Chapter 7

Clinical and Epidemiological Factors Predicting the Severity of Psoriasis

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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 complied 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]), hyperglyceridemia (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 ± 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**).

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

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

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.

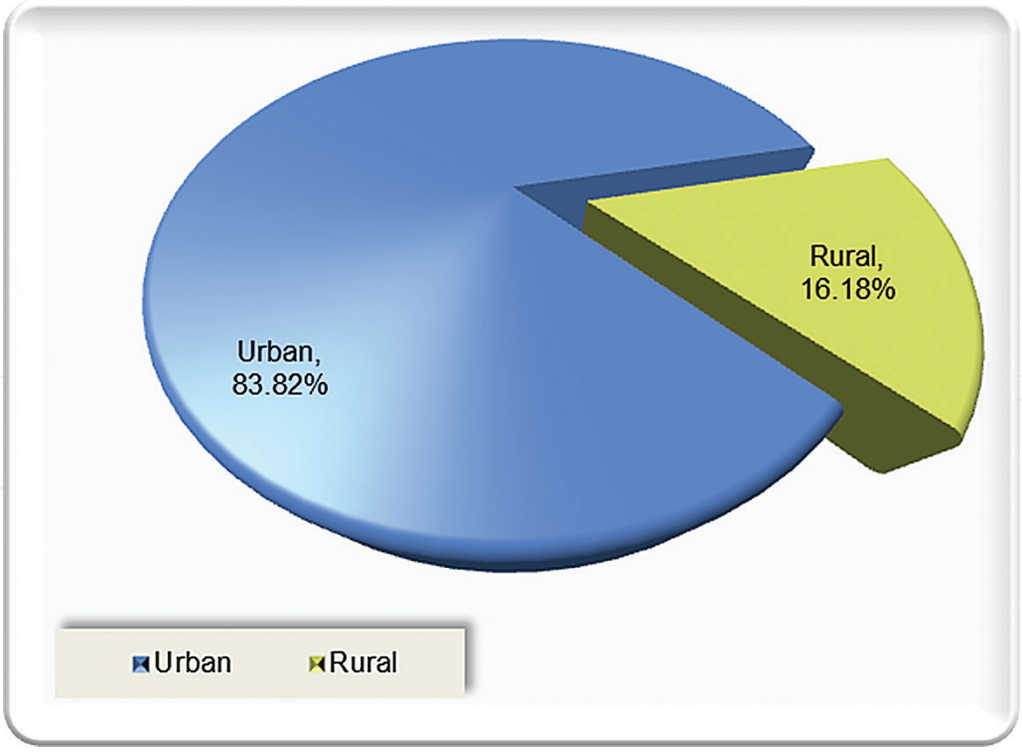

Figure 1. Results of the study: distribution of cases reported to residence.

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.

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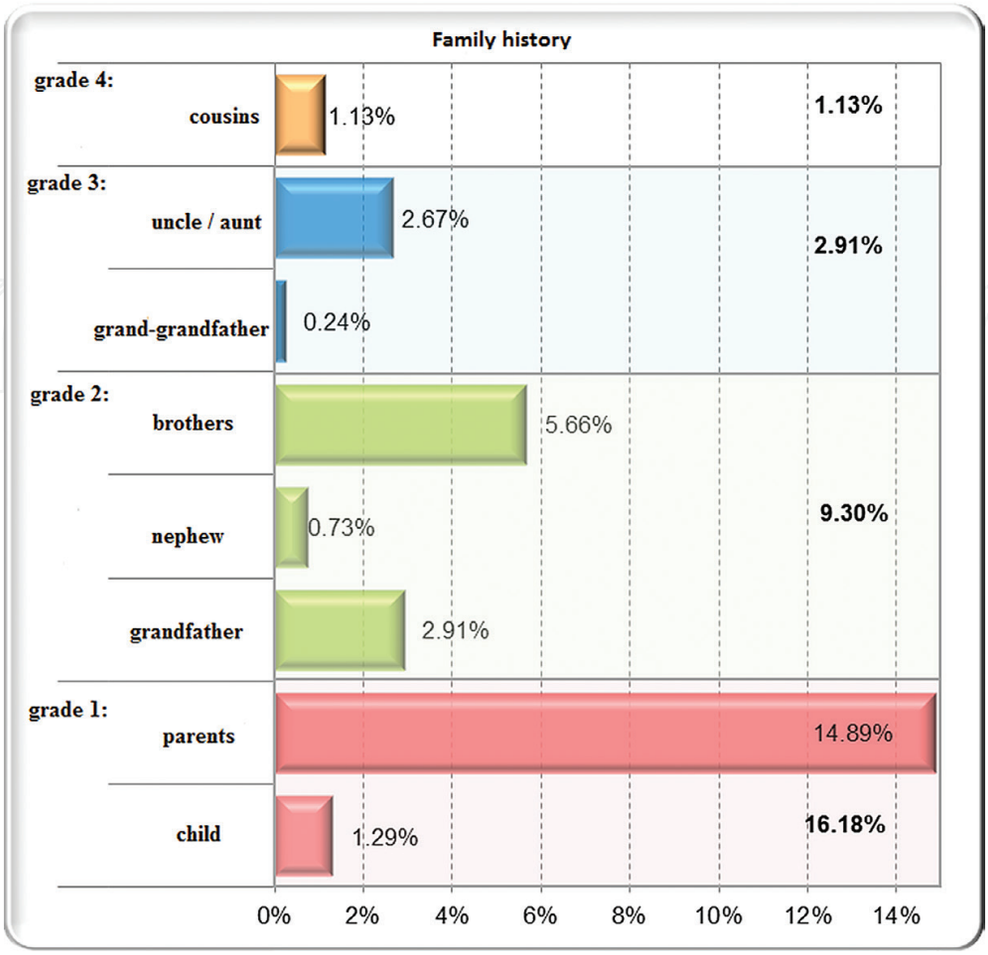

Figure 2. Results of the study: family history reported.

Onset age (years)	Nr. cases	%
Age ≤10	104	8.41
10 < age ≤19	263	21.28
Over 20	869	70.31

Table 3. Results of the study: age of the patients at the onset of 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**):

	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.

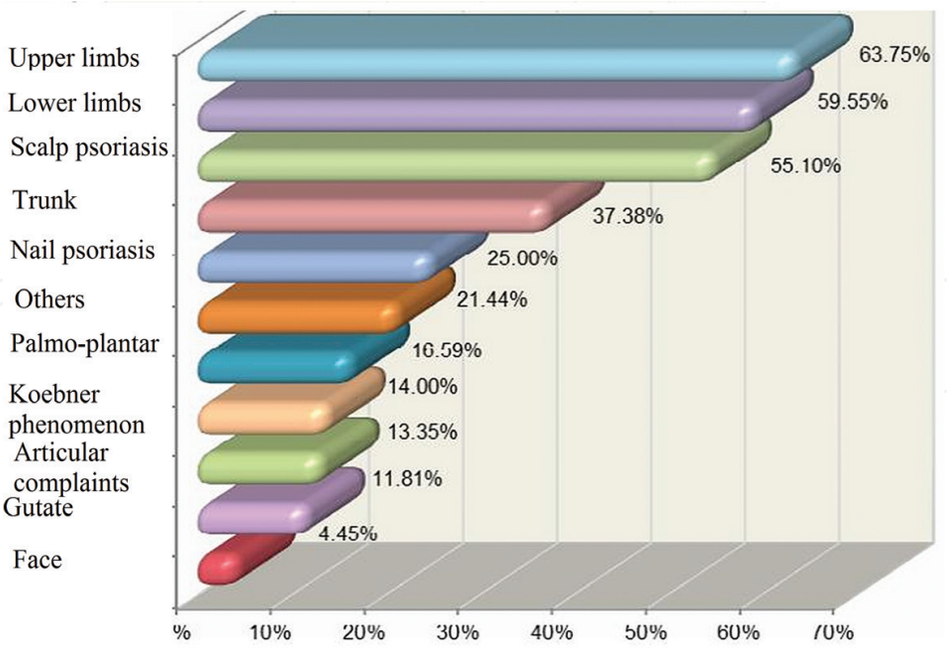

Figure 3. Distribution of multiple skin lesions at the moment of clinical inspection.

