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RESEARCH ARTICLE

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INCIDENCE OF PSORIASIS IN MEDICAL STUDENTS

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ABSTRACT

Psoriasis (PS) is a highly prevalent skin disease worldwide. The aim of this study was to investigate the prevalence of PS in medical students. The patients were selected through a questionnaire delivered in the University of Marília – Marília - São Paulo - Brazil classrooms to identify disease carriers. Students from the Medical school participated in the research, totaling 351 students. The incidence of PS in this group of students was 1.424%, which agrees with the incidence in other populations. There was an association with stress, alcoholism, and smoking, both in triggering and as a factor of difficulty in treatment. In the group of students without the condition, only 9.53% reported smoking, about half (52.1%) reported drinking, and 29.19% reported stress, a lower number than in students with the disease (smoking, drinking and stress 80%). In this way, it is important to act with all patients regarding healthy lifestyle habits, thus reducing stress and discouraging the consumption of beverages and tobacco, factors that worsen PS and are also crucial in the comorbidities associated with it. Improving these patients' expectations and quality of life can benefit them in several aspects.

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INTRODUCTION

Psoriasis (PS) is a relapsing, chronic autoimmune inflammatory skin condition triggered by environmental factors and genetic and immunological predisposition. The most common characteristic are hyperkeratosis, epidermal hyperplasia, infiltration of immune cells, and vascular remodeling (GONZAGA *et al.*, 2015; WEIGLE e MCBANE, 2013; ROUSSET e HALIOUA, 2018; HE *et al.*, 2022; PERIS *et al.*, 2022). This disease is characterized by a defect in the normal cycle of epidermal development, causing hyperproliferation with altered cell maturation, vascular alteration, and angiogenesis. It presents a leukocyte infiltrate composed of activated T lymphocytes in the dermis and neutrophils in epidermal micro-abscesses (RANA *et al.*, 2022; ZUO *et al.*, 2022).

Pro-inflammatory cytokines play a dominant role in the pathogenesis of PS, in which the IL-23/IL-17 axis has a critical position in the pathogenesis of the disease. Studies have shown a close relationship with interleukin 17 (IL-17) secreting TH17 (T helper 17) cells, and many mediators that belong to the IL-17 family are related to the inflammatory cascade underlying the disease. The outcomes can be localized or generalized and show hyperproliferative keratinocytes, dilated capillaries, and leukocyte infiltration, affecting the entire skin (LANNA *et al.*, 2022; TANG *et al.*, 2022). PS, diagnosis is based on the typical erythematous, scaly lesions in the skin and other lesions developed in the nails and joints. PS has an unpredictable course, spontaneous improvement, or exacerbation of lesions (GONZAGA *et al.*, 2022)(TAKANO-KAWASAKI *et al.*, 2022). The oral condition most frequently associated with psoriasis is the geographic tongue. Benign migratory glossitis (BMG), also termed geographic tongue, is

characterized by recurrent loss of epithelium on the dorsum and lateral borders of the tongue (GONZAGA *et al.*, 1996) (GONZAGA *et al.* 2015). Authors have shown that in 2019, there were 40 million people with PS in the world, and 4.6 million were new cases. The prevalence of this condition varies from 0.09% o 3.34% in different populations, with 0.22% in African Union, 2.11% in European Union, and 0.56% in China. PS represents a high financial burden in all countries. The United States has an estimated 1.6 to 4.3 billion dollars in total annual cost for treating this condition, and the global economic burden was over 120 billion in 2013 (BREZINSKI *et al.*, 2015; Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019, 2020; Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019, 2020; LIU *et al.*, 2022).

MATERIAL AND METHODS

Casuistic: A total of 520 medical students from the University of Marília, São Paulo, Brazil, participated in the sample. These patients were recruited from a questionnaire developed and applied in classrooms. Subsequently, those with the disease, who agreed, underwent anamnesis and a complete dermatological physical examination. Medical consultations for patients with the condition were carried out at the outpatient clinic of medical specialties of the Beneficent Association of the University Hospital of UNIMAR (HBU). This study was approved by the Human Ethics Commette – UNIMAR – Marília – São Paulo (protocol number 334), and a Free and Informed Consent Form was requested for all research participants according to the guidelines of the Research Ethics Committee. The participants had the guarantee of their confidentiality preserved. Participants were included in the study regardless of age, sex, and race; however, in this sample, all participants were students of a Medical School.

Dermatological Exam: The integumentary examination performed was standardized following the criteria of Sampaio; Rivitti (SAMPAIO; RIVITTI, 2018).

Oral examination: The oral examination performed in this Service, standardized by GONZAGA *et al.* (2018), is described below: observation of perioral structures. mouth opening; inspection of the lips, cheeks, gums, hard palate, soft palate, uvula, and tonsil region, in addition to the tongue (back, belly, posterior third, and lateral portions) and mouth floor; and inspection of dental structures, especially regarding their degree of preservation and hygiene.

