Study of nutritional parameters and physical activity in psoriasis patients attended at a reference center in Northeastern Brazil

Estudo de parâmetros nutricionais e atividade física em pacientes com psoríase atendidos em um centro de referência no Nordeste do Brasil

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ABSTRACT
Psoriasis is defined as an immune-mediated disease, which has a chronic and relapsing nature, multifactorial etiology, strong participation of genetic, immunological and environmental factors. Studies show the association of psoriasis with risk factors for cardiovascular diseases. An adequate diet combined with the practice of physical activity is capable of positively influencing the prognosis of the disease. The present study aimed to assess the nutritional status and physical activity practice of patients diagnosed with psoriasis seen at the Reference, Support and Treatment Center for Psoriasis Patients of the University Hospital Lauro Wanderley (HULW), in João Pessoa, Paraíba state from October to December 2018. Patients were evaluated by means of a semi-structured questionnaire to collect information such as identification data, skin color, family history of the disease, previous pathological history, life habits and feeding. High BMI prevailed in 80% of the patients, being 35% overweight and 45% obese. The result showed that 45% of the patients had a diagnosis of type 2 DM and 60% of SAH. When asked about the diagnosis of dyslipidemia, 25% of the patients reported having high cholesterol and/or triglyceride and 10% of the patients did not know how to report. With regard to the practice of physical activity, 65% of patients reported performing physical activities, of which 84.6% performed it at a frequency of 1 to 3 times a week and 15.4%, from 4 to 7 times. This preliminary study allowed us to identify the nutritional profile and the practice of physical activity of individuals with psoriasis treated at a Reference Center. The results showed the coexistence of psoriasis and comorbidities related to the metabolic syndrome.
in the majority of patients evaluated, with a predominance of obesity, systemic arterial hypertension and type 2 diabetes mellitus.

**Keywords:** Psoriasis. Comorbidity. Nutrition. Physical activity.

**RESUMO**
A psoríase é uma doença imunomediated, que possui caráter crônico e recidivante, de etiologia multifatorial, com forte participação de fatores genéticos, imunológicos e ambientais. Estudos mostram a associação da psoríase com os fatores de riscos para doenças cardiovasculares. Uma dieta adequada aliada à prática de atividade física é capaz de influenciar positivamente no prognóstico da doença. O presente estudo visou avaliar o estado nutricional e a prática de atividade física dos pacientes com diagnóstico de psoríase atendidos no Centro de Referência, Apoio e Tratamento aos Portadores da Psoríase do Hospital Universitário Lauro Wanderley (HULW), em João Pessoa, estado da Paraíba (PB), no período de outubro a dezembro de 2018. Os pacientes foram avaliados por meio de um questionário semiestruturado para coleta de informações como dados de identificação, cor da pele, histórico familiar da doença, história patológica pregressa, hábitos de vida, prática de atividade física e alimentação. O IMC elevado prevaleceu em 80% dos pacientes, sendo 35% com sobrepeso e 45% com obesidade. O resultado mostrou que 45% dos pacientes possuem diagnóstico de DM tipo 2 e 60% de HAS. Quando questionados sobre diagnóstico de dislipidemia, 25% dos pacientes relataram apresentar colesterol e/ou triglicerídeo elevado e 10% dos pacientes não souberam informar. No que concerne à prática de atividade física, 65% dos pacientes referiram realizar atividades físicas, dos quais 84,6% realizavam numa frequência de 1 a 3 vezes na semana e 15,4%, de 4 a 7 vezes. Este estudo preliminar permitiu identificar o perfil nutricional e a prática de atividade física dos indivíduos com psoríase atendidos no HULW. Os resultados expressaram a coexistência de psoríase e comorbidades relacionadas à síndrome metabólica na maioria dos pacientes avaliados, com predominio da obesidade, hipertensão arterial sistêmica e *diabetes mellitus* tipo 2.


**1 INTRODUCTION**
Psoriasis (PsO) is an immune-mediated disease that is chronic and relapsing, with 2-3% worldwide prevalence. The etiology of PsO is multifactorial with a strong participation of genetic, immunological and environmental factors (YANG; ZHENG, 2020). The disease consists of exacerbated proliferation of the epidermis by the multiplication of spinous cells, associated with dermal inflammation, which results in lesions represented by erythematous and scaly plaques, with an irregular border or well-demarcated plaques. PsO appears more frequently on the extensor surface of the limbs, scalp, knees, elbows and palmoplantar, however, any area of the skin can be affected (FRIEDER *et al.*, 2017).
Psoriatic lesions are painful, itchy, and causing physical limitations and potentializing psychosocial disorders with a significant reduction in the quality of life of patients. Physical symptoms and stigmatization in relation to physical appearance is associated with reduced patient self-esteem, social isolation, mental disorders and addiction. Despite being incurable, this chronic condition can be controlled with medications (MORAES et al., 2020; FRIEDER et al., 2017).

