Clinical and Epidemiological Factors Predicting the Severity of Psoriasis

Anca Chiriac, Cristian Podoleanu and Doina Azoicai

Additional information is available at the end of the chapter

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Abstract

Introduction: Psoriasis, a systemic disease with a chronic course, is associated with a high degree of comorbidities and decreased quality of life.

Aims: The aims of the study were to analyze epidemiological data of a large cohort of patients diagnosed with psoriasis over 8 years and to assess factors related to psoriasis severity and impact on quality of life.

Research methods: A transversal study was performed on 1236 persons diagnosed with psoriasis in an OutPatient Dermatology Center between January 1, 2004 and December 31, 2011.

Clinical examination was done and medical records were compiled including: type of psoriasis, number of body locations at the onset and at the moment of examination, severity index, family history of psoriasis, comorbidities, past and current treatments, demographic characteristics, residence, level of education, working status and income, smoking, and alcohol intake. Linear regression was used for multivariable analysis.

Key results of the chapter: Comorbidities were present in 36.1% of patients with mild form of psoriasis, 44.05% with moderate forms, and in 19.64% of severe psoriasis.

Onset and clinical examination age, education level, residence, job, gender, and smoking were significant factors associated with severity of psoriasis.

Keywords: psoriasis, epidemiological data, comorbidities, risk factors, severity index
1. Introduction

One of the most common T-cell-mediated diseases, psoriasis, is widely spread, potentially affecting 125 million people, or nearly 3% of the world’s population [1–3]. Reports show that psoriasis affects as much as 2% of the UK population [4]. A significant number of UK psoriatic patients have a Dermatology Life Quality Index (DLQI) of >10, indicating that the disease strongly affects their lives [4]. Social factors such as stigmatization, psychological factors such as depression, and physical factors such as pruritus, pain, and other comorbidities have a great impact on the patient’s life [5, 6].

Psoriasis involves high costs in the health-care system, represented by diagnosis, psychological counseling, investigations, treatments, and further research, which cannot be entirely quantified. A systematic review including 22 studies, published in *JAMA Dermatology 2015*, takes a comprehensive look at the cost of psoriasis in the USA by analyzing the expenses reported between 2008 and 2013, associated with the disease. In 2013, the US cost of psoriasis was estimated around $112 billion. Researchers have described four categories of expenses associated with psoriasis. Direct costs represented by doctor’s appointments, investigations, and therapies, have the highest expenses, estimated to be $8000 annually per person. The cost of dealing with comorbidities such as heart disease and depression, extends the costs with almost $5000 per person annually. Indirect costs are considered absences from work or lost productivity on the job, caused by psoriasis, and estimated to be upwards of $4000 annually per person. The decreased quality of life with reduced selfconfidence and substantial stigmatization cannot be quantified or calculated in terms of cost—impalpable costs. US psoriatic patients would pay a lifetime cost of $11,498 for treatment, relief of physical symptoms, emotional health, and reintegration into society. The direct psoriasis costs ranged from $51.7 to $63.2 billion, the indirect costs ranged from $23.9 to $35.4 billion, and medical comorbidities were estimated to be $36.4 billion in 2013 [7]. On the strength of such high costs and the burden of seeking the right therapy, it is of great importance to assess psoriatic patients with comorbidities associated with severe disease and decreased quality of life.

Recent studies show that psoriatic patients have relatively higher risks of heart disease, stroke, hypertension, and diabetes. Furthermore, due to social isolation, patients are more prone to develop depression and anxiety compared to the general population [4–6, 8]. A national study in Taiwan performed on 51,800 patients diagnosed with psoriasis revealed a high prevalence ratio (relative risk (RR); [95% confidence interval (CI)]) for rheumatoid arthritis (3.02; [2.68, 3.41]), alopecia areata (4.71; [2.98, 7.45]), vitiligo (5.94; [3.79, 9.31]), pemphigus (41.81; [12.41, 140.90]), pemphigoid (14.75; [5.00, 43.50]), heart disease (1.32; [1.26, 1.37]), hypertension (1.51; [1.47, 1.56]), hyperglycemia (1.61; [1.54, 1.68]), diabetes (1.64; [1.58, 1.70]), hepatitis B viral infection (1.73; [1.47, 2.04]), hepatitis C viral infection (2.02; [1.67, 2.44]), systemic lupus erythematosus (6.16; [4.70, 8.09]), sleep disorder (3.89; [2.26, 6.71]), asthma (1.29; [1.18, 1.40]), allergic rhinitis (1.25; [1.18, 1.33]), chronic airways obstruction (1.47; [1.34, 1.61]), lip, oral cavity, and pharynx cancer (1.49; [1.22, 1.80]), digestive organs and peritoneum cancer (1.57; [1.41, 1.74]), and depression (1.50; [1.39, 1.61]) [8].
Psoriasis, a systemic disease with a chronic course, is associated with a high degree of comorbidities and decreased quality of life.

Psoriasis can vary tremendously in its severity. A number of studies investigated the factors that affect severity \[9, 10\]. They reported significant associations between psoriasis severity and comorbid diseases \[10\], male gender, younger age \[11, 12\], localization of the lesions \[13\], the presence of family history of psoriasis \[14\], smoking, and alcohol consumption \[15\]. The factors that affect severity are still not well characterized.

2. An overview of the transversal study

2.1. Aims and objectives of the study: methods and materials

The aim of this study was to evaluate clinical and epidemiological characteristics of the psoriatic population for establishing prevention strategies and optimal clinical management.

The objectives of this transversal study were to analyze epidemiological data of a large cohort of patients diagnosed with psoriasis over a period of 8 years and to assess factors related to psoriasis severity and impact on their quality of life (validated by Psoriasis Area and Severity Index (PASI) index and DLQI).

All the investigations were conducted in an outpatient clinic specialized for psoriasis and investigative dermatology, in the north-eastern region of Romania, over a period of 8 years. Study was performed on 1236 persons diagnosed with psoriasis between January 1, 2004 and December 31, 2011.

Participants were examined for psoriasis by the same two dermatologists, under similar conditions. All patients had a complete physical examination and their medical history was recorded.

Psoriasis was diagnosed by dermatological examination and was confirmed by punch skin biopsy, when needed. Skin biopsies were performed at a representative psoriatic plaque of each patient.

In other articles \[16, 17\], psoriasis is classified as mild, moderate, and severe, based on clinical evaluation tools such as the extent of the affected skin surface. In this study, in order to quantify the severity of the disease, PASI was used; patients were categorized into mild (PASI: 0.0–4.0), moderate (4.1–9.9), and severe (10 or higher) psoriasis.

Patient data and medical history were collected from the Specialized Psoriasis Clinic, over a period of 8 years. Written informed consent was obtained from all patients.

The data collected by our dermatologists included the following:

1. demographic characteristics: gender, date of birth, age of the patients at the moment of examination, level of education, occupation (jobs distribution, respectively, socioeconomic status), residence;
2. **psoriasis—clinical-related data**: family history of psoriasis, age distribution at the onset of psoriasis, distribution of psoriatic lesions at the moment of diagnosis and at the moment of clinical inspection, number of areas involved, symptoms such as pruritus;

3. **comorbidities** such as thyroid abnormalities, cardiovascular disease (CVD), hypertension, other concomitant skin disorders, and others;

4. **severity of lesions in relation to evolution characteristics**: smoking history, alcohol consumption, past and current therapies with topical steroids.

### 2.1.1. Statistical analysis

All statistical analyses were conducted using Statistical Analysis System software.

Patient data were presented as proportions, standard deviations, means, and ranges. Linear regression was used for multivariable analysis of factors affecting psoriasis severity. Specified variables were included in the analysis of index severity. Spearman’s rank coefficient of correlation was used as a nonparametric measure of dependence. Pearson’s chi-squared test to quantify differences was used. All statistical tests had a confidence interval of 95% and the significance level was set at $p < 0.05$.

