Doctoral School in Medical Sciences

With manuscript title
C.Z.U: 616.72-002:616.517-02(043.2)

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COMORBIDITIES IN PSORIATIC ARTHRITIS

321.04 – RHEUMATOLOGY

Summary of Doctor of Medical Sciences Thesis

Chișinău, 2025

The thesis was developed at the Discipline of Rheumatology and Nephrology

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The defense will take place on 03.12.2025, at the premises of SUMPh "Nicolae Testemițanu", 165 Ștefan cel Mare și Sfânt blvd., 165, office 204, at 14.00at the meeting of the Commission for public defence of the doctoral thesis, approved by the decision of the Scientific Council of the Consortium on 17.06.2025 (minutes no. 14).

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INTRODUCTION

Relevance and Importance of the Topic. Psoriatic arthritis (PsA), also known as psoriatic arthropathy, is interpreted by various authors either as a distinct disease or as a co-occurrence of two conditions: cutaneous psoriasis and arthritis. Psoriasis affects approximately 2% of the population in Europe and North America, with arthritis manifesting in 6% to 39% of psoriasis patients. Recent European studies (EuroPSO) report a 30% co-occurrence of cutaneous psoriasis and arthritis, whereas in the U.S.A., this figure is around 11% [10, 18].

PsA leads to chronic joint damage and dysfunction, with significant medical and social costs, and increased morbidity *and* mortality. Erosive and destructive joint lesions are present in 40–60% of patients[10, 14]. Clinical features, particularly those of clinical subtypes linked to immune status and genetic predisposition are not fully elucidated. Although the etiology and pathogenesis of PsA remain unclear, genetic predisposition, immune system factors, and environmental influences are considered key triggers [2, 3, 8, 19].

PsA is a heterogeneous inflammatory arthritis associated with cutaneous psoriasis and classified among the seronegative spondyloarthropathies. It affects both the axial skeleton and peripheral joints and manifests through enthesitis and dactylitis [1, 23]. In addition to joint and skin involvement, PsA is associated with numerous immunopathologically mediated extra-articular manifestations, affecting multiple organ systems. Studies indicate that PsA patients often present with associated comorbidities such as cardiovascular diseases, obesity and metabolic syndrome, diabetes, osteoporosis, malignancies, non-alcoholic fatty liver disease, depression, and anxiety [4, 12, 17, 21]. Identifying these comorbidities is crucial to ensuring optimal treatment outcomes.

Both psoriasis and myocardial infarction have been linked to metabolic syndrome, suggesting a potential indirect connection. Psoriasis has recently been proposed as an independent cardiovascular risk factor. In diabetic patients, psoriasis is associated with higher rates of both microvascular and macrovascular complications [5, 12, 15]. PsA patients have higher body mass index (BMI) values compared to those with rheumatoid arthritis or the general population. Metabolic syndrome and insulin resistance are highly prevalent among PsA patients and independently associated with disease severity [7, 11, 23].

Psoriasis and PsA are closely related to immune system status. Significant advances have been made in understanding the molecular and cellular mechanisms of cutaneous psoriasis immunopathogenesis, with emerging insights into PsA. PsA is thought to be a T-cell-dependent pathology, with CD8+ and CD4+ T lymphocytes actively involved in synovial inflammation [3, 12, 20, 28].

The complex relationship between psoriasis, PsA, cardiovascular diseases, and other comorbidities is not fully understood due to limited data. Existing studies suggest that PsA patients exhibit a higher prevalence of cardiovascular, neurological, hepatic, and gastrointestinal comorbidities than those with psoriasis alone [9, 13, 16, 22]. These findings underscore the importance of vigilant management of chronic inflammatory skin and joint diseases to minimize comorbid complications and improve patient outcomes.

In the Republic of Moldova, such studies have not been previously conducted, highlighting the need for local research to better understand the pathology and improve clinical management.

Study aim: to evaluate the impact of comorbidities on clinical severity and quality of life in patients with PsA, by analyzing the relationship between systemic inflammation, clinical parameters, and functional impairment.