Epidemiological studies show that PsO is more frequent in high latitudes and in the Caucasian population. It is rarer to affect African Americans, black people from West Africa and the Chinese, and is practically non-existent in indigenous populations in the Americas. Although it can occur at any age, the first manifestation of the disease appears between 15 and 30 years of age. The distribution of prevalence between genders is practically the same, with some slight variations. However, some authors claim that the clinical manifestation is earlier in women (SILVEIRA; NETO; FERREIRA, 2017).

Studies show that inflammatory pathways shared between PsO and other chronic systemic immune-mediated illnesses contribute to the higher prevalence rates of comorbidities among psoriatic patients (FRIEDER et al., 2017).

Metabolic syndrome (MS) as a whole and its components (arterial hypertension, obesity, insulin resistance and dyslipidemia) has been associated with PsO due to their common chronic and inflammatory nature. Chronic inflammation caused by MS is characterized by high levels of tumor necrosis factor alpha (TNF-α), Interleukin-6 (IL-6) and C-reactive protein (CRP). These pro-inflammatory cytokines can also influence the onset of PsO and are present in the course of the disease. Therefore, it is possible to suggest a possible relationship for the higher occurrence of MS and isolated components in patients with psoriasis (ADIŞEN et al., 2018).

The influence of diet can be considered an environmental factor that is intrinsically related to the quality of life of the psoriatic patient. Inadequate food and body weight can trigger or increase the symptoms of the disease. Epidemiological studies revealed that patients with PsO had inadequate dietary habits, such as higher intake of total fat, simple carbohydrates and lower intake of protein, complex carbohydrates, monounsaturated fatty acids and omega-3 fatty acids compared to healthy individuals (KANDA; HOASHI; SAEKI, 2020).

Lack of knowledge about the importance of food and eating regular meals, as well as the large offer of processed foods with excess calories and the lack of determination to reconcile work and eating schedules, are factors that contribute to the PsO worsening.
Likewise, an adequate diet combined with the practice of physical activity is able to positively influence the prognosis of the disease (ODIERNO; COELHO; MATOS, 2015).

In view of this, the present study aimed to assess the nutritional status and the practice of physical activity of patients diagnosed with PsO seen at a Reference Center in Northeastern Brazil.

2 METHODS

This is a cross-sectional and descriptive study, consisting of individuals assisted by the Reference, Support and Treatment Center for Psoriasis Patients of the University Hospital Lauro Wanderley (HULW), in João Pessoa, Paraíba state (PB), from October to December 2018. The HULW is a general hospital in education, considered a reference for the municipality and northeastern region. The project was approved by the Research Ethics Committee of the HULW, under registration No. 2.778.627.

To participate in the research, individuals must be 18 years of age or older, be seen at the Reference Center for PsO with a confirmed diagnosis, accept to participate in the research and sign the Informed Consent Form. Individuals in the following situations were excluded from the study: pregnancy or lactation; have difficulty in oral feeding; and having undergone partial or total gastroplasty.

Data collection covered aspects related to identification, gender, skin color, family history of the disease, previous pathological history, lifestyle, physical activity practice, and diet. To assess these items, a semi-structured questionnaire in the form of an interview was applied.

Smoking habits were surveyed and patients were divided into those who smoke, never smoked, and those who stopped smoking before or after diagnosis. Alcoholism was also studied and patients were divided into those who do not consume alcohol, those who consume a frequency considered low (less than once a week), moderate (from 1 to 3 times a week) and high (4 or more times a week).

Nutritional status was assessed by checking body weight (kg) using a digital scale provided by the Reference Center. Individuals were evaluated without shoes and adornments, standing in the center of the scale platform. Height (cm) was measured with a stadiometer attached to the scale, with the individual in an orthostatic position.

For nutritional diagnosis, the Body Mass Index (BMI) and classification according to the cutoff points established by the WHO were used: BMI < 18.5 kg/m² as underweight; eutrophy, BMI between 18.5 kg/m² and 24.9 kg/m²; overweight, BMI
between 25kg/m² and 29.9kg/m²; and obesity ≥ 30kg/m² (WORLD HEALTH ORGANIZATION, 1995).