### 2.2. Results and discussion

#### 2.2.1. Demographic data

##### 2.2.1.1. Gender distribution

Out of the 1236 patients diagnosed with psoriasis, 669 were men (54.13%) and 567 (45.87%) were women, showing a *predominance of male over female gender (1.18/1)*.

##### 2.2.1.2. Age distribution at the moment of examination

The **highest incidence** of the disease was noticed for the *age group 30–50 years old (43.12%)*; the **minimal incidence** was over 70 years (5.83%) and under 20 years (5.5%). Statistically 50% of cases were over 40 years and 25% under 33 years.

The median value for age was $44.94 \pm 15.84$ standard deviation (SD), with a great variability from 6 to 91 years old. Psoriasis can occur at any age; patients should seek medical advice regardless of age.

##### 2.2.1.3. Distribution of cases reported to residence

As shown in **Table 1**, urban patients prevail. People living in villages have low incidence of psoriasis, reflecting a real reduced number of cases or a smaller addressability to medical care (**Figure 1**).
2.2.1.4. Level of education

The level of education correlates with the prevalence of psoriasis (Table 2). This can be explained by stress, underlying the western modern lifestyle.

2.2.1.5. Occupational characteristics at the moment of medical examination: jobs distribution, respectively, socioeconomic status

Present data confirm the high prevalence of psoriasis in working people, especially in stressful activities: engineers, students, professors, managers, drivers, salesmen, and medical staff. Physical activity, alcohol consumption, smoking, pollution from the working place, repeated trauma, and irritants are linked to psoriasis on workers.

Table 1. Results of the study: number of patients reported to residence.

| Residence | Nr. cases | %    |
|-----------|-----------|------|
| Urban     | 1036      | 83.82|
| Rural     | 200       | 16.18|
| Total     | 1236      |      |

Figure 1. Results of the study: distribution of cases reported to residence.
Retired persons encounter a frequent diagnosis of psoriasis after a long evolution of the disease (psoriasis march), even though they allocate time and money in search of medical help. This can be explained by the fact that chronic infections, comorbidities, and drug administration could be a potential trigger for psoriasis flares.

2.2.2. Diagnosis of psoriasis and clinical data

2.2.2.1. Family history of psoriasis

Out of the 1236 patients, a positive family history of psoriasis was found in 380 patients (59.37%); of these, 174 (27.18%) had at least one parent with psoriasis, with a λR of 13.59, while 106 patients (16.56%) had at least one second-degree relative with psoriasis, and 34 patients (5.31%) had one-third-degree relative with psoriasis (Figure 2). No parent-of-origin effect in transmission of psoriasis from affected parent to offspring was observed, and there were no significant differences in the clinical profiles of the disease between patients grouped by transmission pattern of psoriasis.

2.2.2.2. Age of the patients at the onset of psoriasis

Results of the study showed the following: 7.77% of patients did not recall the age at which the first lesions appeared, 46.04% had the first diagnosis of psoriasis somewhere between 10 and 30 years old, and the fewest cases were detected over the age of 50 (11.17%).

The median age at the diagnosis is 29.34 ± 15.24 SD, with the youngest patient being 6 months (neonatal psoriasis) and oldest 76 years.

Statistically 50% of cases were less than 27 years old at the moment of first medical seek and 25% over 39 years old when they accepted psoriasis as a diagnosis (Table 3). Within this group, there were 104 cases (8.41%) with the onset of psoriasis under the age of 10 and 263 (21.28%) of cases had the first certified diagnosis of psoriasis before 19 years old. The majority of cases were adult psoriasis 869 (70.31%).

| Level of education      | Nr. cases | %    |
|-------------------------|-----------|------|
| Middle school           | 54        | 4.37 |
| College                 | 148       | 11.97|
| Vocational school       | 48        | 3.88 |
| High school             | 345       | 27.91|
| Postsecondary school    | 47        | 3.80 |
| Students                | 182       | 14.72|
| University graduates    | 412       | 33.33|
| Total                   | 1236      |      |

Table 2. Results of the study: level of education among patients diagnosed with psoriasis.
Psoriasis has been reported as a chronic disease that begins in one-third of the patients during the first two decades of life [18]. Several prevalence studies have published their results showing that one-third of psoriatic patients develop the disease during childhood [19]. A fast increase in the incidence rate of psoriasis until the age of 30–35 years was recently reported [20].

Childhood onset of psoriasis was not proven to be a risk factor for higher frequencies of cardiovascular and metabolic comorbidities during adulthood in a recent French study [21]. Moreover, the age of onset of psoriasis had no impact on the severity of the disease in another retrospective study conducted in Greece [22]. No evidence was found that under 18 years may influence the disease severity in later life [23].
Similar data have been obtained by present analysis: 70.31% of patients enrolled in the study were diagnosed after the age of 20, only 104 cases (8.41%) had the onset before the age of 10; 263 (21.28%) of cases were diagnosed between 10 and 19 years old.

Psoriasis in children should not be considered as underreported because parents seek for medical care for their children at the first signs of skin injury. Children with psoriatic arthritis (PsA) were not included in the study.

2.2.2.3. The distribution of psoriatic lesions at the moment of diagnosis (Single lesion or multiple distributions of cutaneous manifestations declared by patients)

The majority of cases (91.18%) had a unique lesion of psoriasis when they were first diagnosed, multiple locations being much rarer (8.82%). Among the unique first clinical signs, most of the patients (28.07%) reported scalp being involved, followed by elbows (11.89%), palms (7.93%), feet (7.12%), and trunk (5.18%). A significant number of persons involved in the study were not able to remember the first location of psoriasis (10.36%).

2.2.2.4. The distribution of psoriatic lesions at the moment of clinical inspection (Single lesion or multiple distributions of cutaneous manifestations)

The majority of patients (82.85%) had multiple skin lesions at the moment of clinical inspection (Table 4).

The distribution of psoriasis was recorded. Active lesions were noted on the scalp, face, trunk, anogenital area, arms, legs, hands, feet, or nails, that is, in 10 different locations (Figure 3):

| Lesion                  | Nr. cases | %    |
|-------------------------|-----------|------|
| Nail psoriasis          | 165       | 13.35|
| Psoriatic arthritis     | 309       | 25.00|
| Koebner phenomena       | 173       | 14.00|
| Scalp psoriasis         | 681       | 55.10|
| Gutate psoriasis        | 146       | 11.81|
| Superior limbs          | 788       | 63.75|
| Inferior limbs          | 736       | 59.55|
| Trunk                   | 462       | 37.38|
| Face                    | 55        | 4.45 |
| Palmo-plantar           | 205       | 16.59|
| Others                  | 265       | 21.44|
| Total                   | 1236      |      |

Table 4. Results of the study: distribution of multiple skin lesions at the moment of clinical inspection.
2.2.2.5. Number of areas involved at the moment of clinical inspection (By single or multiple cutaneous lesions)

Out of the 1236 patients enrolled in the study, an approximately equal distribution was observed among patients with solitary lesion or two, three, or four body areas involved (Table 5). More generalized forms were very rare (Figure 4).

2.2.2.6. Evolution of psoriatic lesions from diagnosis to present clinical inspection

Few patients (1.21%) with multiple onset lesions later turned to have unique lesions, while 7.61% of them preserved the initial multiple lesions; 15.94% of patients with onset single lesions remained with a unique cutaneous psoriasis stigma (the same of different location) (Table 6).

The vast majority of cases (75.24%) with declared unique psoriatic lesion at the onset of the disease developed multiple skin manifestations over short or long periods of time.

The statistical report shows no marked relationship between the lesions location at the time of the first diagnosis of psoriasis and at the moment of onset evaluation ($r = 0.1406$, $\chi^2 = 1.018$, $p = 0.312$, 95% CI).

The comparison between unique onset lesion and multiple lesions at the moment of clinical examination is presented in (Table 7).