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!

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.

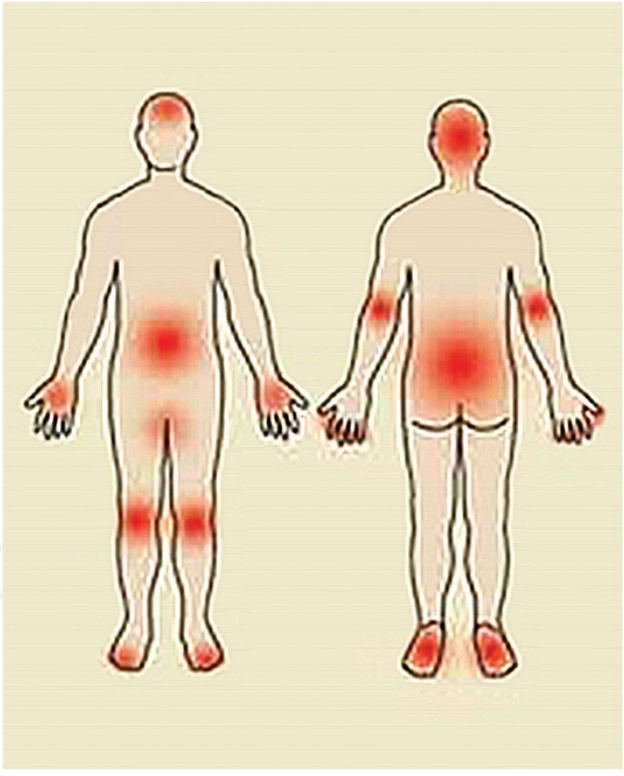

Figure 4. Body areas frequently involved.

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, feet	4	0.32

Onset *unique lesion*	Nr. cases	%	Associations of *multiple lesions* at the onset of evaluation	Nr. cases	%
			Dorsal aspects of the hands, face	1	0.08
			Plantar, abdomen	1	0.08
			Cervical, retroauricular	1	0.08
Total	1127		Total	109	

Table 6. Number of areas involved.

Onset location	Location at the moment of examination		Total
	Unique location	Multiple locations	
ONSET: unique location	197	930	1127
	15.94%	75.24%	
ONSET: multiple location	15	94	109
	1.21%	7.61%	
Total	212	1024	1236

Table 7. The number of psoriatic lesions found in time of diagnosis as compared with the number found at clinical inspection.

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].

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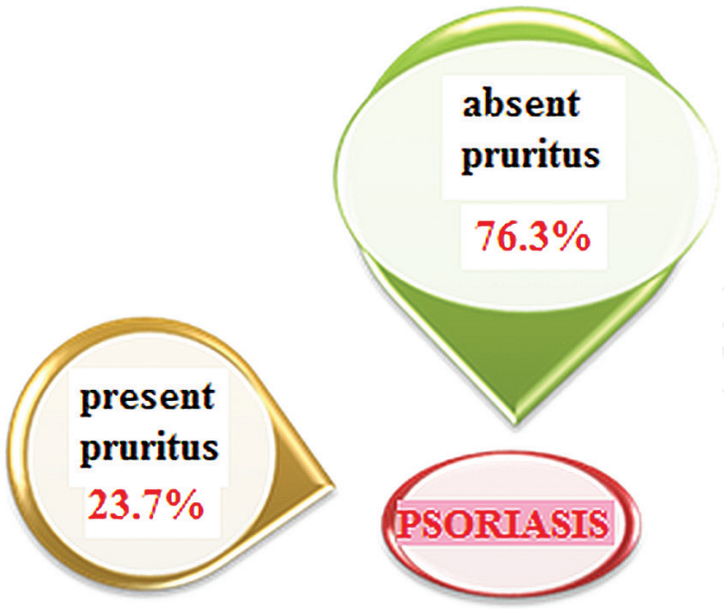

Figure 5. Results of the study: pruritus and psoriasis.

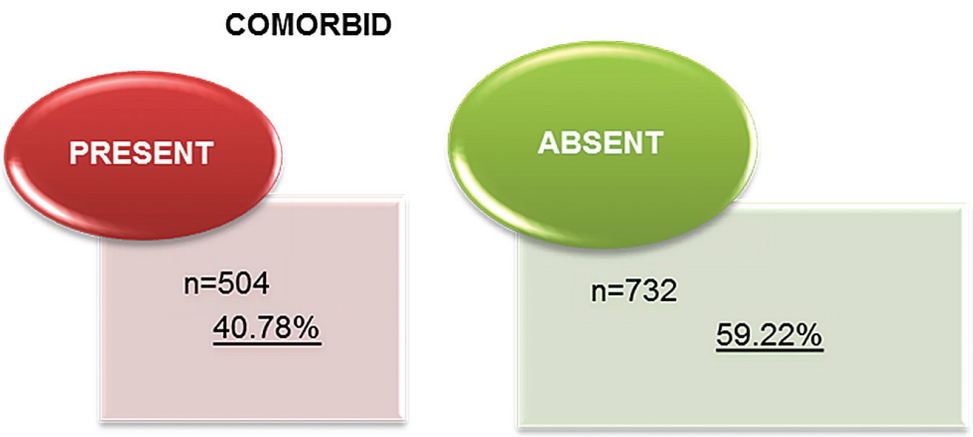

Figure 6. The number of patients with present/absent comorbidities at the moment of diagnosis and/or in their medical history.

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 dysrhythmia	18	1.44	Quincke edema	1	0.08	Hay fever	1	0.08
Ischemic heart disease	20	1.16	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	Chronic cholecystitis	8	0.65
Chronic hepatitis B	10	0.08	Hysterectomy	1	0.08	Biliary lithiasis	4	0.32
Chronic hepatitis C	7	0.56	Ovarectomy	6	0.49	Renal lithiasis	9	0.73
Toxic chronic hepatitis	28	2.24	Inguinal hernia	5	0.40	Chronic pyelonephritis	2	0.16
Liver cirrhosis	2	0.16	Megacolon surgery	1	0.08	Enuresis	1	0.08
Hepatic steatosis	3	0.24	Ischemic stroke	5	0.40	Chronic glomerulonephritis	1	0.08
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 ectopia	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 hypocalcemia	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	Vestibular disorder	1	0.08
Vitiligo	10	0.80	Blepharitis	1	0.08	Secondary amenorrhea	1	0.08
			Retinopathy	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).