Objectives:

1. To analyze the clinical characteristics of arthritis and enthesitis and identify comorbidities in PsA patients: Investigating synovitis and enthesitis distribution and severity based on localization using clinical assessment.
2. To determine associations between clinical and imaging markers of inflammation and disease severity: Exploring the relationships between clinical scores (NAD/14, NAT/14, LEI, MASES, SPARCC), ultrasound indicators (number of synovitis and enthesitis lesions, vascularized entheses), and inflammatory markers (ESR, hs-CRP).
3. To assess the relationship between comorbidities and systemic inflammation severity using clinical, laboratory (hs-CRP, ESR), and imaging methods (Power-Doppler and SMI ultrasound).
4. To evaluate the impact of comorbidities on clinical disease activity and quality of life using standardized scores such as DAPSA, PsAQoL, and SF-36.
5. To identify correlations between the number of comorbidities and physical/mental functional impairment using indicators like HAQ-DI, FACIT-F, and the physical/mental components of SF-36.
6. To examine differences between patients with isolated peripheral arthritis and those with additional axial involvement: Comparing clinical severity, ultrasound scores, quality of life, and functional capacity.

Scientific novelty and originality

This study significantly enhances the understanding of comorbidities in PsA and their impact on clinical, imaging, and quality of life outcomes. Its originality lies in the comparison between PsA and psoriasis-only patients, emphasizing differences in disease progression and the role of comorbidities in clinical severity. The use of Power-Doppler and SMI ultrasound revealed correlations between synovial/entheseal inflammation and systemic inflammation. The study highlighted the association between the number of comorbidities (hypertension, obesity, digestive disorders) and disease severity, underlining the need for a multidisciplinary approach. Quality of life analysis using validated instruments supports the integration of such assessments into clinical practice and the development of personalized therapeutic strategies. This is the first study of its kind conducted in the Republic of Moldova, contributing innovative insights for adapting PsA management to the local population context.

Scientific problems solved in the thesis

The thesis investigates the impact of comorbidities on PsA, highlighting clinical, functional, and imaging differences compared to psoriasis without arthritis. Using advanced clinical-statistical methods and imaging, it demonstrates the frequency of subclinical inflammation and correlations between synovitis, enthesitis, and disease activity, even in the absence of overt clinical symptoms. It establishes connections between comorbidities, anthropometric parameters, and disease severity, as well as a significant influence on quality of life. The results support the need for personalized, multidisciplinary management to optimize treatment and prognosis.

Theoretical significance

The study deepens the understanding of the relationship between systemic inflammation and comorbidities in PsA, demonstrating the influence of inflammation on lipid metabolism and cardiovascular risk. Correlations between cholesterol levels, hs-CRP, and immunological markers enhance insights into pathophysiological mechanisms and the role of modern imaging techniques.

Practical value

The research underscores the impact of inflammation on lipid and cardiovascular profiles in PsA and psoriasis, providing valuable data for personalized disease management. The results support the development of multidisciplinary strategies to reduce metabolic risk and improve clinical guidelines.

Scientific problem addressed

The core scientific issue addressed is the evaluation of comorbidities' impact on the clinical, paraclinical, and imaging characteristics of PsA patients, and establishing the relationship between systemic inflammation, cardiovascular risk, and quality of life, in order to shape personalized management strategies.

Implementation of Results

The data obtained will be implemented in the activities of the Discipline of Rheumatology and Nephrology, at IMSP SCR "Timofei Moșneaga" and IMSP SCM "Sfânta Treime", Chișinău, Republic of Moldova.

Approval of Scientific Results

The thesis results were discussed, approved, and recommended for defense at the meeting of the Discipline of Rheumatology and Nephrology at USMF "Nicolae Testemițanu" (minutes no. 4 of 04.12.2024), and at the specialized scientific seminar in Rheumatology (specialty 321.04), minutes no. 02 of 24.02.2025.

Scientific output

The research findings were disseminated in 31 scientific publications, including 8 articles in nationally accredited journals, 6 articles in category B journals, and 23 abstracts/conference theses presented at national and international scientific conferences. Summary presentations were delivered at 17 conferences.

Structure of the thesis

The thesis comprises 136 pages of text, structured into: introduction, 4 research chapters, conclusions, practical recommendations, bibliography (140 sources), and 15 annexes. It includes 31 tables and 24 figures.

Keywords

Psoriatic arthritis, cutaneous psoriasis, metabolic comorbidities, metabolic syndrome, cardiovascular disease, obesity, diabetes mellitus, systemic inflammation, inflammatory markers, musculoskeletal ultrasound.