2.2.2.7. Symptoms: pruritus and psoriasis

Previous dermatology dogma suggested that atopic dermatitis is itchy and psoriasis is not!

![Figure 3. Distribution of multiple skin lesions at the moment of clinical inspection.](http://dx.doi.org/10.5772/intechopen.68728)
The aim of the present study was to assess the incidence of pruritus in patients diagnosed with psoriasis (Figure 5); data were collected based on patients’ responses and pruritus was certified by declaration.

| Location             | Nr. cases | %     |
|----------------------|-----------|-------|
| Unique lesion        | 212       | 17.15 |
| Multiple lesions     | 1024      | 82.85 |
| Two body areas       | 266       | 21.55 |
| Three body areas     | 244       | 19.74 |
| Four body areas      | 240       | 19.41 |
| Five body areas      | 155       | 12.54 |
| Six body areas       | 76        | 6.15  |
| Seven body areas     | 30        | 2.43  |
| Eight body areas     | 12        | 0.97  |
| 10 body areas        | 1         | 0.08  |
| Total                | 1236      |       |

Table 5. Number of areas involved.

Figure 4. Body areas frequently involved.

The aim of the present study was to assess the incidence of pruritus in patients diagnosed with psoriasis (Figure 5); data were collected based on patients’ responses and pruritus was certified by declaration.
| Onset unique lesion | Nr. cases | %    | Associations of multiple lesions at the onset of evaluation | Nr. cases | %    |
|---------------------|-----------|------|-------------------------------------------------------------|-----------|------|
| Unknown             | 128       | 10.36| Scalp, auxiliary                                           | 1         | 0.08 |
| Scalp               | 347       | 28.07| Scalp, presternal                                          | 2         | 0.16 |
| Elbows              | 147       | 11.89| Scalp, elbows                                              | 9         | 0.73 |
| Palms               | 98        | 7.93 | Scalp, elbows, knees                                       | 1         | 0.08 |
| Feet                | 88        | 7.12 | Scalp, face                                                | 3         | 0.24 |
| Trunk               | 64        | 5.18 | Scalp, knees                                               | 2         | 0.16 |
| Hands               | 51        | 4.13 | Scalp, intraauricular                                      | 3         | 0.24 |
| Knees               | 34        | 2.75 | Scalp, feet                                                | 1         | 0.08 |
| Goutate             | 23        | 1.86 | Scalp, buttocks                                            | 1         | 0.08 |
| Abdomen             | 18        | 1.46 | Scalp, trunk                                               | 5         | 0.40 |
| Fingers             | 16        | 1.29 | Trunk, axillary                                            | 1         | 0.08 |
| Plantar             | 16        | 1.29 | Trunk, face                                                | 1         | 0.08 |
| Face                | 12        | 0.97 | Trunk, palms                                               | 1         | 0.08 |
| Thighs              | 11        | 0.89 | Trunk, fingers                                             | 1         | 0.08 |
| Retroauricular      | 11        | 0.89 | Trunk, knees                                               | 1         | 0.08 |
| Perimaleolar        | 10        | 0.81 | Elbows, palms                                              | 5         | 0.40 |
| Erythrodermic       | 9         | 0.73 | Elbows, knees                                              | 42        | 3.40 |
| Periumbilical       | 9         | 0.73 | Elbows, palms                                              | 2         | 0.16 |
| Occipital           | 6         | 0.49 | Elbows, feet                                               | 4         | 0.32 |
| Cervical            | 8         | 0.64 | Elbows, plantar                                            | 1         | 0.08 |
| Palpebral           | 4         | 0.32 | Palms, fingers                                             | 1         | 0.08 |
| Retrooccipital      | 4         | 0.32 | Palms, pretibial                                           | 1         | 0.08 |
| Genital             | 3         | 0.24 | Palms, dorsal aspect of the hands                          | 1         | 0.08 |
| Buttocks            | 3         | 0.24 | Palms, occipital                                           | 1         | 0.08 |
| Preauricular        | 2         | 0.16 | Palmo-plantar                                              | 6         | 0.49 |
| Lumbo-sacral        | 2         | 0.16 | Knees, plantar                                             | 1         | 0.08 |
| Temporal            | 2         | 0.16 | Knees, pretibial                                           | 2         | 0.16 |
| Frontal             | 1         | 0.08 | Knees, dorsal aspects of the hands                         | 1         | 0.08 |
|                     |           |      | Knees, buttocks                                           | 1         | 0.08 |
|                     |           |      | Dorsal aspects of the hands                               | 4         | 0.32 |
Pruritus was admitted by 293 persons (23.7%) and denied by 943 (76.3%). The presence and intensity of pruritus were independent of age, gender, marital status, family history of psoriasis, job, level of education, type of psoriasis, alcohol, smoking, duration of the disease, number of lesions, and severity index.

Pruritus may be unrecognized and underestimated by the patients and/or medical staff.

2.2.3. Comorbidities

2.2.3.1. Comorbidities: overview

Comorbidities present at the moment of diagnosis and/or in the medical history of patients (Figure 6, Table 8).

Out of the 1236 patients enrolled in the study, 59.22% (732 psoriatic patients) had no comorbidities at the moment of diagnosis or in their medical history (Table 8).

2.2.3.2. Comorbidities: psoriasis and psoriatic arthritis

Psoriatic arthritis is a chronic, inflammatory, seronegative form of arthritis occurring in subjects with psoriasis. PsA usually occurs over the age of 40 and it affects both sexes equally [24, 25].
The incidence and prevalence of PsA among patients with psoriasis varies between different studies based on the variety of criteria and methods used to study PsA such as patient history, questionnaires, Moll and Wright or Caspar and Grappa classification criteria [26]. Prey et al. published a review where prevalence ranged from 2.04 to 26% and 5.94 to 25% when evaluating PsA using only rheumatologic diagnostic criteria [26].