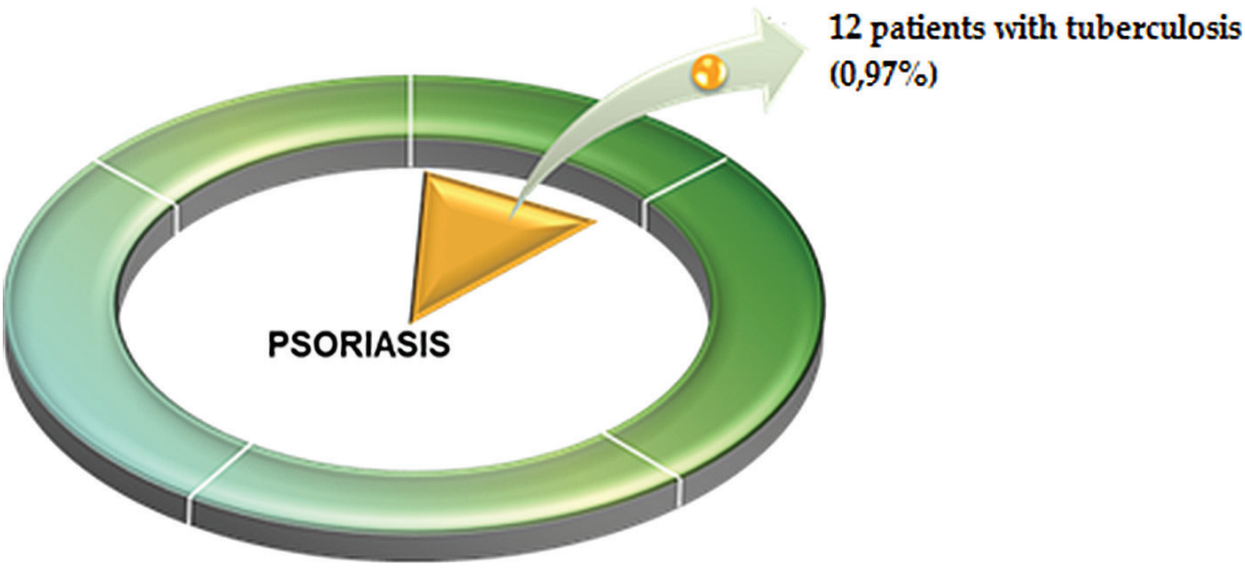

Figure 7. Tuberculosis among psoriatic patients involved in the study.

	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	10.44
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**).

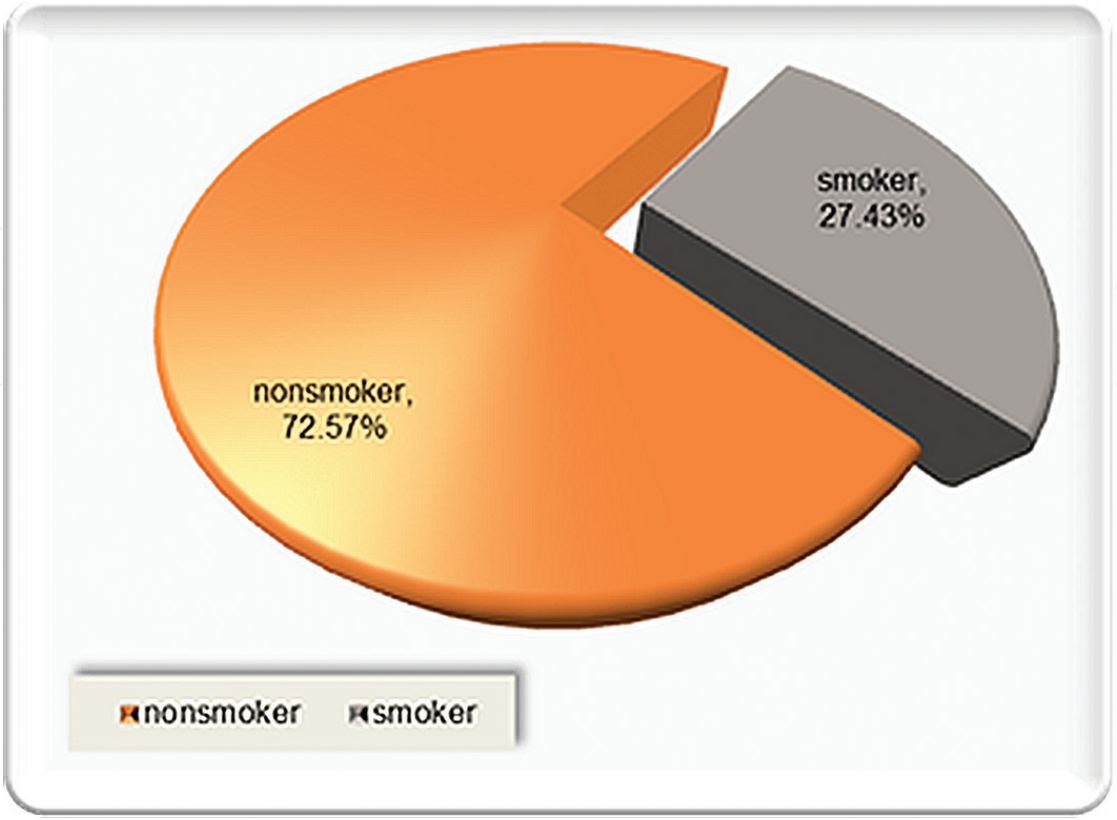

Figure 8. Results of the study: smokers and nonsmokers involved in the study.

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.

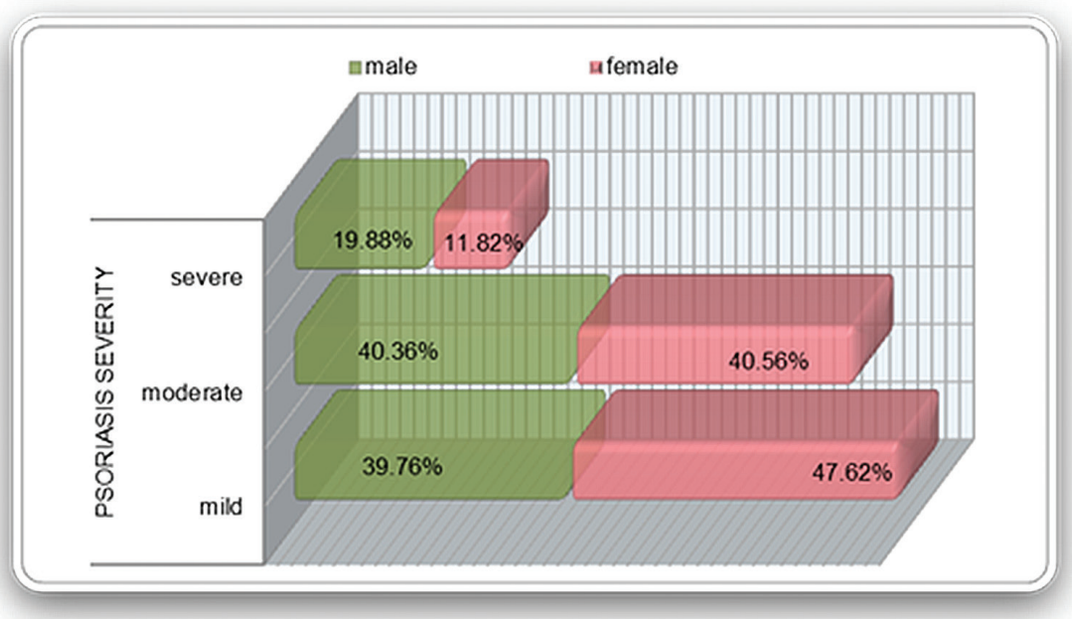

Figure 9. Gender distribution among patients involved in the study.

