in psoriasis suggests that a successful course of treatment is possible.<sup>2</sup> It has been discovered that individuals with psoriasis exhibit abnormal eating patterns, such as consuming large amounts of unhealthy fat, consuming insufficient amounts of micronutrients, and experiencing consequent metabolic disruptions. It has been suggested that the pathophysiology and genesis of psoriasis are related to both the general diet and particular food items. Improvements have been connected in some studies to vegetarian diets, fasting periods, and diets rich in omega-3 polyunsaturated fatty acids from fish oil. Therefore, in patients with overweight psoriasis, dermatologists should encourage both weight loss and greater physical activity.<sup>3</sup> Screening for alcohol abuse and smoking is also emphasized. Research has not focused much on the variation of nutrients, such as vitamin D, polyunsaturated fatty acids, and antioxidant micronutrients. To give particular dietary recommendations for psoriasis, a lot remains to be

found out. Incorporating the latter will improve the outcomes of conventional therapy. By promoting patient participation in the management of their illness, the integrated method may also assist the patient in lowering his dependency on pricey and potentially hazardous drug therapy. Modifications to diet and lifestyle may also mitigate the effects of predisposing factors and co-morbidities.<sup>4</sup> According to traditional dietary coding (WISP), there were no such clear relationships between sigmoidoscopy scores and vitamin or macronutrient intake. Therefore, it was thought that important trends in dietary data were being missed by traditional dietary analysis, which prompted the creation of a novel nutritional evaluation method.<sup>5</sup>

A growing body of studies suggests that the genesis of sickness may be rooted in epigenetic pathways that mediate the effects of nutrition. Numerous unanswered questions surround dosage, duration, and—most importantly—exposure during early developmental time windows in studies on exposures to changing consumption of individual nutrients.<sup>6</sup> This emphasizes the continued need for in-depth studies on the connection between psoriasis and nutrition. Because of the major genetic origin of the disease, nutritional epidemiology studies utilizing traditional approaches are fraught with danger. The lack of sickness in the controls may lead to inaccurate judgments of the association between nutrition and disease since they share few genes with the patients.<sup>7</sup>

#### **MATERIAL AND METHODS**

The current cross-sectional, observational, and analytical investigation was conducted in the Department of Dermatology. Two hundred male and female psoriasis patients who attended a dermatology clinic were included in the study. The values of the daily dietary nutrient intake—also referred to as exposure variables—are the independent variables. Among them are a number of macro and micronutrients. The dependent variable is the clinical categories determined by disease severity scores. A structured questionnaire was used in the study to collect information on the participants' sociodemographic traits. Each patient had a personal interview to gather details about their name, age, sex, location of residence, religion, and line of work. 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**

The assessment of dietary intake was used to collect quantitative and descriptive data regarding normal food consumption habits using the 24-hour dietary recall approach. The patients were told to try to remember as much as they could about the items they had eaten the day before. Portion size was estimated using the researcher's proportion size, which considered the weights and sizes of different food items in addition to standard measuring equipment. It was assessed by requesting the patients to assist with more accurate portion size using digital photographs. Patients were shown images of the small, medium, and large areas that had been photographed. The picture that most closely resembled the patient's typical serving size was chosen. This technique was routinely recorded every morning by providing them with a fresh page to enter their dietary data from the previous day.

#### **Food Frequency Questionnaire (FFQ)**

Patients who answered the meal frequency questionnaire were also asked to explain how often they usually ate each item on a list over a specific amount of time. While frequency data was obtained, little was known about other elements of the foods as consumed, such as meal combinations or cooking methods. This FFQ contained questions about portion amounts, or questions that provided precise portion sizes. The total foods were added together, and the products of the reported frequency of each item were divided by the amount of nutrient in a defined (or assumed) serving of that food in order to estimate the daily intake of nutrients, dietary components, and food groups. 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 No. 1 Variation of Disease Severity with Calorie and Dietary Fiber Intake**

50 <sup>th</sup> 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%	<b>Dietary Fiber</b>						
	≥93.26%	15	7.5	41	20.5	43	21.5
	<93.26%	16	8	40	20	45	22.5

The median of the observed daily calorie consumption was 82.16% of the recommended daily food intake amount. Overall, it was demonstrated that low-calorie intakes were more common and progressive as the disease severity rose. Across all sickness severity categories, there was no appreciable variation in the distributed frequency of occurrences around the median calorie consumption value. The 40 grams of fiber per day suggested by the government accounted for 93.26% of the overall median dietary fiber consumption. The different illness severity groups and the pattern of fiber consumption did not appear to be correlated.

**Table No. 2 Variation of Disease Severity with Vitamin-B12 and Vitamin-C Intake.**

50 <sup>th</sup> 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%	<b>Vit C</b>						
	≥202%	30	15	35	17.5	32	16
	<202%	11	5.5	41	20.5	51	25.5

The average amount of food consumed was 110% of the recommended amount (1µg/d). Less severe varieties consumed less, and the category with the highest rate of excess intake was mild sickness. A relationship between vitamin B12 and different severity groups was discovered. The overall median intake of vitamin C was found to be 202%, which is double the 40 mg/d recommended dietary intake. The severity of the condition is significantly correlated with the prevalence of excessive vitamin C usage. The bivariate analysis of the association between macronutrient and micronutrient intakes and the severity of the illness may be impacted by confounding variables. It has been demonstrated that micronutrients such as vitamin B12 and C are very important.

**DISCUSSION**

The pathophysiology of psoriasis is complicated and involves both hereditary and epigenetic variables. Both autoimmune and hyperactive innate immunity are linked to the genesis and course of the disease. Such a chronic condition has a significant dietary component. The male to female ratios in the study population of psoriasis patients are approximately 2:1, which is in contrast to women's generally higher risk of autoimmune illnesses. These findings obliquely

emphasize the significance of environmental factors such as diet.