Likewise, geographical variations in PsA were notified: Europe and North America present higher PsA prevalence ranging between 20.6 and 30% compared with Asia where PsA is significantly lower (8.7%) as seen in a large study of 1149 patients, in Argentina the prevalence rate was found to be 17%, whereas in Brazil 35% [27–31].
| Comorbidities                | N  | %       | Comorbidities                | N  | %       | Comorbidities                | N  | %       |
|-----------------------------|----|---------|-----------------------------|----|---------|-----------------------------|----|---------|
| Absent                      | 732| 59.22   | Chronic urticaria           | 2  | 0.16    | Allergic rhinitis           | 1  | 0.08    |
| Arterial hypertension       | 124| 9.92    | Lyell syndrome              | 1  | 0.08    | Sinusitis                   | 2  | 0.16    |
| Cardiac dysrhythm           | 18 | 1.44    | Quincke edema               | 1  | 0.08    | Hay fever                   | 1  | 0.08    |
| Ischemic heart disease      | 20 | 1.61    | Acne                        | 1  | 0.08    | Gilbert syndrome            | 1  | 0.08    |
| DZ II                       | 47 | 3.79    | Amygdalectomy               | 10 | 0.80    | Chronic pancreatitis        | 3  | 0.24    |
| DZ insulin-dependent        | 3  | 0.24    | Adenoidectomy               | 13 | 1.04    | Hiatal hernia               | 1  | 0.08    |
| Dysmetabolic syndrome       | 18 | 1.44    | Colecystectomy              | 16 | 1.28    | Umbilical hernia            | 2  | 0.16    |
| Morbid obesity              | 16 | 1.28    | Splenectomy                 | 1  | 0.08    | Biliary lithiasis           | 4  | 0.32    |
| Chronic hepatitis B         | 10 | 0.80    | Hysterectomy                | 1  | 0.08    | Renal lithiasis             | 9  | 0.73    |
| Chronic hepatitis C         | 7  | 0.56    | Ovarectomy                  | 6  | 0.49    | Chronic pyelonephritis      | 2  | 0.16    |
| Toxic chronic hepatitis     | 28 | 2.24    | Inguinal hernia             | 5  | 0.40    | Enuresis                    | 1  | 0.08    |
| Liver cirrhosis             | 2  | 0.16    | Megacolon surgery           | 1  | 0.08    | Chronic glomerulonephritis  | 1  | 0.08    |
| Hepatic steatosis           | 3  | 0.24    | Ischemic stroke             | 5  | 0.40    |                              |     |         |
| Hepatitis B virus carrier   | 1  | 0.08    | Infantile paralysis         | 1  | 0.08    | Chronic urinary tract infection | 1  | 0.08    |
| Hepatic cyst hydatid        | 1  | 0.08    | Status epilepticus          | 1  | 0.08    | Testicular etopia           | 1  | 0.08    |
| Tuberculosis                | 12 | 0.96    | Meningitis                  | 1  | 0.08    | Hydrocele                   | 5  | 0.40    |
| Peptic ulcer                | 36 | 2.91    | Parkinson disease           | 1  | 0.08    | Azoospermia                 | 1  | 0.08    |
| Gastritis                   | 8  | 0.64    | Spastic tetraparesis        | 1  | 0.08    | Phimosis                    | 2  | 0.16    |
| Gastric hemorrhage          | 2  | 0.16    | Cervical cancer             | 2  | 0.16    | Endometriosis               | 1  | 0.08    |
| Disc herniation             | 21 | 1.68    | Hodgkin disease             | 1  | 0.08    | Fibroma uterus              | 14 | 1.12    |
| Gout                        | 3  | 0.24    | Breast cancer               | 1  | 0.08    | Ovarian cysts               | 8  | 0.64    |
| Rheumatoid arthritis        | 4  | 0.32    | Cancer colorectal           | 1  | 0.08    | Fibrocystic breast disease  | 6  | 0.49    |
| Comorbidities              | N  | %    | Comorbidities              | N  | %    | Comorbidities              | N  | %    |
|---------------------------|----|------|---------------------------|----|------|---------------------------|----|------|
| Ankylosing spondylitis    | 4  | 0.32 | Thyroid cancer            | 1  | 0.08 | Pituitary adenoma         | 1  | 0.08 |
| Rheumatic fever           | 1  | 0.08 | Gastric cancer            | 1  | 0.08 | Chronic hypocalaemia      | 5  | 0.40 |
| Osteitis                  | 1  | 0.08 | Chronic venous insufficiency | 15 | 1.2  | Asthma                    | 11 | 0.88 |
| Psoriatic arthritis       | 2  | 0.16 | Peripheral arteriopathy   | 1  | 0.08 | Chronic bronchitis        | 6  | 0.49 |
| Knee meniscus graft       | 1  | 0.08 | Crohn’s disease           | 1  | 0.08 | Spontaneous pneumothorax  | 1  | 0.08 |
| Osteomyelitis             | 2  | 0.16 | Erythematous-pultaceous angina | 3  | 0.24 | Pleural effusion          | 1  | 0.08 |
| Cervical spondylotic      | 2  | 0.16 | B streptococcal pharyngitis | 3  | 0.24 | Multiple sclerosis        | 1  | 0.08 |
| Autoimmune thyroiditis    | 1  | 0.08 | Anti-streptolyzin o       | 2  | 0.16 | Duchenne muscular dystrophy | 1  | 0.08 |
| Thyroidectomy             | 8  | 0.64 | Psychiatric disorders     | 10 | 0.80 | Myasthenia gravis         | 1  | 0.08 |
| Hypothyroidism            | 9  | 0.73 | Thyroid goiter            | 3  | 0.24 | keratoconjunctivitis      | 1  | 0.08 |
| Vitiligo                  | 10 | 0.80 | Blepharitis               | 1  | 0.08 | Secondary amenorrhea      | 1  | 0.08 |
| Alopecia areata           | 2  | 0.16 | Hypermetropia             | 1  | 0.08 | Gastric prolapse          | 1  | 0.08 |
| Dermatomyositis           | 3  | 0.24 | Glaucoma                  | 1  | 0.08 | Chronic mastoiditis       | 1  | 0.08 |
| Rosacea                   | 3  | 0.24 | Cataract                  | 2  | 0.16 | Polyposis coli            | 2  | 0.16 |
| Keratosis pilaris         | 2  | 0.16 | Anemia                    | 3  | 0.24 | Spina bifida              | 1  | 0.08 |
| Celiac disease            | 1  | 0.08 | Idiopathic thrombocytopenia | 1  | 0.08 |                            |     |      |

Table 8. General comorbidities among psoriatic patients involved in the study.
In our study, the estimated PsA prevalence based on rheumatologic evaluation (Moll and Wright criteria) was 0.16% among 1236 patients with psoriasis (Table 9), NOT in accord with several European revisions.

An extensive study in Germany on 1511 patients revealed a total PsA prevalence of 20.5% [31]. In Greece, a retrospective analysis on 278 patients with psoriasis revealed that PsA prevalence was 30%. This subgroup of patients with PsA showed significantly higher rates of comorbidities including CVD, hypertension, diabetes mellitus type 2, and hypercholesterolemia compared to non-PsA patients [24]. Other studies show PsA prevalence ranging between 0.17 and 0.35% in the general Greek population [32, 33]. Other two publications report remarkably lower rates of PsA prevalence among patients with psoriasis, 7.23% in Croatia, respectively, 9.3% in Serbia [26].

2.2.3.3. Comorbidities: coexistence of psoriasis with other skin diseases at the moment of diagnosis

Out of the 1236 patients enrolled in the study, only 26 psoriatic patients had other skin diseases at the moment of diagnosis (Table 10), including 10 with vitiligo, 3 with dermatomyositis, 3 with Rosacea, and 2 with Alopecia areata.

2.2.3.4. Comorbidities: coexistence of psoriasis with cardiovascular diseases at the moment of diagnosis

Psoriasis has been associated with high cardiovascular morbidity and mortality. Recent studies suggest that psoriasis, particularly if severe, has a 58% increased risk of major adverse cardiovascular events such as arrhythmia, myocardial infarction, or stroke, and has a 57% increased risk of cardiovascular death, beyond the risk of death associated with traditional cardiovascular risk factors [34–36].

Of the 1236 patients enrolled in the study, 162 psoriatic patients had cardiovascular diseases at the moment of diagnosis (Table 11), great majority accusing arterial hypertension.

| Coexistence of rheumatologic diseases | Nr. cases | %     |
|---------------------------------------|-----------|-------|
| Disc herniation                       | 21        | 1.68  |
| Gout                                  | 3         | 0.24  |
| Rheumatoid arthritis                  | 4         | 0.32  |
| Ankylosing spondylitis                | 4         | 0.32  |
| Rheumatic fever                       | 1         | 0.08  |
| Osteitis                              | 1         | 0.08  |
| Psoriatic arthritis                   | 2         | 0.16  |
| Knee meniscus graft                   | 1         | 0.08  |
| Osteomyelitis                         | 2         | 0.16  |
| Cervical spondylotic                  | 2         | 0.16  |
| Total                                 | 68/1236   |       |

Table 9. Coexistence of psoriasis with other rheumatologic diseases.
2.2.3.5. Comorbidities: prevalence of thyroid abnormalities among psoriatic patients

Of the 1236 patients diagnosed with psoriasis, only 22 were spotted with thyroid abnormalities (Table 12).

| Coexistence of other skin diseases            | Number of cases | %    |
|-----------------------------------------------|-----------------|------|
| Vitiligo                                      | 10              | 0.80 |
| Alopecia areata                               | 2               | 0.16 |
| Dermatomyositis                               | 3               | 0.24 |
| Rosacea                                       | 3               | 0.24 |
| Keratosis pilaris                             | 2               | 0.16 |
| Dermatitis herpetiformis                      | 1               | 0.08 |
| Chronic urticaria                             | 2               | 0.16 |
| Lyell syndrome                                | 1               | 0.08 |
| Quincke edema                                 | 1               | 0.08 |
| Acne                                          | 1               | 0.08 |
| Total                                         | 26/1236         |      |