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 ($F = 45.780$, $p \ll 0.01$, 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 χ^2**	***p* 95% *confidence interval***
Pearson Chi-square—χ^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.

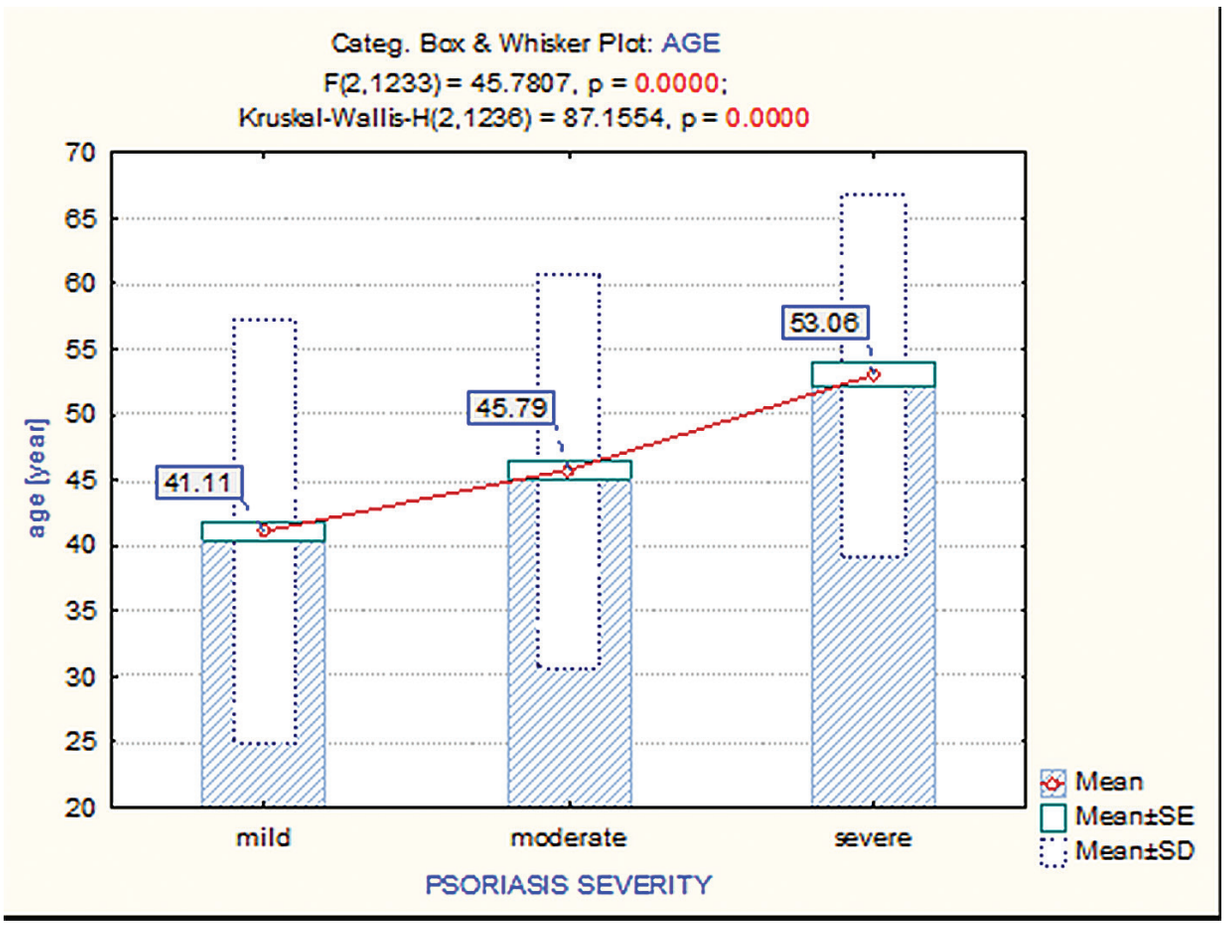

Figure 10. Mean (medium) age of patients at the moment of clinical examination.

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
		−95%	+95%							
Severe	53.06	51.13	54.99	13.82	0.98	12.00	88.00	43.50	53.50	63.00
Moderate	45.79	44.47	47.11	15.01	0.67	13.00	91.00	34.00	45.00	57.00
Mild	41.11	39.74	42.47	16.07	0.69	6.00	89.00	29.00	40.00	52.00
All Groups	44.94	44.05	45.82	15.84	0.45	6.00	91.00	33.00	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.

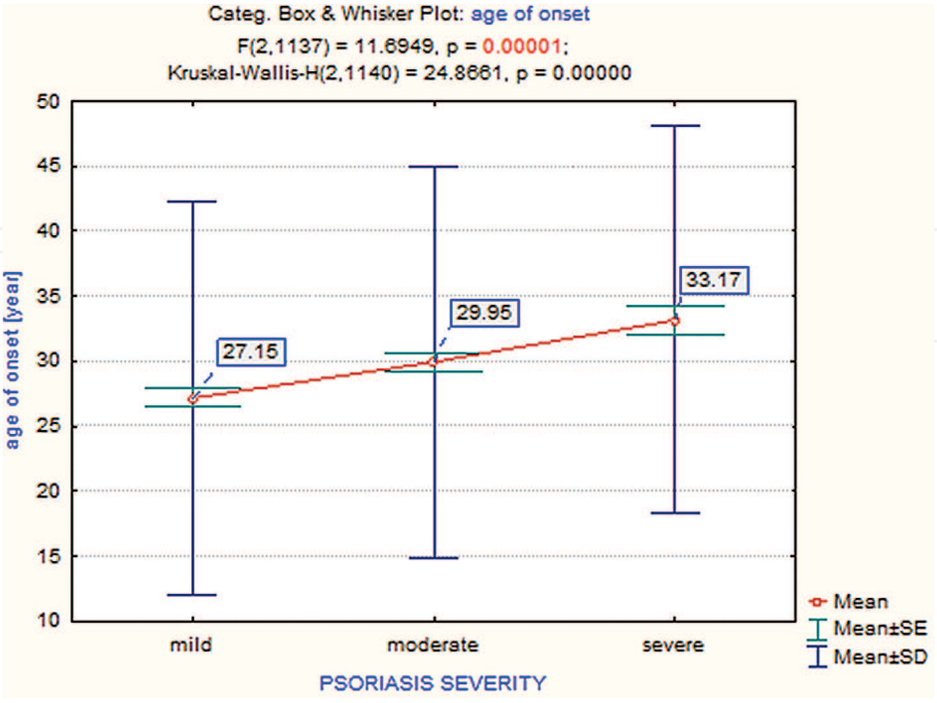

Figure 11. Mean (medium) age of patients at the onset of disease.

Unequal N HSD test	*p* (95% *confidence interval*)
Mild versus moderate	0.000025
Mild versus severe	0.000022
Moderate versus severe	0.000027

Table 22. Results of the unequal N HSD test: correlations between age of patients and the severity index.