Ethical Approval

The study was approved by the **Research Ethics Committee** of the State University of Medicine and Pharmacy "Nicolae Testemițanu" (Approval No. 82 of 19.06.2018). All participants provided informed consent.

THESIS CONTENT

1. CURRENT ADVANCES IN PSORIATIC ARTHRITIS AND COMORBIDITIES

1.1. Etiology and Comorbidities in Psoriatic Arthritis (PsA)

Psoriatic arthritis is a chronic inflammatory disease affecting up to 30% of patients with psoriasis. Comorbidities—especially metabolic and cardiovascular ones—are common and negatively impact prognosis and quality of life. Cardiovascular disease risk increases by up to 55%, driven by systemic inflammation and traditional risk factors such as hypertension (HTN), diabetes mellitus (DM), dyslipidemia, and obesity.
Etiopathogenetic factors include**:** genetic**:** HLA-B27, B38, Cw6, DR7, PSORS loci; infectious**:** *Streptococcus pyogenes*, HIV, *Candida* spp.; immunological and metabolic**:** chronic inflammation, TNF-α activation, decreased DHEA; other factors: trauma, climate, stress, medications (NSAIDs, β-blockers).

1.2. Pathogenetic Mechanisms

Inflammation in PsA is sustained by immune complex formation, complement activation, and leukocyte recruitment. Eicosanoids and free radicals contribute to joint destruction and abnormal ossification. Antioxidant and anti-inflammatory systems (e.g., macrocortin) become insufficient, facilitating disease progression.

1.3. Metabolic Diseases Associated with PsA

Metabolic Syndrome (MetS)**:** prevalence ranges from 24–59%. Components include HTN, obesity, dyslipidemia, and insulin resistance. PsA shows higher MetS prevalence compared to RA

or psoriasis. Type 2 Diabetes Mellitus (T2DM)**:** increased prevalence (~10–20%). Inflammation and obesity are significant contributors. Women with active PsA have higher risk. Hypertension (HTN)**:** prevalence 29–37%, higher than in psoriasis or RA. Correlates with systemic inflammation. Dyslipidemia**:** increased risk of atherogenic lipid profile, associated with CRP and active inflammation. Contributes to subclinical atherosclerosis. Obesity**:** present in >40% of patients. Risk factor for PsA onset and reduces therapy response. Osteoporosis**:** data is limited and conflicting, but PsA is associated with decreased bone mass.

1.4. Impact of Comorbidities on Disease Activity

Comorbidities increase PsA severity, delay diagnosis, and reduce treatment efficacy. Obesity, MetS, and dyslipidemia correlate with higher disease activity (DAPSA, CRP, HAQ).

1.5. Treatment Response Based on Comorbidities

Obesity and MetS lower the rate of achieving minimal disease activity (MDA), increase NSAID requirements, and reduce therapy adherence. Anti-TNF-α agents are less effective in obese patients. IL-17 inhibitors show promise, but data remain limited.

1.6. Impact of PsA Treatment on Metabolic Diseases

Corticosteroids can worsen metabolic status, while biologics (anti-TNF-α, ustekinumab, secukinumab) may have neutral or beneficial effects. Methotrexate (MTX) and apremilast may reduce HbA1c levels.

1.7. Cardiovascular Involvement in PsA

Atherosclerotic Coronary Artery Disease**:** myocardial infarction risk increases by 43–68%, even independent of traditional CV risk factors. Systemic inflammation plays a central role. Other Cardiac Disorders**:** conduction abnormalities (AV block, atrial fibrillation), heart failure with preserved ejection fraction (HFpEF), and diastolic dysfunction are more common in PsA than in the general population. Treatment Effects on CV Risk**:** anti-TNF-α agents reduce cardiovascular risk by ~30%. Data on IL-12/23 and IL-17 agents indicate cardiovascular safety, but long-term studies are lacking.

Cardiovascular Risk Management in PsA

Monitoring and controlling risk factors (HTN, DM, dyslipidemia, obesity) is essential. Screening should include imaging methods (carotid ultrasound, coronary scoring). Patient education and interdisciplinary collaboration (rheumatologist–cardiologist–nutritionist) are recommended.