Table 10. Coexistence of psoriasis with other skin diseases.

| Cardiovascular diseases                      | Nr. cases | %    |
|----------------------------------------------|-----------|------|
| Arterial hypertension                        | 124       | 9.92 |
| Cardiac dysrhythmia                          | 18        | 1.44 |
| Ischemic heart disease                       | 20        | 1.16 |
| Total                                        | 162/1236  |      |

Table 11. Cardiovascular diseases among psoriatic patients involved in the study.

| Thyroid abnormalities                        | Nr. cases | %    |
|----------------------------------------------|-----------|------|
| Autoimmune thyroiditis                       | 1         | 0.08 |
| Thyroidectomy                                | 8         | 0.64 |
| Hypothyroidism                               | 9         | 0.73 |
| Thyroid goiter                               | 3         | 0.24 |
| Thyroid cancer                               | 1         | 0.08 |
| Total                                        | 22/1236   | 1.77 |

Table 12. Coexistence of thyroid abnormalities at patients diagnosed with psoriasis.
2.2.3.6. Comorbidities: psoriasis and tuberculosis

In this transversal study, the incidence of tuberculosis was quantified from the medical history and at the moment of the clinical examination for patients diagnosed with psoriasis. Of the 1236 patients diagnosed with psoriasis, over a period of 8 years (2004–2011) comorbidities were present in 40.78% of cases, and 12 of them (0.97%) had a history of tuberculosis: 5 were men (41.67%), 8 cases of pulmonary tuberculosis (66.67%), 2 pleural effusions (16.67%), 1 genital tuberculosis (8.34%), and 1 case of kerato-conjunctivitis (8.34%). Of the 12 patients with psoriasis and past tuberculosis, 1 had arterial hypertension and chronic nephritis, 1 obesity, 1 erythema nodosum, and 1 with gastric carcinoma (Figure 7).

Psoriasis could represent an independent risk factor for tuberculosis, because a high prevalence was reported in recent studies: 18.0%—Bordignon et al. [37]. In another study, latent tuberculosis infection was more reported in psoriasis (50%) than inflammatory bowel disease patients (24.2%), prior to the onset of any anti-tumor necrosis factor (TNF)-α treatment [38].

2.2.4. Evolution characteristics

2.2.4.1. Severity of lesions in relation to risk factors

The number of psoriatic lesions is in direct relation with the risk factors, including residence, gender, index severity, presence of comorbidities, alcohol intake, smoking, work status, and family history of psoriasis (Table 13).

2.2.4.2. Severity of lesions in relation to risk factors: smoking and psoriasis

Most of the patients enrolled in the study were nonsmokers, by declaration (Figure 8) but there is a significant correlation between the smoking and the severity of the disease ($r = 0.254$, $\chi^2 = 10.49$, $p = 0.00527$, 95% CI).
### Location

|                | Unique lesion |                | Multiple lesions |                |
|----------------|---------------|----------------|------------------|----------------|
|                | Nr. patients  | %              | Nr. patients     | %              |
| Urban residence| 192           | 18.53          | 844              | 81.47          |
| Rural residence| 20            | 10             | 180              | 90             |
| Male gender    | 103           | 15.40          | 566              | 84.60          |
| Female gender  | 109           | 19.22          | 458              | 84.60          |
| Mild psoriasis | 132           | 24.63          | 404              | 75.37          |
| Moderate psoriasis | 65  | 13             | 435              | 87.00          |
| Severe psoriasis | 15    | 7.5            | 185              | 92.50          |
| Comorbidities absent | 135 | 18.44          | 597              | 81.56          |
| Comorbidities present | 77       | 15.28         | 427              | 84.72          |
| Alcohol consumer | 45       | 10.98         | 365              | 89.02          |
| Nonalcohol consumer | 167      | 20.22         | 659              | 79.78          |
| Nonsmoker      | 171           | 19.06          | 726              | 80.94          |
| Smoker         | 41            | 12.09          | 298              | 87.91          |
| Pupil/student  | 45            | 3.64           | 137              | 11.08          |
| Worker         | 130           | 10.52          | 622              | 50.32          |
| Retired        | 20            | 1.62           | 129              | 9.44           |
| Social assisted| 1             | 0.08           | 27               | 2.18           |
| Jobless        | 16            | 1.29           | 109              | 8.82           |
| Family history absent | 150       | 17.22         | 721              | 82.78          |
| First-degree relatives diagnosed with psoriasis | 38 | 19.00 | 162 | 81.00 |
| Second-degree relatives diagnosed with psoriasis | 15 | 13.04 | 100 | 86.96 |
| Third-degree relatives diagnosed with psoriasis | 7  | 19.44 | 29  | 80.56 |
| Fourth-degree relatives diagnosed with psoriasis | 2  | 14.29 | 12  | 85.71 |

**Table 13.** Number of lesions in relation to risk factors (residence, gender, index severity, presence of comorbidities, alcohol intake, smoking, work status, and family history of psoriasis).

#### 2.2.4.3. Severity of lesions in relation to risk factors: alcohol intake (by declaration) and psoriasis

Of 1236 patients with psoriasis, alcohol consumption was declared by 410 persons, representing 33.17% of all (Table 14).
2.2.4.4. Severity of lesions in relation to PASI

The number of psoriasis lesions correlates with (Table 15):

- age at the moment of clinical examination ($F = 8.902, p = 0.0029$);
- residence in rural area ($\chi^2 = 8.589, p = 0.00338$, 95% CI);
- alcohol intake ($\chi^2 = 16.47, p = 0.00005$, 95% CI);
- smoking ($\chi^2 = 8.408, p = 0.00373$, 95% CI);
- occupation: workers/pupils/students ($\chi^2 = 14.11, p = 0.0069$, 95% CI).

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Figure 8. Results of the study: smokers and nonsmokers involved in the study.

| Alcohol consumption | Nr. cases | %   |
|---------------------|-----------|-----|
| Positive            | 410       | 33.17 |
| Negative            | 826       | 66.83 |
| Total               | 1236      |      |

Table 14. Results of the study: number of patients in relation with alcohol consumption.

2.2.4.4. Severity of lesions in relation to PASI

The number of psoriasis lesions correlates with (Table 15):

- age at the moment of clinical examination ($F = 8.902, p = 0.0029$);
- residence in rural area ($\chi^2 = 8.589, p = 0.00338$, 95% CI);
- alcohol intake ($\chi^2 = 16.47, p = 0.00005$, 95% CI);
- smoking ($\chi^2 = 8.408, p = 0.00373$, 95% CI);
- occupation: workers/pupils/students ($\chi^2 = 14.11, p = 0.0069$, 95% CI).
2.2.4.5. **Severity of lesions in relation with topical steroids**

**Topical steroids**: most of the patients were several years treated with steroids topically before presenting to the clinical appointment (**Table 16**).

### 2.3. Correlations with the severity of psoriasis (Risk factors)

Severity index of the disease at the moment of clinical examination (**Table 17**) are as follows:

Within psoriasis patients, 43.37% were diagnosed with mild form of the disease, 40.45% with moderate, and only 16.18% with severe type.