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 ± 14.92 SD (**Table 24**), for moderate cases 29.95 ± 15.07 SD, and for severe cases 33.17 ± 15.07 SD (**Table 25**).

Psoriasis	Media age	Media		Dev.std	Er.std	Min	Max	*Q*25	Median	*Q*75
		–95%	+95%							
Mild	27.15	25.79	28.52	15.20	0.70	1.00	72.00	16.00	25.00	36.00
Moderate	29.95	28.58	31.32	15.07	0.70	0.50	76.00	18.00	27.00	40.00
Severe	33.17	31.07	35.26	14.92	1.06	3.00	70.00	22.00	32.00	43.00
All groups	29.34	28.45	30.22	15.24	0.45	0.50	76.00	18.00	27.00	39.00

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

	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**).

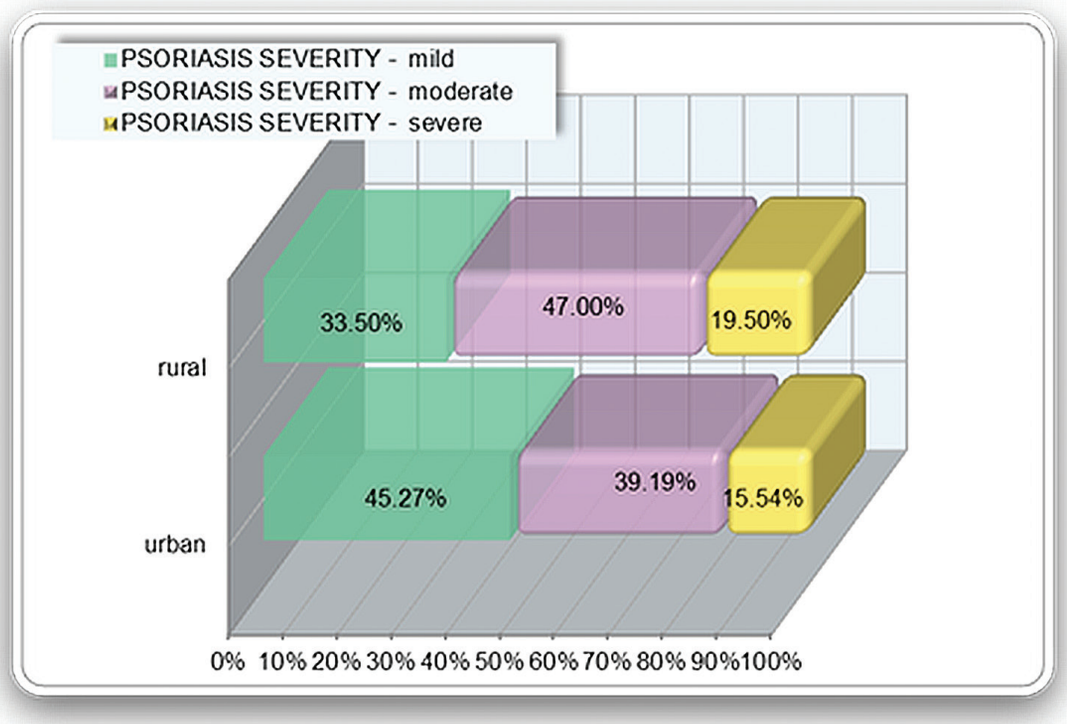

Figure 12. Residence distribution among patients involved in the study.

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.

df = 2	Chi-square χ^2	*p* (95% *confidence interval*)
Pearson Chi-square—χ^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% CI) (**Table 31**).

df = 12	**Chi-square χ^2**	***p* (95% *interval de încredere*)**
Pearson Chi-square—χ^2	77.51211	0.00000
M-L Chi-square	85.73127	0.00000
Correlation coefficient (Spearman Rank *R*)	−0.4139638	0.00000

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.

df = 8	Chi-square χ^2	*p* (95% *confidence interval*)
Pearson Chi-square—χ^2	66.67419	0.00000
M-L Chi-square	73.96201	0.00000
Correlation coefficient (Spearman Rank *R*)	0.3056883	0.000

Table 31. Results of the study: correlations between jobs distribution and the 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, χ^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**).

Psoriasis severity	Family history					Total
	Absent	First degree	Second degree	Third degree	Fourth degree	
Mild	361	95	60	14	6	536
	41.45%	47.50%	52.17%	38.89%	42.86%	
Moderate	368	79	29	19	5	500
	42.25%	39.50%	25.22%	52.78%	35.71%	
Severe	142	26	26	3	3	200
	16.30%	13.00%	22.61%	8.33%	21.43%	
Total	871	200	115	36	14	1236

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

df = 8	**Chi-square χ^2**	***p* (95% *confidence interval*)**
Pearson Chi-square—χ^2	18.32477	0.01893
M-L Chi-square	19.13866	0.01414
Correlation coefficient (Spearman Rank *R*)	−0.44809	0.011536

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

Psoriasis severity	**Onset location of psoriasis**		**Total**
	Unique location	**Multiple locations**	
Mild	492	44	536
	43.66%	40.37%	
Moderate	456	44	500
	40.46%	40.37%	
Severe	179	21	200
	15.88%	19.27%	
Total	1127	109	1236

Table 34. Results of the study: distribution of psoriatic lesion(s) versus severity index.

df = 2	**Chi-square χ^2**	***p* (95% *confidence interval*)**
Pearson Chi-square—χ^2	0.9511274	0.62154
M-L Chi-square	0.9196143	0.63141
Correlation coefficient (Spearman Rank *R*)	0.0249217	0.38135

Table 35. Correlations between the distribution of (unique/multiple) psoriatic lesions and the severity index.

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**).

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

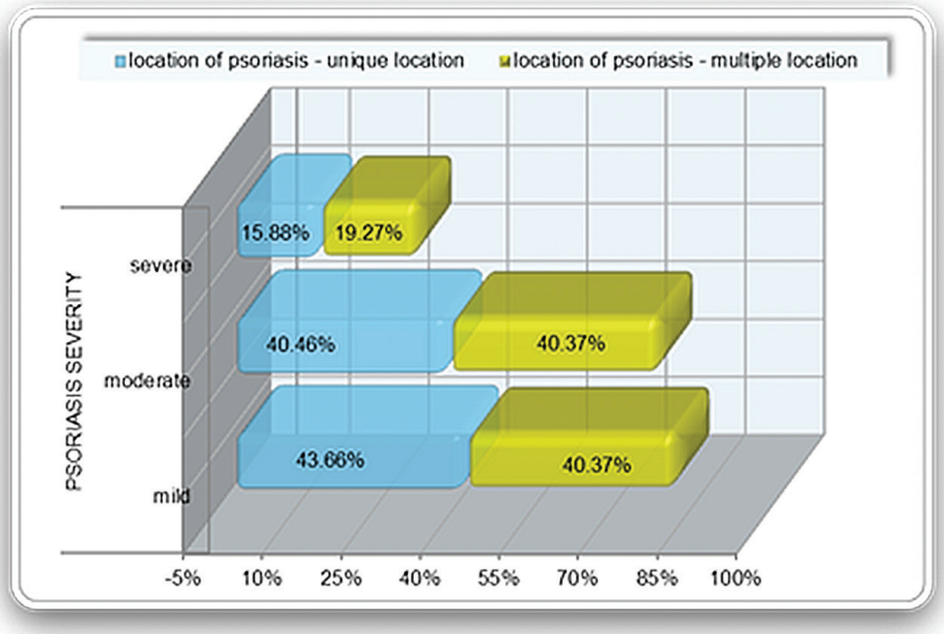

Figure 13. The distribution of (unique/multiple) psoriatic lesions among patients involved in the study.