For statistical purposes, diagnoses were grouped into malnutrition, normal weight, overweight and obesity. Finally, the frequency of physical activity and food frequency were evaluated, generalizing into two large groups, the first being foods rich in saturated fats and the second, fruits, vegetables, and grains. Both were divided into three consumption categories: 1 to 3 times a week, 4 to 7 times a week, and not at all.

Obtained data were tabulated using Microsoft Excel® program, tables and graphs were constructed and results expressed as percentage of the analyzed parameters.

3 RESULTS AND DISCUSSION

Twenty individuals with PsO during the study period were evaluated, being 14 women (70%). At the time of the interview, age ranged from 24 to 65 years, with a mean of 50.3 years. The predominant skin color in the sample was white (70%) and the smallest was black (5%). Regarding family history, 35% had a family history of psoriatic disease (Table 1).

Several studies suggest a higher PsO rate in white individuals when compared to other ethnic groups, corroborating the findings of this research (KAUFMAN; ALEXIS, 2018). A study by Santos et al. (2016) in the Dermatology Service of the University Hospital of Taubaté indicated a predominance of men (64.4%) affected by the pathology, compared to the findings of this study, which showed a higher prevalence for women with this dermatosis.

<table>
<thead>
<tr>
<th>Variables</th>
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<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Skin color</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>14</td>
<td>70</td>
</tr>
<tr>
<td>Brown</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
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<td></td>
</tr>
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<td>35</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>65</td>
</tr>
</tbody>
</table>

Source: Own authorship.

Aware of the health risks, 80% of patients did not smoke and 15% claimed to be former smokers (Table 2); 63% of the participants of the study approached did not
consume any type of alcoholic beverage and of the 37% who did, only 1 patient reported consumption at a frequency of 4 or more times a week. In the study by Adişen et al. (2018), carried out in Turkey with 563 psoriatic patients, 50.3% reported being smokers and only 3.3% reported consuming alcoholic beverages. Of the smokers, 69.6% reported being smokers before diagnosis and 30.3% started after diagnosis.

The pathophysiological relationship between PsO and smoking has not been clarified; however, studies suggest a higher incidence and risk of this illness in smokers when compared to the non-smoker group. In addition, tobacco use can trigger the pathology by exposing the body to potentially toxic substances, such as nicotine, increasing the formation of reactive oxygen species and release of pro-inflammatory cytokines (MADDEN; FLANAGAN; JONES, 2020).

PsO is directly related to other diseases, such as chronic inflammatory bowel diseases, obesity, metabolic syndrome, cardiovascular diseases and type 2 diabetes mellitus (DM2) (VASCONCELOS et al., 2021; BARREA et al., 2020). The most prevalent isolated components of the metabolic syndrome in this study were obesity, arterial hypertension (SAH) and DM2.

Studies show that for every one-unit increase in BMI, there is a 9% increased risk for onset of PsO. Thus, the relationship between the two diseases is probably bidirectional with PsO favoring obesity and the dysfunctional metabolism of obesity predisposing this individual to PsO. Furthermore, obesity has also been shown to impair the effectiveness of drug treatment (MADDEN; FLANAGAN; JONES, 2019).

In the present study, 80% of the patients had a high BMI: the frequency of overweight was 35% and that of obesity was 45% (Table 2). As this is a cross-sectional study, it was not possible to state whether the skin disease predisposed to obesity or vice versa. However, 95% of patients reported weight change after diagnosis, and of these, 84.2% reported weight gain and 15.8% claimed weight loss.

Table 2: Distribution of patients with PsO under outpatients follow-up, according to the presence of comorbidities and health risk factors.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
</tr>
<tr>
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<td>80</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Systemic arterial hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>55</td>
</tr>
</tbody>
</table>
Odierno, Coelho and Matos (2015), when evaluating the nutritional status of 41 patients registered at a School Health Unit in the municipality of Itajaí/South Brazil, observed that 3% of patients were underweight, 22% were overweight and 39% were with obesity. Of the total number of patients, 67% reported weight change, of which 58% claimed weight gain and 42% claimed weight loss. Coincident data were found in a study carried out in Botucatu/Southeastern Brazil with 94 psoriatic patients, in which 40% were overweight, 48% obese and 12% were eutrophic (POLO et al., 2020).

In addition to obesity, SAH and DM2 are other independent risk factors for the development of PsO (HAN et al., 2019). In this study, 45% of patients have a diagnosis of DM2 and 60% of SAH using antihypertensive medication (Table 2). A longitudinal study carried out in the North of Portugal with 495 patients with PsO identified that 35.2% of patients were diagnosed with SAH and 15.6% with DM (VIDEIRA et al., 2017).