### 2.3.1. Correlations between demographic data and the severity index of psoriasis

#### 2.3.1.1. Gender distribution versus severity index

There is a strong correlation between gender and severity of the disease ($r = 0.378$, $p = 0.00023$, $\chi^2 = 16.706$, $p = 0.00024$, 95% CI) (**Table 18**). Among severe cases, 19.8% were men and only 11.82% women, in comparison with mild cases where 47.62% were women (**Figure 9**).

| Parameter/factor                  | PASI index-correlation | Number of psoriatic lesions-correlation |
|-----------------------------------|------------------------|----------------------------------------|
| Onset age                         | Yes                    | No                                     |
| Age at the moment of clinical examination | Yes        | Yes                                     |
| Gender (male)                     | Yes                    | No                                     |
| Residence in rural area           | Yes                    | Yes                                     |
| History family of psoriasis      | Yes                    | No                                     |
| Presence of comorbidities         | Yes                    | No                                     |
| Alcohol and smoking               | Yes                    | Yes                                     |
| Work status-education             | Retired persons/jobless | Workers/pupils-students                |

**Table 15.** Results of the study: severity of lesions in relation to PASI.

| Topical steroids | Nr. cases | %  |
|-----------------|-----------|----|
| Yes             | 1073      | 86.81 |
| No              | 110       | 8.90  |
| Unknown         | 53        | 4.29  |
| Total           | 1236      |      |

**Table 16.** Results of the study: number of patients treated with topical steroids.
| Type of psoriasis          | Nr. cases | %    |
|---------------------------|-----------|------|
| Severe (PASI > 10)        | 200       | 16.18|
| Moderate (PASI: 3/5–10)   | 500       | 40.45|
| Mild                      | 536       | 43.37|
| Total                     | 1236      |      |

Table 17. Results of the study: severity index of the disease.

| Psoriasis severity | Gender of the patient | Total |
|--------------------|-----------------------|-------|
|                    | Male                  | Female|       |
| Mild               | 266                   | 270   | 536   |
|                    | 39.76%                | 47.62%|       |
| Moderate           | 270                   | 230   | 500   |
|                    | 40.36%                | 40.56%|       |
| Severe             | 133                   | 67    | 200   |
|                    | 19.88%                | 11.82%|       |
| Total              | 669                   | 567   | 1236  |

Table 18. Gender distribution versus severity index.

Figure 9. Gender distribution among patients involved in the study.
Our data support a male predominance in all forms of psoriasis (54.13% versus 45.87%) and greater severity in men (Table 19).

2.3.1.2. Age of patients at the moment of clinical examination versus severity index

The mean (medium) age of patients presents important differences reported to the severity of the disease ($F = 45.780$, $p ≪ 0.01$, 95% CI) (Figure 10), with small values for mild cases ($41.11 ± 16.07$ SD) and greater values for severe cases ($53.06 ± 13.82$ SD) (Table 20).

| df = 2 | Chi-square $\chi^2$ | $p$ 95% confidence interval |
|-------|---------------------|-----------------------------|
| Pearson Chi-square $\chi^2$ | 16.70615 | 0.00024 |
| M-L Chi-square | 16.99982 | 0.00020 |
| Correlation coefficient (Spearman Rank $R$) | $-0.378898$ | 0.00023 |

Table 19. Results of the study: correlations between gender distribution and the severity index.

Figure 10. Mean (medium) age of patients at the moment of clinical examination.
Psoriasis is a disease of all ages but predominant around 40 years of age; early psoriasis (manifesting before 40 years of age) is associated with increased severity index, while late psoriasis (manifesting after 40 years of age) appears to be milder (Table 21). We do not see the peak in the age groups 20–30 and 40–50, but there is a quite uniform distribution starting with the age group 20 and ending with age group 60 years old (Figure 11). The most active age group 30–50 years is affected by psoriasis (Table 22).

| Psoriasis | Media age | Media | Dev.std | Er.std | Min | Max | Q25 | Median | Q75 |
|-----------|-----------|-------|---------|--------|-----|-----|-----|--------|-----|
| Severe    | 53.06     | 51.13 | 54.99   | 13.82  | 0.98| 12.00| 88.00| 53.50  | 63.00|
| Moderate  | 45.79     | 44.47 | 47.11   | 15.01  | 0.67| 13.00| 91.00| 45.00  | 57.00|
| Mild      | 41.11     | 39.74 | 42.47   | 16.07  | 0.69| 6.00 | 89.00| 40.00  | 52.00|
| All Groups| 44.94     | 44.05 | 45.82   | 15.84  | 0.45| 6.00 | 91.00| 44.00  | 57.00|

Table 20. Age of patients at the moment of clinical examination versus severity index.

|                          | F (95% confidence interval) | p      |
|--------------------------|------------------------------|--------|
| Levene Test of Homogeneity of Variances | 3.034166                     | 0.048474|
| Brown-Forsythe Test of Homogeneity of Variances | 2.843525                     | 0.058602|
| Test ANOVA               | 45.78075                     | 0.000000|

Table 21. Test ANOVA—results.

Figure 11. Mean (medium) age of patients at the onset of disease.
2.3.1.3. Age of the patients at the onset of psoriasis versus severity index

The first diagnosis of psoriasis was made at the age 10–30 for the most of the patients and the percentage of psoriasis de novo falls with age (Table 23). This could mean that majority of patients were diagnosed previously or they do not seek special care in the older age. Our findings suggest that there is a march over time toward greater severity in the disease.

The medium of age of onset shows statistical differences related to severity of psoriasis ($F = 11.69$, $p = 0.000009$, 95% CI): for mild forms were $27.15 \pm 14.92$ SD (Table 24), for moderate cases $29.95 \pm 15.07$ SD, and for severe cases $33.17 \pm 15.07$ SD (Table 25).

| Psoriasis | Media age | Dev.std | Er.std | Min | Max | Q25 | Median | Q75 |
|-----------|-----------|---------|--------|-----|-----|-----|--------|-----|
| Mild      | 27.15     | 15.20   | 0.70   | 72  | 16  | 25  | 36     |
| Moderate  | 29.95     | 15.07   | 0.70   | 76  | 18  | 27  | 40     |
| Severe    | 33.17     | 14.92   | 1.06   | 70  | 22  | 32  | 43     |
| All groups| 29.34     | 15.24   | 0.45   | 76  | 18  | 27  | 39     |

Table 23. Age of patients at the onset of psoriasis versus severity index.

| Test                  | $F$ (95% confidence interval) | $p$     |
|-----------------------|------------------------------|---------|
| Levene Test of Homogeneity of Variances | 0.108982 | 0.896756 |
| Brown-Forsythe Test of Homogeneity of Variances | 0.060732 | 0.941079 |
| Test ANOVA            | 11.69489                     | 0.000009 |

Table 24. Test ANOVA — results.

| Unequal N HSD test | $p$ (95% confidence interval) |
|---------------------|------------------------------|
| Mild versus moderate| 0.012604                     |
| Mild versus severe  | 0.000029                     |
| Moderate versus severe | 0.032170                   |

Table 25. Results of the unequal N HSD test: correlations between age of patients at the onset of psoriasis and the severity index.
2.3.1.4. Distribution of cases reported to residence/location versus severity index

The present study confirms the higher prevalence of psoriasis in urban area, but mild cases were diagnosed compared with severe and untreated forms seen in people living in rural areas (Figure 12). Explanations can be found in reduced accessibility of people living in villages far away from a specialized medical center; long period of no treatments especially in milder forms considering the disease an esthetic problem rather than a disease; stress-less life, open air activity with many hours of sun bathing/exposure; different nutrition habits (less industrialized and processed food, less meat, and more vegetables), type of water, skin-care practices, tobacco, alcohol, smaller exposure to drugs, and other chemicals (Table 26).

Major association exists between index severity and residence of the patients ($r = 0.319$, $p = 0.0037$, $\chi^2 = 9.507$, $p = 0.0086$, 95% CI). Although the prevalence of psoriasis is higher in urban area, mild cases are diagnosed, severe and untreated forms are seen in people living in rural areas (Table 27).

2.3.1.5. Level of education versus severity index

High level of education was recognized in patients severely affected by psoriasis. Persons in worrying conditions were related to income/job such as retired people, with no income or social-assisted developed severe forms of psoriasis (Table 28).