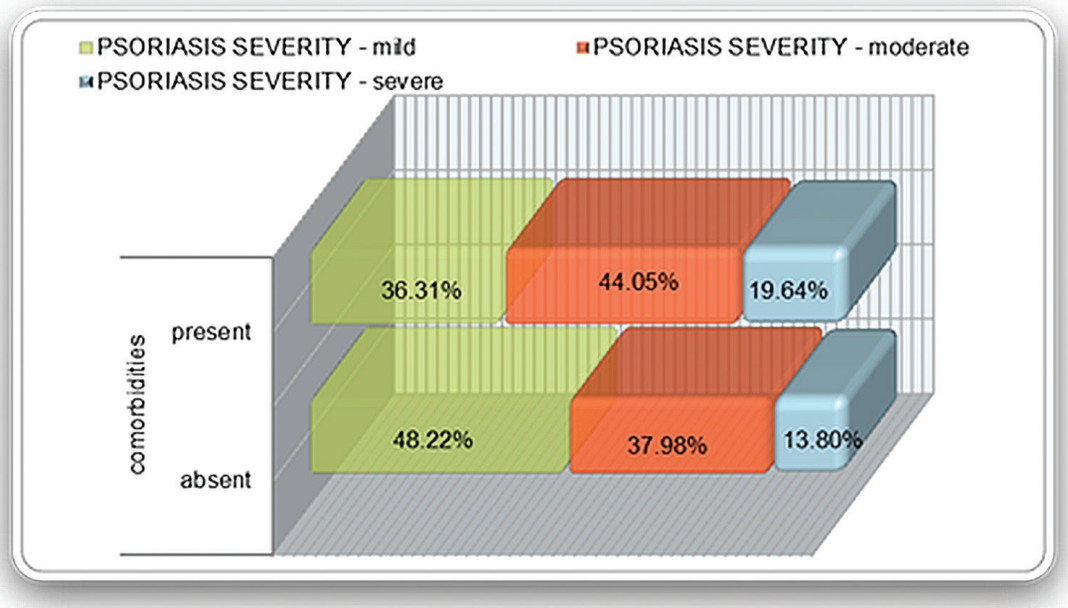

Figure 14. The distribution of comorbidities among patients involved in the study.

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

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

Table 37. Correlations between comorbidities and 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

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

Statistically, a correlation between alcohol intake and index severity is proved ($r = -0.48$, $\chi^2 = 24.30$, $p \ll 0.01$, 95% CI) (**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 (**Table 42**, **Figure 17**).

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

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

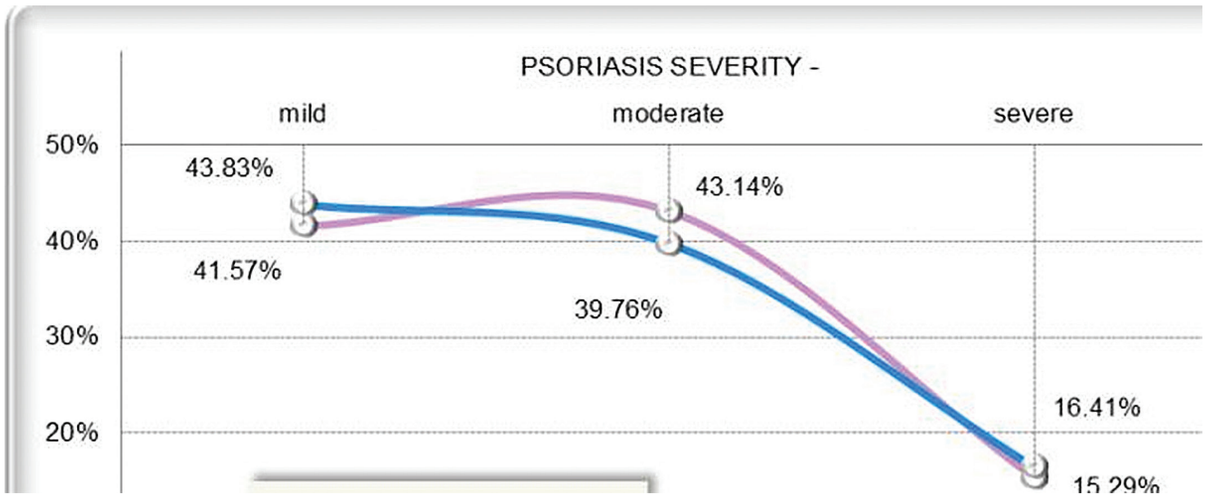

Figure 15. Number of patients with appendectomy among patients involved in the study.

df = 2	**Chi-square χ^2**	***p* (95% *confidence interval*)**
Pearson Chi-square—χ^2	0.9677348	0.61640
M-L Chi-square	0.9633761	0.61774
Correlation coefficient (Spearman Rank *R*)	−0.009627	0.73528

Table 39. Correlations between number of patients with appendectomy and severity index.

Psoriasis severity	**Alcohol consumption**		**Total**
	Declared	**Not declared**	
Mild	140	396	536
	34.15%	47.94%	
Moderate	183	317	500
	44.63%	38.38%	
Severe	87	113	200
	21.22%	13.68%	
Total	410	826	1236

Table 40. Results of the study: alcohol consumption versus severity index.

2.3.5. Multivariable analysis of factors implicated in severity of psoriasis

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**).