Other Relevant Comorbidities in PsA

Inflammatory Bowel Disease (IBD)**:** commonly associated with PsA, especially Crohn's disease. Etanercept is ineffective in IBD. Autoimmune Ocular Involvement**:** uveitis is the most frequent. Biological treatment should be adjusted accordingly. Liver Disease**:** Non-alcoholic fatty liver disease (NAFLD) is common and may worsen with methotrexate. Requires close hepatic monitoring. Malignancy**:** no significant increase in overall cancer risk. Data regarding biologics are generally favorable. Depression and Anxiety: affect >30% of patients. Associated with pain, disability, and fatigue. Anti-TNF-α agents may alleviate affective symptoms. Fibromyalgia**:** prevalent (~50%). Can mimic enthesitis, complicating disease activity assessment.

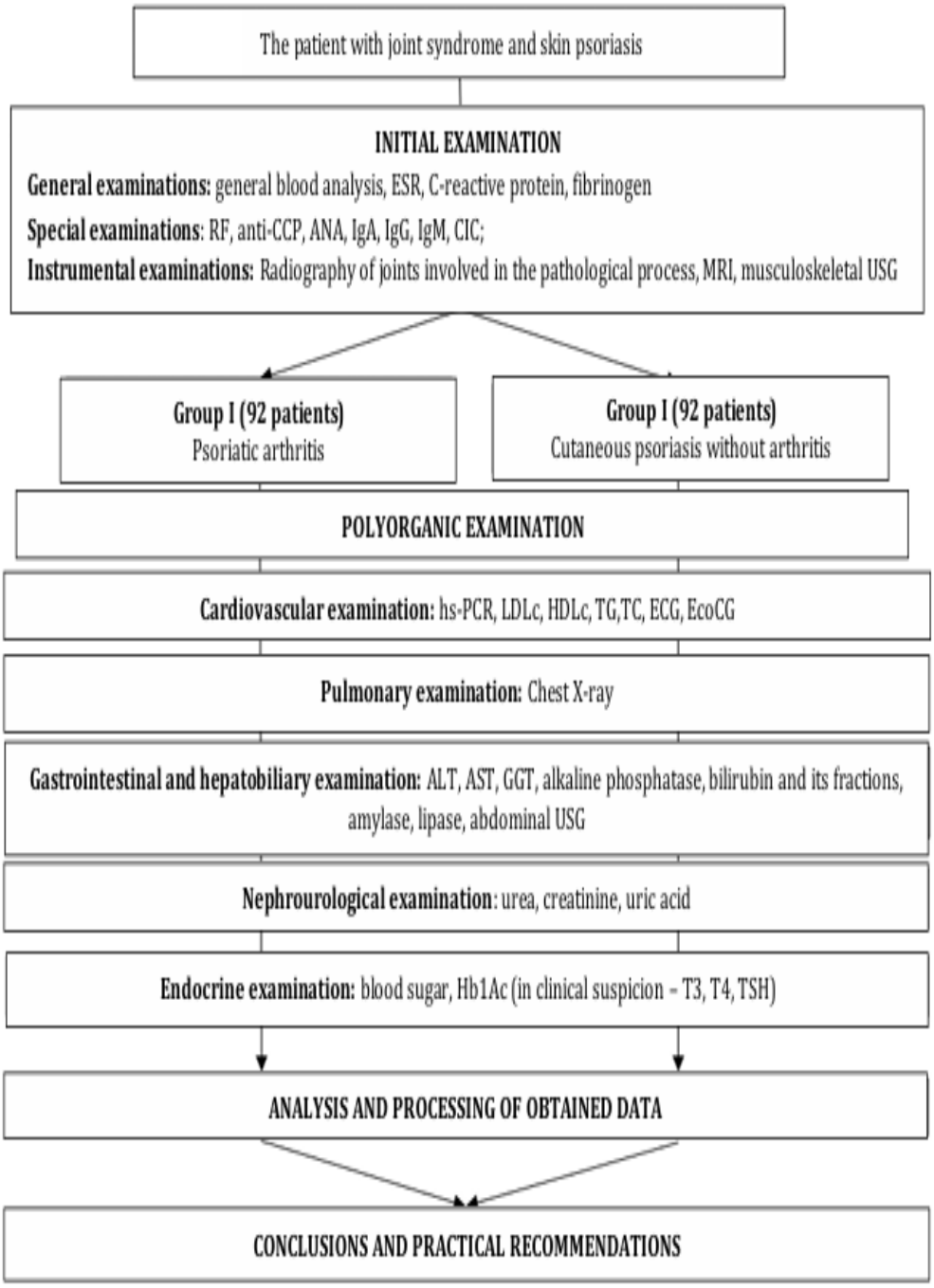
Psoriatic arthritis is a complex systemic disease characterized by chronic inflammation and frequently associated with multiple metabolic and cardiovascular comorbidities. These comorbidities negatively influence disease progression and treatment response, justifying the need for a personalized, multidisciplinary therapeutic approach. Early identification and effective management of these conditions can reduce morbidity, disability, and mortality in PsA patients.