Figure 12. Residence distribution among patients involved in the study.
| Psoriasis severity | Urban | Rural | Total |
|-------------------|-------|-------|-------|
| Mild              | 469   | 67    | 536   |
|                   | 45.27%| 33.50%|       |
| Moderate          | 406   | 94    | 500   |
|                   | 39.19%| 47.00%|       |
| Severe            | 161   | 39    | 200   |
|                   | 15.54%| 19.50%|       |
| Total             | 1036  | 200   | 1236  |

**Table 26.** Residence versus severity index.

|                        | Chi-square $\chi^2$ | $p$ (95% confidence interval) |
|------------------------|----------------------|------------------------------|
| Pearson Chi-square — $\chi^2$ | 9.507847             | 0.00862                      |
| M-L Chi-square          | 9.698231             | 0.00784                      |
| Correlation coefficient (Spearman Rank $R$) | 0.3191024 | 0.00317 |

**Table 27.** Results of the study: correlations between residence distribution and the severity index.

| Level of education | Psoriasis severity | Total |
|-------------------|--------------------|-------|
|                   | Mild | Moderate | Severe |       |
| Middle school     | 19   | 23       | 12     | 54    |
|                   | 35.19% | 42.59% | 22.22% |       |
| College           | 46   | 72       | 30     | 148   |
|                   | 31.08% | 48.65% | 20.27% |       |
| Vocational school | 13   | 23       | 12     | 48    |
|                   | 27.08% | 47.92% | 25.00% |       |
| High school       | 124  | 158      | 63     | 345   |
|                   | 35.94% | 45.80% | 18.26% |       |
| Postsecondary school | 20 | 15      | 12     | 47    |
|                   | 42.55% | 31.91% | 25.53% |       |
| Students          | 121  | 56       | 5      | 182   |
|                   | 66.48% | 30.77% | 2.75%  |       |
| University graduates | 193 | 153      | 66     | 412   |
|                   | 46.84% | 37.14% | 16.02% |       |
| Total             | 536  | 500      | 200    | 1236  |

**Table 28.** Level of education versus severity index.
Level of education points out a strong correlation with severity \((r = -0.413, p \ll 0.01)\); patients with less than 12 years of school presented more cases with psoriasis type moderate-severe (Table 29). Although high educated persons, with university degree are more often diagnosed with psoriasis, cases are less severe.

Although higher education suggests a higher prevalence of psoriasis, a lower level of education correlates strongly with moderate-severe forms of psoriasis.

Education may be related to multiple confounding factors including alcohol intake, smoking, and access to specialized dermatological care.

2.3.1.6. Jobs distribution/income versus severity index

Among pupils and students, the most frequently diagnosed form of psoriasis was mild one (66.48%), severe disease being reported to only 2.75%, while persons without any occupation presented severe psoriasis 24.16%, respectively, 24% (Table 30). Moderate forms were seen in retired persons (43.62%) and jobless (42.4%). Jobless patients had worse severity \((\chi^2 = 66.67, p \ll 0.01, 95\% \text{ CI})\) (Table 31).

### Table 29. Results of the study: correlations between level of education and the severity index.

| Job                        | Psoriasis severity | Total |
|---------------------------|--------------------|-------|
|                           | Mild   | Moderate | Severe |
| Pupil/student             | 121    | 56       | 5      | 182   |
|                           | 66.48% | 30.77%   | 2.75%  |
| Employee                  | 313    | 316      | 123    | 752   |
|                           | 41.62% | 42.02%   | 16.36% |
| Retired                   | 48     | 65       | 36     | 149   |
|                           | 32.21% | 43.62%   | 24.16% |
| Social assisted           | 12     | 10       | 6      | 28    |
|                           | 42.86% | 35.71%   | 21.43% |
| With no income            | 42     | 53       | 30     | 125   |
|                           | 33.60% | 42.40%   | 24.00% |
| Total                     | 536    | 500      | 200    | 1236  |

### Table 30. Jobs distribution versus severity index.
2.3.2. Correlations between clinical data and the severity index of psoriasis

2.3.2.1. Family history of psoriasis versus severity index

There was a positive family history of psoriasis in 29.53% of subjects, 16.18% first-degree relatives, 9.30% second-degree, 2.91% third-degree, and 1.13% fourth-degree (Table 32).

A family history of psoriasis was associated with greater disease severity ($r = -0.448$, $\chi^2 = 18.32$, $p = 0.01893$, 95% CI) (Table 33).

2.3.2.2. The distribution of (unique/multiple) psoriatic lesions at the moment of clinical inspection versus severity index

The results (Table 34) prove the absence of an important correlation between the severity index and type of lesions at the onset of psoriasis (unique/multiple lesions) ($r = 0.0249$, $p = 0.381$, 95% CI) (Table 35). One can notice that in 19.27% cases of severe psoriasis, patients describe multiple lesions at the first diagnosis (Figure 13).

2.3.3. Correlations between comorbidities and the severity index of psoriasis

2.3.3.1. Presence of general comorbidities versus index severity

Comorbidities were present in 36.1% of patients with mild form of psoriasis, 44.05% with moderate forms, and in 19.64% of severe psoriasis (Figure 14, Table 36).

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### Table 31. Results of the study: correlations between jobs distribution and the severity index.

| df | Chi-square $\chi^2$ | $p$ (95% confidence interval) |
|----|---------------------|-------------------------------|
| Pearson Chi-square — $\chi^2$ | 66.67419 | 0.00000 |
| M-L Chi-square | 73.96201 | 0.00000 |
| Correlation coefficient (Spearman Rank $R$) | 0.3056883 | 0.000 |

### Table 32. Results of the study: family history versus severity index.

| Psoriasis severity | Family history | Total |
|-------------------|----------------|-------|
|                   | Absent | First degree | Second degree | Third degree | Fourth degree |
| Mild | 361 | 95 | 60 | 14 | 6 | 536 |
| Moderate | 368 | 79 | 29 | 19 | 5 | 500 |
| Severe | 142 | 26 | 26 | 3 | 3 | 200 |
| Total | 871 | 200 | 115 | 36 | 14 | 1236 |

### Table 33. Results of the study: correlations between family history and severity index.

### Table 34. Results of the study: distribution of lesions versus severity index.

### Table 35. Results of the study: correlation between unique/multiple lesions and severity index.

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Clinical and Epidemiological Factors Predicting the Severity of Psoriasis

http://dx.doi.org/10.5772/intechopen.68728

151
The results ($r = 0.41$, $\chi^2 = 18.79$, $p = 0.00008$, 95% CI) confirm a strong association between the presence of comorbidities and severity of psoriasis (Table 37).

### 2.3.3.2. Comorbidities: appendectomy versus index severity

Appendectomy (Table 38, Figure 15) does not correlate with severity index of psoriasis ($r = -0.0096$, $\chi^2=0.967$, $p = 0.616$, 95% CI) (Table 39).

### 2.3.4. Correlations between evolution characteristics and the severity index of psoriasis

#### 2.3.4.1. Risk factors: alcohol consumption versus index severity

Severe forms of psoriasis were found in patients with declared chronic alcohol intake (21.22%), while mild forms were depicted within non-consumers (47.94%) (Table 40, Figure 16).
Figure 13. The distribution of (unique/multiple) psoriatic lesions among patients involved in the study.

Figure 14. The distribution of comorbidities among patients involved in the study.
Statistically, a correlation between alcohol intake and index severity is proved \( r = -0.48, \chi^2 = 24.30, p \ll 0.01, 95\% \text{ CI} \) \((\text{Table } 41)\).

### 2.3.4.2. Risk factors: smoking versus index severity

Smokers are prone to severe forms of psoriasis (17.7%), and non-smokers with less severe ones \((\text{Table } 42, \text{Figure } 17)\).

Smoking and severity of psoriasis highly correlate \( r = 0.254, \chi^2 = 10.49, p = 0.00527, 95\% \text{ CI} \) \((\text{Table } 43)\).