Gonzalez-Reimers et al. 2014<sup>8</sup>, and Sun et al. 2012<sup>9</sup> 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.

Either a balanced or imbalanced diet is consumed. They can only be used in conjunction with sickness incitation or prevention. Rarely do they directly alter how a disease presents itself. Diet is the only scientific method available to study the biology of nutrients because nutrients are not like pharmaceuticals. Every nutrient interacts or works in concert with one or more other nutrients, such as vitamin D + calcium, iron + vitamin C + folic acid + vitamin B12, etc.<sup>10</sup> To learn more about the biology of nutrients, extensive populations must be the subject of long-term study. Brief pharmacological clinical trials are a far cry from this. A simple way to determine whether consumption is adequate is to refer to the recommended dietary allowances (RDA) for that particular group. The etiology of psoriasis is primarily determined by genetic factors. Nutrition is one of the main environmental factors impacting the avoidance of precipitation. Most chronic illnesses have complex

etiologies and require long-term modifications in the balance of nutrients to be effective.<sup>11</sup>

**Homsy et al. 1986**<sup>12</sup> showed that Reduced calorie intake is beneficial to downgrade inflammation because inflammation is an energy-spending phenomenon. The idea that calorie restriction produces anti-inflammatory effects in people is not as well supported by data. Since calorie restriction is a useful weight loss approach for obese people, much study on this topic has concentrated on this population.

**Hao et al. 2004**<sup>13</sup> studied that Fiber consumption is particularly important as psoriasis is considered to involve gut-lymphoid activation and abnormal gut flora. Soluble fiber and oligosaccharides are the two compounds that offer qualitatively superior protection against the onset of autoimmunity. Decreased fiber intake may be a sign of a nutritional deficit linked to psoriasis. The short-chain fatty acids (SCFAs), acetate (C2), propionate (C3), and butyrate (C4) are the main metabolic byproducts of the fermentation of anaerobic bacteria in the intestine. In addition to playing a vital role as fuel for intestinal epithelial cells, these fatty acids have been discovered as potential mediators in the impact of gut microbiota on intestinal immune function.

**Catani et al., 2005**<sup>14</sup> 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 2006**<sup>15</sup> 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

#### CONCLUSION:

Focused investigations on large-scale epidemiological and clinical perspectives—which are anticipated from the current study—are required to create specific dietary recommendations for psoriasis. Because of the delayed and subtle effects of nutrients and their synergistic nature, scientific clinical trials may never be feasible. On the other hand, the animal research might provide more hints than the current study did, and then be the subject of many epidemiologic investigations.

#### REFERENCES:

1. Abdulla M, Andersson I, Asp NG, Berthelsen K, Birkhed D. Nutrient intake and health status of vegans. Chemical analyses of diets using the duplicate portion sampling technique. *Am J Clin Nutr.* 1981;34: 2464-2477.
2. Baker BS, Ovigne JM, Powles AV, Corcoran S, Fry L. Normal keratinocytes express Toll-like receptors (TLRs) 1, 2 and 5: Modulation of TLR expression in chronic plaque psoriasis. *Br J Dermatol.* 2003;148:670-679.
3. Brandrup F, Holm N, Grunnet N, Henningsen K, Hansen HE. Psoriasis in monozygotic twins: variations in expression in individuals with the identical genetic constitution. *Acta Derm Venereol.* 1982;62:229-236.
4. Cantorna MT. Vitamin D and autoimmunity: Is vitamin D status an environmental factor affecting autoimmune disease prevalence? *Proc Soc Exp Biol Med.* 2000;223:230–233.
5. Delage B, Dashwood RH. Dietary manipulation of histone structure and function. *Annu Rev Nutr* 2008;28:347–366.
6. Deriemaeker P, Alewaeters K, Hebbelinc M, Lefevre J, Philippaerts R. Nutritional status of Flemish vegetarians compared with non-vegetarians: a matched samples study. *Nutrients* 2010;2: 770-780.
7. Erlinger TP, Miller ER III, Charleston J. Inflammation modifies the effects of a reduced-fat low-cholesterol diet on lipids: results from the DASH-sodium trial. *Circulation* 2003;108:150–154.
8. González-Reimers E, Santolaria-Fernández F, Martín-González MC, Fernández Rodríguez CM, Quintero-Platt G. Alcoholism: a systemic proinflammatory condition. *World J Gastroenterol.* 2014;20:14660-14671.
9. Sun K, Liu J, Ning G. Active smoking and risk of metabolic syndrome: a meta-analysis of prospective studies. *PLoS One.* 2012; 7:477-91.
10. Rostan EF, De Buys HV, Madey DL, Pinnell SR. Evidence supports zinc as an important antioxidant for the skin. *Int J Dermatol.* 2002;41:606–611
11. Nichter M, Thompson J. For my wellness, not just my illness: North Americans' use of dietary supplements. *Culture, Medicine, and Psychiatry.* 2006;30:175–222.
12. Homsey J, Morrow WJW, Levy J A. Nutrition and autoimmunity a review. *Clin. exp. Immunol.* 1986;65:473-488.
13. Hao WL, Lee YK. Microflora of the gastrointestinal tract: a review. *Methods Mol Biol.* 2004;268:491-502.
14. Catani MV, Savini I, Rossi A, Melino G, Avigliano L. Biological role of vitamin C in keratinocytes. *Nutr Rev.* 2005;63:81-90.
15. Christophers E. Comorbidities in psoriasis. *Clin Dermatol.* 2007;25:529-534.