2. CLINICAL-STATISTICAL CHARACTERISTICS AND RESEARCH METHODOLOGY

2.1. Clinical and Demographic Characteristics of the Study Group

To achieve the aim and objectives of the study, a general cohort of 184 patients was selected, consisting of 92 patients with psoriatic arthritis (PsA) - diagnosed according to the CASPAR criteria (2006) - and 92 patients in a control group with psoriasis (PSO) but without

psoriatic arthritis. The patients received treatment in the Departments of Rheumatology and Arthrology at the *Timofei Moşneaga Republican Clinical Hospital* and the *Sfânta Treime Municipal Clinical Hospital* in Chișinău, as well as at the Republican Dermatovenerologic Dispensary**,** during the years 2017–2019**.** In order to meet the research objectives, a type 1 cohort study (prospective study with retrospective components) was designed (see Fig. 1).



Inclusion Criteria:

- Age between 18 and 65 years;
- Confirmed diagnosis of psoriatic arthritis (PsA) (using the two-step AMOR/CASPAR criteria);
- Diagnosis of cutaneous psoriasis, confirmed by a dermatologist;
- Patient consent to participate in the study.

Exclusion Criteria:

- Presence of other rheumatic diseases (inflammatory or autoimmune), aside from SpA/PsA;
- Presence of decompensated diseases (cardiovascular, hepatic, renal) that preceded the onset of SpA/PsA;
- Age <18 or >65 years (due to the increased incidence of metabolic and degenerative disorders).

The **diagnosis of psoriatic arthritis** was established based on diagnostic criteria developed by the working group led by Taylor W. and Gladman D. (2009) [6], who defined and proposed the new CASPAR criteria (*Classification of Psoriatic Arthritis*, International Multicentre Validation of Diagnostic Criteria for Psoriatic Arthritis).

Global disease assessment: Both **the patient and the physician** assessed disease activity on a **scale from 0 to 10** (0 = inactive, 10 = active), with scores ranging from **6 to 10**. These assessments are helpful in evaluating the active phase of the disease and adjusting the treatment plan accordingly.

Preclinical evaluation: Blood pressure was measured in a standardized manner (after 5–10 minutes of rest), on both arms, determining SBP (systolic, Korotkoff phase I) and DBP (diastolic, Korotkoff phase V). These data were used to identify comorbidities and individualize treatment. The mean age of patients with PsA was 42.9 ± 9.6 years. The median duration of psoriasis was 11 (7; 25.8) years, and the median duration of PsA was 7 (2; 11.8) years. Among the patients included in the study, there were 42 men (45.7%) and 50 women (54.3%). Patient characteristics are presented in Table 1.

Table 1. Characteristics of patients with PsA (Psoriatic Arthritis)

Parameter	**Values**
Men, n (%)	42 (45.7%)
Women, n (%)	50 (54.3%)
Age, years, mean ± SD, min–max	42.9 ± 9.6, 22–60
Duration of PsA, years, median (IQR)	7 (2; 11.8)
DAPSA, median (IQR)	15.2 (10.2; 21.4)
Skin psoriasis, n (%)	91 (98.9%)
Duration of psoriasis, years, median (IQR)	11 (7; 25.8)
PASI, median (IQR)	3.8 (1.2; 9.6)
Psoriatic onychodystrophy, n (%)	26 (28.3%)
NAPSI, median (IQR)	24 (0; 69.8)
Body mass index (BMI), kg/m², mean ± SD	27 ± 4.7
Waist circumference (WC), cm, median (IQR)	95 (82.8; 104)
Hip circumference (HC), cm, median (IQR)	102.5 (95.3; 109.8)
WC/HC ratio, median (IQR)	0.9 (0.8; 1)
Tender joint count (NAD/14), median (IQR)	1 (0; 3)
Swollen joint count (NAT/14), median (IQR)	0 (0; 2)
hs-CRP, g/L, median (IQR)	5.1 (2.2; 16.1)
ESR, mm/h, median (IQR)	20 (11; 30)