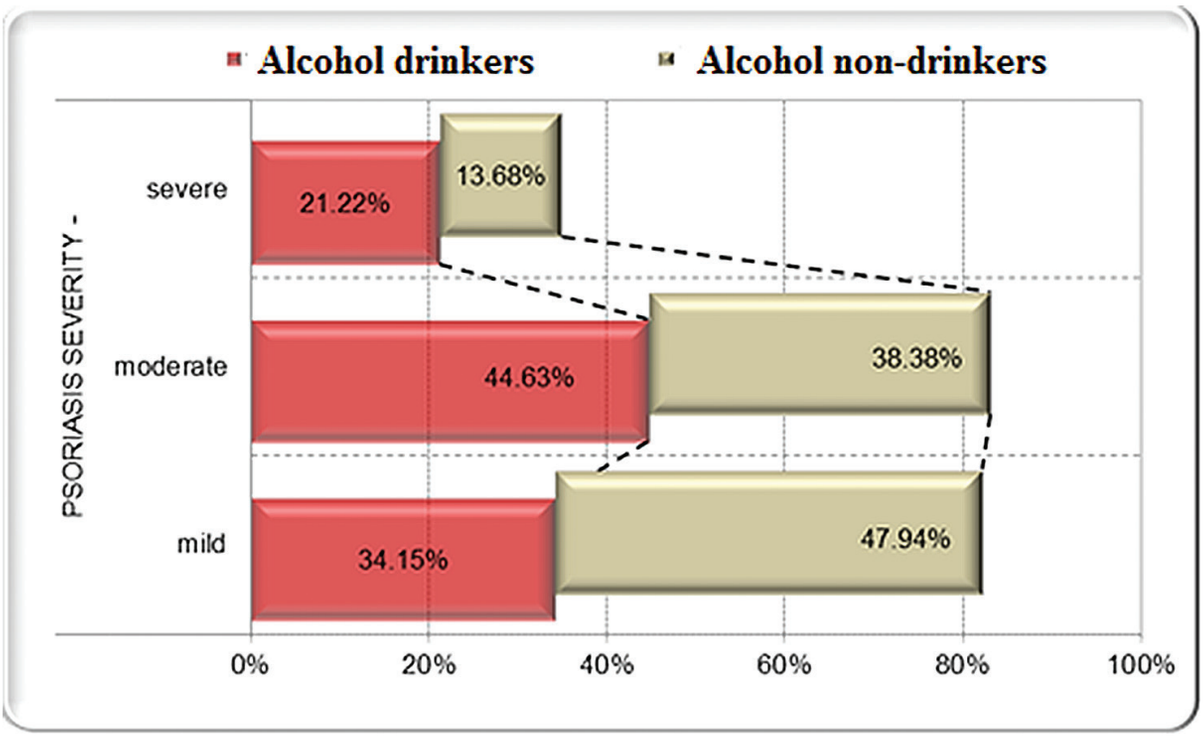

Figure 16. Alcohol consumption among patients involved in the study.

df = 2	**Chi-square χ^2**	***p* (95% *confidence interval*)**
Pearson Chi-square—χ^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.

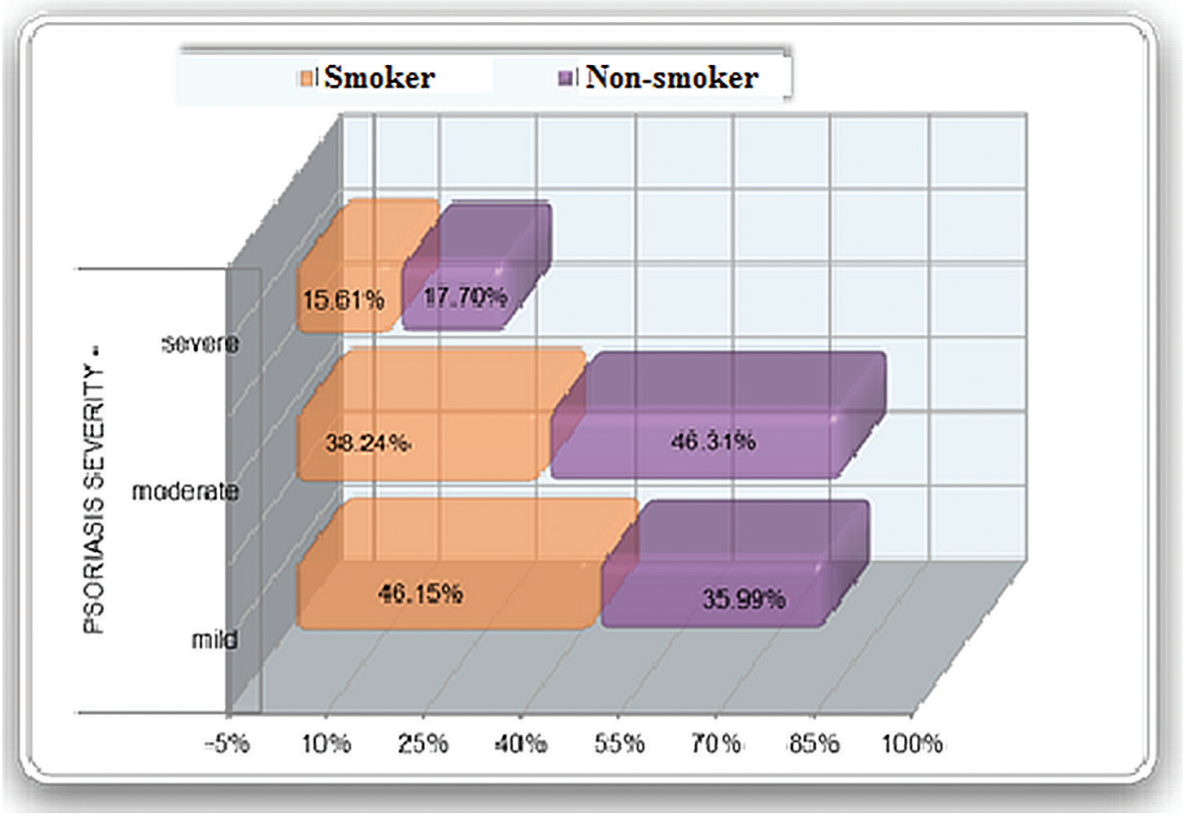

Figure 17. Smoking among patients involved in the study.

df = 2	**Chi-square χ^2**	***p* (95% *confidence interval*)**
Pearson Chi-square—χ^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

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.

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.

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References

[1] Langan SM, Seminara NM, Shin DB, Troxel AB, Kimmel SE, Mehta NN, et al. Prevalence of metabolic syndrome in patients with psoriasis: A population-based study in the United Kingdom. Journal of Investigative Dermatology. 2012;**132**:556-562

[2] Langley R, Krueger G, Griffiths C. Psoriasis: Epidemiology, clinical features, and quality of life. Annals in Rheumatic Diseases. 2005;**64**:ii18–ii23

[3] Nestle FO, Kaplan DH, Barker J. Psoriasis. New England Journal of Medicine. 2009;**361**: 496-509

[4] Wade AG, Crawford GM, Young D, Leman J, Pumford N. Severity and management of psoriasis within primary care. BMC Family Practice, BMC Series. 2016;**17**:145. DOI: 10.1186/s12875-016-0544-6

[5] Nelson PA, Barker Z, Griffiths CEM, Cordingley L, Chew-Graham CA. 'On the surface': A qualitative study of GPs' and patients' perspectives on psoriasis. BMC Family Practice. 2013;**14**:158-167

[6] Mattei Peter L, Corey Kristen C, Kimball Alexa B. Cumulative life course impairment: Evidence for psoriasis. In: Linder MD, Kimball AB, editors. Dermatological Diseases and Cumulative Life Course Impairment. Current Problems in Dermatology. Vol. 44. Basel, Karger; 2013. pp. 82-90. DOI: 10.1159/000350008

[7] Brezinski EA, Dhillon JS, Armstrong AW. Economic burden of psoriasis in the United States: A systematic review. Journal of American Medical Association Dermatology. 2015;**151**(6):651-658. DOI: 10.1001/jamadermatol.2014.3593

[8] Tsai TF, Wang TS, Hung ST, Tsai PI, Schenkel B, Zhang M, Tang CH.Epidemiology and comorbidities of psoriasis patients in a national database in Taiwan. J Dermatol Sci. 2011 Jul;**63**(1):40-6. doi: 10.1016

[9] Akaraphanth R, Kwangsukstid O, Gritiyarangsan P, Swanpanyalert N. Psoriasis registry in public health hospital. Journal of the Medical Association of Thailand. 2013;**96**(8):960-966

[10] Yeung H, Takeshita J, Mehta NN, Kimmel SE, Ogdie A, Margolis DJ, Shin DB, Attor R, Troxel AB, Gelfand JM. Psoriasis severity and the prevalence of major medical comorbidity: A population-based study. Journal of American Medical Association Dermatology. 2013 Oct;**149**(10):1173-1179