Several studies relate the association between PsO and changes in lipid metabolism, such as a reduction in HDL and an increase in triglyceride (SILVEIRA; NETO; FERREIRA, 2017). Of the total number of patients studied at the Reference Center, 25% reported having high cholesterol and/or triglyceride and 10% of the patients were unable to inform whether they had any dyslipidemia (Table 2). In a study carried out in Campinas/Southeastern Brazil with 50 psoriatic patients, 50% of respondents had altered cholesterol and 42% had high triglyceride (ABRAHÃO-MACHADO et al., 2020). It is known that some proinflammatory cytokines involved in PsO, such as interleukin 1 (IL-1), IL-6 and TNF-a, also play important roles in dyslipidemia, which may explain the association between PsO and the development of atherosclerosis (MIAO et al., 2019).

Regarding the practice of physical activity, 65% of patients reported performing physical activities, of which 84.6% performed it at a frequency of 1 to 3 times a week and 15.4%, from 4 to 7 times (figure 1). In a study by DiBonaventura et al. (2018) using data
from the Brazil 2012 National Health and Wellness Survey (NHWS), 210 individuals reported having a diagnosis of PsO. Of these, 117 (55.7%) reported exercising regularly. However, among the patients with the severe form of the disease, 63.6% did not exercise, showing the physical and psychosocial limitations associated with PsO.

Physical activity is mainly known to reduce the levels of TNF-α and IL-6, whose expression is elevated in PsO. In addition, it can help to increase the production of anti-inflammatory cytokines. Weight loss in obese psoriatic patients induces an increase in the response to treatment, thus, it highlights the importance of changes in lifestyle habits, such as a low-calorie diet and physical exercise practice, to complement the pharmacological treatment (BARREA et al., 2020).

Regarding the eating habits of the interviewed patients, 70% reported consuming foods rich in saturated and total fats, such as red meat or whole milk and dairy products, 1 to 3 times a week (figure 1). Another 25% reported consuming these same foods at a frequency of 4 to 7 times a week and only one patient reported that he did not consume any of these foods, replacing them with the consumption of fish, chicken, skimmed milk and light cheese. The consumption of fruits, vegetables and grains was low, as 80% of respondents reported consuming these foods 1 to 3 times a week and 10% reported not consuming health food.

According to the FBS (Family Budget Survey: 2018/2019), the consumption of fruits and vegetables has been decreasing over the years, while it has been increased the intake of foods rich in saturated fats, such as processed and ultra-processed meats, beef and dairy products. The increased consumption of saturated fatty acids is associated with
the increased occurrence of inflammatory diseases by facilitating the synthesis and release of pro-inflammatory cytokines (IBGE, 2020; PASSOS et al., 2020).

A case-control study carried out in Italy associated a high intake of red meat with high serum levels of C-Reactive Protein and, consequently, more severe symptoms of PsO, while patients who adhered to a Mediterranean diet had a more controlled disease. The Mediterranean diet is characterized by a high intake of fruits, vegetables, grains and cereals, fish, seafood and olive oil; and a low intake of red meat and dairy products (BARREA et al., 2015).

Additionally, it has been described the Western diet, well known as, rich in sugar, starches, processed foods, saturated fat and low in fruits, vegetables, and omega-3 fatty acids, can promote the development of chronic inflammation by causing insulin resistance and increasing adiposity, resulting in increased production of pro-inflammatory cytokines and disease severity (MADDEN; FLANAGAN; JONES, 2019).

Diet and physical activity play a pivotal role as the adjuvant treatment of PsO. In the United States, the Medical Board of the National Psoriasis Foundation has published dietary recommendations for obese or overweight psoriatic patients, which include reducing body weight with a low-calorie diet (ARMSTONG et al., 2017). However, there is still no established clinical protocol in Brazil defining the most recommended diet or physical activity frequency or the target of weight loss that shows improvement in PsO (BRAZIL, 2021).

4 CONCLUSIONS

This preliminary study allowed us to identify the socio-demographic, nutritional profile and physical activity frequency of individuals with PsO treated at a Reference Center in northeastern Brazil. Despite the limitations of the present study regarding the sample size, results found here, corroborated the current literature. It was possible to identify the coexistence of PsO and comorbidities related to the metabolic syndrome in most of the patients evaluated, with a predominance of obesity, systemic arterial hypertension and type 2 diabetes mellitus. In addition to drug treatment, changes in eating habits associated with the practice of physical activity emerge as potential strategies to control PsO symptoms. This fact indicates the need for monitoring by a multidisciplinary team in the treatment of the disease and improving the patient's quality of life.
REFERENCES