A positive family history of psoriasis was identified in 31 patients (33.7%)**.** At the time of inclusion in the study, 19 patients (20.6%) had disabilities**,** of whom 15 (16.3%) had disabilities due to PsA**,** and 4 (4.3%) had a general medical condition**.** The distribution of patients according to PsA activity based on the DAPSA index (*Disease Activity in Psoriatic Arthritis*) was as follows: moderate activity (14–28): 33 patients (42%), high activity (>28): 13 patients (16%), low activity (4–14): 30 patients (38%), remission (<4): 3 patients (4%). The distribution of patients according to cutaneous psoriasis activity**,** based on the PASI index (*Psoriasis Area and Severity Index*), was: remission: 7 patients (8%), mild activity: 57 patients (68%), moderate activity: 9 patients (11%), severe activity: 11 patients (13%) (*Figure 3*)

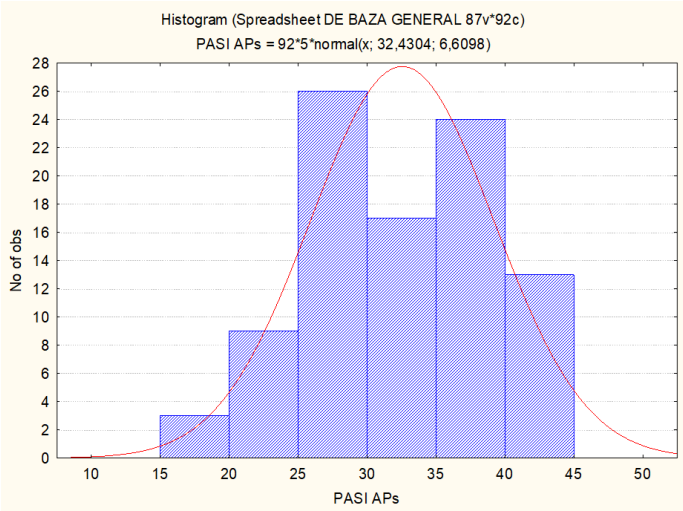


Figure 3. Distribution of patients according to the severity of skin involvement, expressed by the PASI index

According to the clinical and instrumental methods used in the study, the distribution of patients based on peripheral joint and spinal involvement was as follows: polyarthritis was observed in 63 patients (68.5%), oligoarthritis – in 19 patients (20.7%), monoarthritis – in 10 patients (10.9%), axial manifestations**,** including: sacroiliitis – in 30 patients (32.6%), spondylitis – in 23 patients (25%). A combination of sacroiliitis and spondylitis – in 13 patients (14.1%) (*Figure 4*). No patients had isolated axial **involvement**.

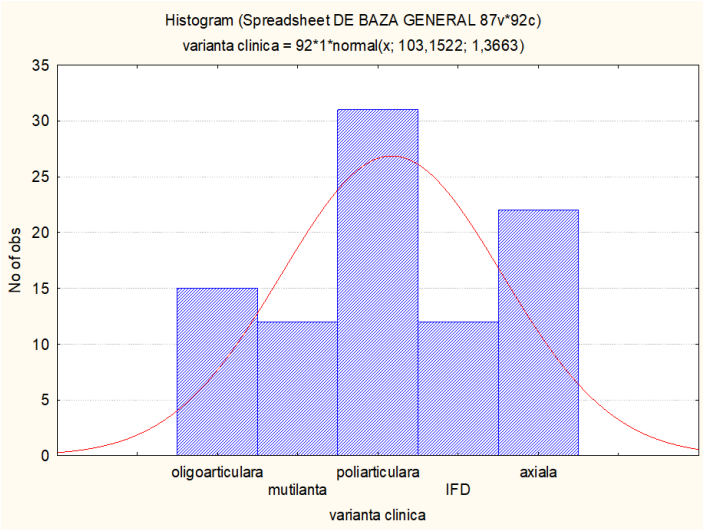


Figure 4. Distribution of patients according to the clinical variants of Psoriatic Arthritis (PsA)