RESULTS

Of 520 students enrolled in this study, 351 students agreed to participate in the research. To this end, they signed the Free and Informed Consent Form. The remaining 169 students did not agree to participate in the work. Of these 351 students, the number of patients with psoriasis was five, corresponding to 1.424%, with the onset of lesions between 11 and 22 years of age. Among them, four were female and one male, all white. These students were referred to the Dermatology outpatient clinic of the Beneficent Association of the University Hospital and examined by a dermatologist. There was a relationship between geographic tongue, fissured tongue, and psoriasis in only one student. The other four carriers did not present any oral alteration in the initial evaluation form, as well as they did not present signs in the dermatological examination. In addition, only one student with psoriasis denied stress as a triggering factor. The others cited tests, insecurity, anxiety, nervousness, and studies for the vestibular as triggering factors for the onset and aggravation of the disease. A family history of psoriasis was observed in two carriers. Four students referred to tobacco use, and four to alcoholism. In the initial questionnaire, three students claimed to have a previous medical diagnosis of *Psoriasis vulgaris*, while the other two did not know the subtype of the disease. At the time of the dermatological examination, the lesions were characteristic of *Psoriasis vulgaris* in

all five students. Of the students who did not have psoriasis, 13% did not answer the questions regarding alcohol consumption, smoking and stress. Of the remaining students, 59.24% said they did not have stress; as for alcoholism, 52.31% mentioned consumption; 9.53% reported smoking. In the group of patients with PS, 80% declared smoking, alcohol consumption and emotional stress.

Table 1. Distribution of the prevalence of psoriasis and smoking, alcohol consumption, and emotional stress in the medical students in psoriasis (PS) group and in the control group

Subjects	Patients with psoriasis (%)	Non-psoriasis patients (%)
Incidence	1,424	98,57
Smoking	80	9,53
Alcoholism	80	52,31
Stress	80	29,19

DISCUSSION

In this study, we found 1.42% of subjects with PS, which is very similar to that found in population studies from other countries. However, we should consider that the data were collected from a population apparently without other comorbidities. Moreover, the sample was a group of individuals under 40 years. Regarding sex, a 4:1 ratio was found for women in relation to men (we should consider that the small number of patients included in our sample can be an impediment to comparing the data reported in the literature). Moreover, among these, there may be individuals who will have the disease expressed until the age of 40, or type I psoriasis, and those who will express the condition after this age (type II) (DUARTE *et al.*, 2010). The incidence of PS in the Brazilian population was studied in one study in a population of patients from a dermatological outpatient clinic (JORGE *et al.*, 2017). In this study, the incidence was 2.1%, which is very similar to that described in other populations. In another study, the authors evaluated 12,000 respondents, of which 1.3% were subjects diagnosed PS (with a mean age of 40.2 years) (FUJII *et al.*, 2012). Papadimitropoulos *et al.* (Papadimitropoulos *et al.*, 2021) performed a systematic literature review of PS burden in Brazil, Argentina, Colombia, and Mexico. The authors found that this disease negatively impacts the physical and mental scores of patients, directly interfering with the quality of life. The disease carriers reported activity impairment, higher levels of presenteeism, and work disability. The estimated annual costs of PS were \$3497.58 and \$2160.92 for the private sector and public scenario, respectively, in Colombia. In agreement with our results, the study of Fuji *et al.* (FUJII *et al.*, 2012) showed that 53.0% of the patients with PS were women. In disagreement with our results and the results presented by Fuji *et al.*, some authors showed that in China, the prevalence rate of PS in men was higher than in women, and the prevalence index peaks at earlier ages in males compared to females (LIU *et al.*, 2022). The etiology of PS remains unknown, but it is now widely accepted that some factors, such as stress and unhealthy lifestyle habits, can contribute to the onset and worsening of the disease (DECEAN *et al.*, 2022; HUANG *et al.*, 2022). This fact was evidenced among patients with PS, as four out of five students mentioned the associated stress, tests, anxiety, and insecurity. In the group of students without illness, less than a third reported stress during activities of daily living. Instruments that assess emotional stress would respond better to these questions. Another critical aspect is alcohol (KEARNEY e KIRBY, 2022) and tobacco (KARPIŃSKA-MIRECKA *et al.*, 2021; WEI *et al.*, 2022) consumption. Among the sample of students with PS, four out of five reported the use of alcohol before the onset of the disease and as a worsening agent. As for smoking, 80% of the students with the condition referred to using tobacco. In the group of non-carrier students, only 9.53% smoked at the time of application of the questionnaires. Gonzaga *et al.* (2015) found that incidence of emotional stress and alcohol use in the PS was higher than that in the CG. The association of emotional stress and alcohol use may have an influence on this studied condition. PS is a condition associated with a significant decrease in quality of life since it impacts the patient's life's social, physical, emotional, occupational, sexual, and economic

aspects. Besides that, the condition is associated with many other comorbidities, such as depression, anxiety, metabolic syndrome, cardiovascular events, and malignancies (COYNE *et al.*, 2022; DA SILVA *et al.*, 2022; DIOTALLEVI *et al.*, 2022; GUPTA e MADKE, 2022; REPOUSI *et al.*, 2022). For these reasons, this condition should be extensively studied to improve the quality of life and reduce the social burden related to the presence of this disease. As PS is a chronic inflammatory condition and common in clinical practice, the correct management by the physician is of great importance. Nevertheless, it is a challenge to recognize the factors contributing to the clinical scenario of the disease's emergence, recurrence, or worsening. As discussed in this study, there is a relationship between psoriasis, psychological aspects, stress, and life events. However, there are genetic, endogenous, and environmental factors related to the onset and worsening of the disease. Alcoholism, smoking, and stress were quite relevant in the group of students with PS compared to those without the disease. It is crucial to act on all patients regarding healthy lifestyle habits, thus reducing stress and discouraging the consumption of beverages and tobacco. These factors worsen PS and are also important in associated comorbidities. Improving these patients' expectations and quality of life may benefit them. The incidence of the disease in the population studied did not vary compared to other populations, even though it is susceptible to stressful events in daily life, including situations experienced by students in their life habits and during medical training.

CONFLICT OF INTERESTS: The authors declare no conflict of interest.

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