[11] Callis DK, Gottlieb AB. Outcome measures for psoriasis severity: A report from the GRAPPA 2012 Annual Meeting. Rheumatology. 2013 Aug;**40**(8):1423-1424

[12] Na SJ, Jo SJ, Youn JI. Clinical study on psoriasis patients for past 30 years (1982-2012) in Seoul National University Hospital Psoriasis Clinic. Journal of Dermatology. 2013;40(9):731-735

[13] Keshavarz E, Roknsharifi S, Shirali Mohammadpour R, Roknsharifi M. Clinical features and severity of psoriasis: A comparison of facial and nonfacial involvement in Iran. Archives of Iranian Medicine. 2013;**16**(1):25-28

[14] Bahcetepe N, Kutlubay Z, Yilmaz E, Tuzun Y, Eren B. The role of HLA antigens in the aetiology of psoriasis. Medicinski Glasnik (Zenica). 2013;**10**(2):339-342

[15] Richard MA, Barnetche T, Horreau C, Brenaut E, Pouplard C, Aractingi S, Aubin F, Cribier B, Joly P, Jullien D, Le Maître M, Misery L, Ortonne JP, Paul C. Psoriasis, cardiovascular events, cancer risk and alcohol use: Evidence-based recommendations based on systematic review and expert opinion. Journal of the European Academy of Dermatology and Venereology. 2013;**27**(Suppl 3):2-11

[16] Feldman S. A quantitative definition of severe psoriasis for use in clinical trials. Journal of Dermatological Treatment. 2004;**15**:27-29

[17] Schmitt J, Wozel G. The psoriasis area and severity index is the adequate criterion to define severity in chronic plaque-type psoriasis. Dermatology. 2005;**210**:194-199

[18] Kwon HH, Na SJ, Jo SJ, Youn JI. Epidemiology and clinical features of pediatric psoriasis in tertiary referral psoriasis clinic. Journal of Dermatology. 2012 Mar;**39**(3):260-264

[19] Raychaudhuri SP, Gross J.A comparative study of pediatric onset psoriasis with adult onset psoriasis. Pediatric Dermatology. 2000 May–Jun;**17**(3):174-178

[20] Tollefson MM, Crowson CS, McEvoy MT, Maradit Kremers H. Incidence of psoriasis in children: A population-based study. Journal of the American Academy of Dermatology. 2010 Jun;**62**(6):979-987

[21] Mahé E, Maccari F, Beauchet A, Lahfa M, Barthelemy H, Reguiaï Z, Beneton N, Estève E, Chaby G, Ruer-Mulard M, Steiner HG, Pauwels C, Avenel-Audran M, Goujon-Henry C, Descamps V, Begon E, Sigal ML; GEM Resopso. Childhood-onset psoriasis: Association with future cardiovascular and metabolic comorbidities. British Journal of Dermatology. 2013 Oct;**169**(4):889-895

[22] Stefanaki C, Lagogianni E, Kontochristopoulos G, Verra P, Barkas G, Katsambas A, Katsarou A. Psoriasis in children: A retrospective analysis. Journal of European Academy of Dermatology and Venereology. 2011 Apr;**25**(4):417-421

[23] de Jager ME, de Jong EM, Meeuwis KA, van de Kerkhof PC, Seyger MM. No evidence found that childhood onset of psoriasis influences disease severity, future body mass index or type of treatments used. Journal of European Academy of Dermatology and Venereology. 2010 Nov;**24**(11):1333-1339

[24] Papadavid E, Katsimbri P, Kapniari I, Koumaki D, Karamparpa A, Dalamaga M, Tzannis K, Boumpas D, Rigopoulos D. Prevalence of psoriatic arthritis and its correlates among patients with psoriasis in Greece: Results from a large retrospective study. Journal of European Academy of Dermatology and Venereology. 2016;**30**:1749-1752. DOI: 10.1111/jdv.13700

[25] Mease P, Goffe BS. Diagnosis and treatment of psoriatic arthritis. Journal of American Academy of Dermatology. 2005;**52**:1-19

[26] Prey S, Paul C, Bronsard V, et al. Assessment of risk of psoriatic arthritis in patients with plaque psoriasis: a systematic review of the literature. Journal of European Academy of Dermatology and Venereology. 2010;**24**:31-35

[27] Estebaranz JL, Zarco MP, Samaniego ML, Garcia Calco C. Prevalence and clinical features of psoriatic arthritis in psoriasis patients on Spain. Limitations of PASE as a screening tool. European Journal of Dermatology. 2015;**25**:57-63

[28] Mease PJ, Gladmann DD, Papp KA, et al. Prevalence of rheumatologist diagnosed psoriatic arthritis in patients with psoriasis in European/North American dermatology clinics. Journal of the American Academy of Dermatology. 2013;**69**:729-735

[29] Reich K, Kruger K, Mossner R, Augustin M. Epidemiology and clinical pattern of psoriatic arthritis in Germany: A retrospective interdisciplinary epidemiological study of 1511 patients with plaque type psoriasis. British Journal of Dermatology. 2009;**160**:1040-1047

[30] Marco G, Cattaneo A, Battafarano M, et al. Not simply a matter of psoriatic arthritis: Epidemiology of rheumatic diseases in psoriatic patients. Archives of Dermatological Research. 2012;**304**:719-726

[31] Henes JJ, Ziupa E, Eisfeder M, et al. High prevalence of psoriatic arthritis in dermatological patients with psoriasis: A cross sectional study. Rheumatology International. 2014;**34**:227-234

[32] Alamanos Y, Papadopoulos NG, Voulgari PV, et al. Epidemiology of psoriatic arthritis in northwest Greece, 1982-2001. Journal of Rheumatology. 2003;**30**:2641-2644

[33] Trontzas P, Andranakos A, Miyakis S, et al. Seronegative spondyloarthropathies in Greece: A population based study of prevalence, clinical pattern, and management. The ESORDIG study. Clinical Rheumatology. 2005;**24**:583-589

[34] Chiu HY, Chang WL, Huang WF, et al. Increased risk of arrhythmia in patients with psoriatic disease: A nationwide population-based matched cohort study. Journal of the American Academy of Dermatology. September 2015;**73**(3):429-438

[35] Mehta NN, Yu Y, Pinnelas R, et al. Attributable risk estimate of severe psoriasis on major cardiovascular events. American Journal of Medicine. 2011;**124**:775.e1-775.e6

[36] Mehta NN, Azfar RS, Shin DB, Neimann AL, Troxel AB, Gelfand JM. Patients with severe psoriasis are at increased risk of cardiovascular mortality: Cohort study using the General Practice Research Database. European Heart Journal. 2010;**31**:1000-1006

[37] Bordignon V, et al. High prevalence of latent tuberculosis infection in autoimmune disorders such as psoriasis and in chronic respiratory diseases, including lung cancer. Biological Regulators and Homeostatic Agents. 2011 Apr–Jun;**25**(2):213-220

[38] Bassukas ID, Kosmidou M, Gaitanis G, Tsiouri G, Tsianos E. Patients with psoriasis are more likely to be treated for latent tuberculosis infection prior to biologics than patients with inflammatory bowel disease. Acta Dermato-Venereologica. 2011 Jun;**91**(4):444-446

[39] WHO Library Cataloguing-in-Publication Data. Global report on psoriasis.World Health Organization 2016. ISBN 978 92 4 156518 9 Available from: www.who.int