To ensure the validity of the data obtained in the study, a control group was included, consisting of 92 patients with psoriasis (PSO) without psoriatic arthritis (PsA). The distribution of patients according to age, sex, and other demographic parameters was similar to that of the PsA group. The characteristics of the PSO patients are presented below, together with a summary of the methods used for their assessment. Demographic and clinical characteristics: mean age: 43.2 ± 9.3 years (range: 21–60 years), comparable to the PsA group; mean disease duration: 11 (7; 24.5) years, also similar to the PsA group; sex distribution: males – 44 (47.8%) and females – 48 (52.2%). In contrast to the PsA group, patients with PSO showed no evidence of articular or axial involvement. Both groups were statistically balanced regarding age, sex, and psoriasis duration, ensuring a valid comparison of outcomes. The PSO group was characterized by the absence of joint and systemic manifestations, highlighting the predominantly dermatological nature of the disease. This comparable group structure allows for a detailed analysis of the differences between patients with psoriatic arthritis and those with cutaneous psoriasis in terms of disease severity, quality of life, and associated comorbidities.

2.2. General Characteristics of Research Methods

Examination of PsA patients included anamnesis, full physical examination, and assessment of organ and system status. Collected data included: demographics and disease - specific information: age, sex, BMI, waist circumference (WC), thigh circumference (TC), WC/TC ratio, duration of PsA and psoriasis, family history. Family history was considered positive if the disease was present in first-degree relatives. Dactylitis was defined as diffuse swelling of a digit, painful or not, present either at the time of exam or in the past. Elevated values were considered:
WC > 80 cm (women), > 94 cm (men); WC/TC ratio > 0.8 (women), > 0.9 (men). All patients underwent detailed rheumatologic and ultrasound assessments.

2.3. Programs and Methods of Examination

To characterize and differentiate clinical forms of PsA, patients underwent a comprehensive protocol involving clinical and paraclinical evaluations:

Paraclinical Investigations

Laboratory tests included: CBC, ESR, glucose, HbA1c, ALT, AST, uric acid, urea, creatinine, fibrinogen, prothrombin. Tests were conducted with standard methods in the labs of "Sfânta Treime" Municipal Hospital and "Timofei Moșneaga" Republcan Clinical Hospital. Immunological profile: C-reactive protein (CRP), rheumatoid factor (latex test), ASLO, ANA, immunoglobulins (Mancini method), and circulating immune complexes (PEG precipitation + photometric evaluation). Imaging: Standard X-rays of joints and spine, CT, and bone scintigraphy with Tc-99m for inflammatory and structural assessment.

Functional Evaluation

Functional capacity was classified using Steinbrocker criteria (Class I–IV). Spinal mobility was assessed with the BASFI questionnaire (Bath Ankylosing Spondylitis Functional Index), completed individually by patients. The final score was the mean of 10 questions.

Comorbidities

Data were collected from medical records and clinical reports. A modified Functional Comorbidity Index (FCI) was calculated, excluding arthritis but including relevant conditions such as hyperlipidemia, hypertension, autoimmune diseases, depression, obesity, etc.

Cardiovascular and Metabolic Risk Assessment

Lipid profile: total cholesterol, HDL, LDL, triglycerides. High-sensitivity CRP (hs-CRP) was interpreted following AHA/CDC guidelines. Cardiac evaluation included: standard ECG, exercise testing, echocardiography (Toshiba, Siemens). The SCORE algorithm was applied to estimate the 10-year risk of fatal cardiovascular events.

Ultrasound Evaluation and Enthesitis

Ultrasound of large joints (14 per patient) and entheses (54 per patient) was performed using Samsung Accuvix A30 and Toshiba Applio 500, in B-mode and Power Doppler. Findings were classified according to OMERACT consensus. Ultrasound indices calculated: GUESS, BUSES, MASEI, SEI. Vascularization was scored on a scale from 0 to 3.

Quality of Life Assessments

Validated questionnaires used: HAQ-DI (Joint dysfunction, score 0–3), SF-36 (8 life quality dimensions, score 0–100), DLQI (Dermatology Life Quality Index, score 0–30), FACIT-F (Fatigue, score 0–52; score <34 = fatigue present), PsAQoL (Psoriatic Arthritis Quality of Life), adapted for Romania, used on a subset of patients.