### Table 36. Results of the study: comorbidities versus severity index.

| Psoriasis severity | Comorbidities | Total |
|--------------------|---------------|-------|
|                    | Absent        | Present |     |
| Mild               | 353           | 183    | 536  |
|                    | 48.22\%       | 36.31\% |     |
| Moderate           | 278           | 222    | 500  |
|                    | 37.98\%       | 44.05\% |     |
| Severe             | 101           | 99     | 200  |
|                    | 13.80\%       | 19.64\% |     |
| Total              | 732           | 504    | 1236 |

### Table 37. Correlations between comorbidities and severity index.

| df = 2         | Chi-square \( \chi^2 \) | \( p \) (95\% confidence interval) |
|----------------|--------------------------|-----------------------------------|
| Pearson Chi-square—\( \chi^2 \) | 18.79107                | 0.00008                           |
| M-L Chi-square  | 18.86543                 | 0.00008                           |
| Correlation coefficient (Spearman Rank R) | 0.4108901              | 0.00001                           |

### Table 38. Results of the study: (comorbidities) appendectomy versus severity index.

| Psoriasis severity | Appendectomy | Total |
|--------------------|--------------|-------|
|                    | Present      | Absent |     |
| Mild               | 106          | 430    | 536  |
|                    | 41.57\%      | 43.83\% |     |
| Moderate           | 110          | 390    | 500  |
|                    | 43.14\%      | 39.76\% |     |
| Severe             | 39           | 161    | 200  |
|                    | 15.29\%      | 16.41\% |     |
| Total              | 255          | 981    | 1236 |

Statistically, a correlation between alcohol intake and index severity is proved \((r = -0.48, \chi^2 = 24.30, p \ll 0.01, 95\% \text{ CI}) \) (\text{Table } 41)\).
In multivariate analysis, age at the moment of clinical examination ($r = 0.83$, $p \ll 0.01$), age of onset ($r = -0.69$, $p = 0.000053$, 95% CI), education level ($r = -0.588$, $p = 0.0037$), residence ($r = 0.688$, $p = 0.0156$, 95% CI), job ($r = 0.671$, $p = 0.0328$, 95% CI), gender ($r = -0.45$, $p = 0.0394$, 95% CI), and smoking ($r = 0.597$, $p = 0.044$, 95% CI) were significant factors associated with severity of psoriasis (Table 44).
Figure 16. Alcohol consumption among patients involved in the study.

| df = 2 | Chi-square $\chi^2$ | $p$ (95% confidence interval) |
|--------|----------------------|-----------------------------|
| Pearson Chi-square — $\chi^2$ | 24.30044 | 0.00001 |
| M-L Chi-square | 24.36224 | 0.00001 |
| Correlation coefficient (Spearman Rank $R$) | $-0.489582$ | 0.000 |

Table 41. Correlations between alcohol consumption and severity index.

| Psoriasis severity | Smoking | Total |
|--------------------|---------|-------|
|                    | Nonsmoker | Smoker |       |
| Mild               | 414      | 122    | 536   |
|                    | 46.15%   | 35.99% |       |
| Moderate           | 343      | 157    | 500   |
|                    | 38.24%   | 46.31% |       |
| Severe             | 140      | 60     | 200   |
|                    | 15.61%   | 17.70% |       |
| Total              | 897      | 339    | 1236  |

Table 42. Results of the study: smoking versus severity index.
Figure 17. Smoking among patients involved in the study.

$$\chi^2$$

| df = 2                  | Chi-square $\chi^2$ | $p$ (95% confidence interval) |
|-------------------------|----------------------|------------------------------|
| Pearson Chi-square—$\chi^2$ | 10.49251             | 0.00527                      |
| M-L Chi-square          | 10.60180             | 0.00499                      |
| Correlation coefficient (Spearman Rank $R$) | 0.252514             | 0.00417                      |

Table 43. Correlations between smoking and severity index.

| Partial correlation psoriasis severity versus | Confidence interval (Beta) | Std.Err. (Beta) | $B$ | Std.Err. B | t   | $p$ (95% confidence interval) |
|----------------------------------------------|-----------------------------|-----------------|-----|------------|-----|------------------------------|
| Intercept                                   | −4.43329                    | 10.37951        | −0.42712 | 0.669374   |
| Gender                                      | −0.45016                    | 0.031288        | −0.9429 | 0.04574    | −2.06153 | 0.039482                     |
| Age at the moment of clinical examination    | 0.831591                    | 0.048523        | 0.1777 | 0.00226    | 7.86419 | 0.000000                     |
| Age of onset                                | −0.692912                   | 0.047558        | −0.922 | 0.00227    | −4.05634 | 0.000053                     |
| Multiple lesions                            | 0.023369                    | 0.028032        | 0.06017 | 0.07217    | 0.83367 | 0.404642                     |
| Education                                   | −0.588659                   | 0.030502        | −0.3359 | 0.01156    | −2.90666 | 0.003725                     |
| Job                                         | 0.67100                     | 0.031403        | 0.4553 | 0.02131    | 2.13671 | 0.032836                     |
3. Conclusion

Our study has several strengths.

First of all, the study includes a high number of patients with psoriasis followed over a period of 8 years: 1236 persons were enrolled in the study.

Second, over a period of 8 years, detailed and updated information regarding a large variety of factors throughout the cohort follow-up was collected, thus allowing data correlation between psoriasis and various factors and/or different comorbidities.

Third, correlation between psoriasis and different factors permitted the investigation of potential associations over long durations such as the analysis of the association of psoriasis with several different comorbidities, demographic data, psoriasis severity.

Some limitations of this study include the following: it was performed only on Caucasians from predominantly the same region in Romania; therefore, generalizing the results to other ethnicities may be partial.

The study was conducted in an outpatient clinic specialized for psoriasis over a period of 8 years, so an increased number of patients diagnosed with psoriasis earlier had to self-report medical history with a small proportion of missing data. Despite this retrospective characteristic, the recall and the high completion rate for all questions on psoriasis were highly accurate.

Psoriasis is a common chronic systemic disease (not a simple skin disorder), spread worldwide, with a reported prevalence varying from 0.09 to 11.43% [39]. Psoriasis can touch any age, with a great variability: from 6 to 91 years old. The number of years should not be a reason for medical advice restriction.

This complex disease, with unknown cause, has many trigger factors, unpredictable course, severe comorbidities, and a great impact on quality of life. Further research is needed to identify these comorbidities and to take into consideration when evaluating the burdens of psoriasis such as costs, impact on quality of life, and integration of psoriatic patient in the society, therefore to be able to recommend the best management and treatment.

| Partial correlation psoriasis severity versus | Confidence interval (Beta) | Std.Err. (Beta) | B | Std.Err. B | t | p (95% confidence interval) |
|---------------------------------------------|--------------------------|----------------|---|-----------|---|--------------------------|
| Location                                    | 0.68837                  | 0.028427       | 0.3510 | 0.05579 | 2.42157 | 0.015611                   |
| Family history                              | −0.013668                | 0.028332       | −0.01158 | 0.02400 | −0.48244 | 0.629586                   |
| Comorbidities                               | −0.034033                | 0.028512       | −0.00023 | 0.00019 | −1.19362 | 0.232876                   |
| Alcohol                                     | −0.052250                | 0.033016       | −0.8041 | 0.05081 | −1.58256 | 0.113803                   |
| Smoking                                     | 0.59732                  | 0.029716       | 0.9691 | 0.04821 | 2.01006 | 0.044662                   |

Table 44. Multivariable analysis of factors implicated in severity of psoriasis.
Clinical and Epidemiological Factors Predicting the Severity of Psoriasis
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Author details
Anca Chiriac¹, Cristian Podoleanu²* and Doina Azoicai³
*Address all correspondence to: podoleanu@me.com

1 University of Medicine and Pharmacy “Grigore T. Popa”, Iasi, Romania
2 Cardiology Department, University of Medicine and Pharmacy of Târgu Mureș, Targu Mures, Romania
3 Epidemiology Department, University of Medicine and Pharmacy “Grigore T. Popa”, Iasi, Romania

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