2.4. Statistical Methods

Data analysis included both descriptive and inferential statistics: Descriptive statistics: Normally distributed data: mean ± standard deviation. Non-normal data: median (25–75 percentiles). Comparative tests: Mann-Whitney, Kruskal-Wallis, χ^2 for group comparisons. Regression analyses: Linear and logistic regression to estimate relationships between comorbidities, disease activity, and functional scores. Spearman correlation: for continuous variables. Validation of questionnaires: Cronbach's alpha, inter-score correlations (e.g., PsAQoL–SF-36), test-retest reliability. Additional analyses: cluster analysis, Box-Plot, factorial ANOVA, data distribution tests (Kolmogorov–Smirnov).

3. RESULTS OF THE PRESENT STUDY

3.1. Clinical and Ultrasonographic Characteristics of Peripheral Arthritis in Patients with Psoriatic Arthritis

A total of 1,288 peripheral joints and 4,968 entheses were assessed both clinically and ultrasonographically. Enthesitis, either present at the time of evaluation or reported in the patient's history, was identified in 58.7% of cases, whereas clinically active enthesitis was detected in 51.1% of patients. The overall frequency of tender joints (NAD/14) was 11.3%**,** while swollen joints (NAT/14) accounted for 4.5%**;** notably, NAT represented 40% of NAD. Involvement of the upper limbs accounted for 10.1% of tender joints, compared with 12.9% in the lower limbs ($p > 0.05$). Swollen joints were significantly more frequent in the lower limbs **(**7.8% vs. 2.04%**,** $p < 0.001$). The hip joints were excluded from analysis. Distribution of tender and swollen joints (NAD/NAT)was as follows: acromioclavicular – 5/0; shoulder – 29/2; elbow – 13/1; hands – 29/15; knees – 38/25; ankle – 33/18.The number of tender entheses was significantly higher in the lower limbs **(**8.9%**)** than in the upper limbs (4.8%**)** ($p < 0.001$). The most frequently affected entheses were: lateral epicondyle (n = 35), medial epicondyle (n = 25), Achilles tendon (n = 38), iliac spines (n = 48), knee (n = 103), and plantar fascia (n = 9).On ultrasonographic examination**,** synovitis was observed in 17.7% of joints (228/1288), and active enthesitis in 6.9% (90/1288), with enthesitis present in 39.5% of inflamed joints. Overall, 661 entheses (13.3%) showed sonographic signs of inflammation, of which 128 (19.4%) exhibited vascularization on Doppler imaging. In total, 876 entheses (17.6%) demonstrated pathological features. Comprehensive data are presented in **Table 6**.

Table 6. Frequency of enthesitis and synovitis detected in "grayscale" mode according to ultrasonographic data

Upper limbs	**Frequency**	**Lower limbs**	**Frequency**
Joints:			
Acromioclavicular	46/736 (6,3%)	**Coxofemoral**	28/552 (5,1%)
Humeral	7/736 (0,95%)	**Knee**	42/552 (7,6%)
Ulnar	18/736 (2,4%)	**Talocrural**	32/552 (5,8%)
Radiocarpal	47/736 (6,4%)		

Total	118/736 (16%)	**Total**	112/552 (20,3%)*
Entheses:			
Short head of the biceps brachii muscle of the shoulder	10/1472 (0,7%)	**Greater trochanter:** • **Gluteus minimus** • **Gluteus medius**	28/3496 (0,8%) 45/3496 (1,3%)
Subscapularis muscle	20/1472 (1,4%)	**Ischial tuberosity**	28/3496 (0,8%)
Deltoid muscle	13/1472 (0,9%)	**Medial collateral ligament:** • **Proximal** • **Distal**	53/3496 (1,5%) 20/3496 (0,6%)
Subosseous muscle	2/1472 (0,1%)	**Lateral collateral ligament:** • **Proximal** • **Distal**	33/3496 (0,9%) 19/3496 (0,5%)
Triceps brachii muscle of the shoulder	11/1472 (0,7%)	**Patellar ligament:** • **Proximal** • **Distal**	6/3496 (0,2%) 21/3496 (0,6%)
Medial epicondyle	30/1472 (2%)	**Pes anserinus ("goose's foot")**	70/3496 (2%)
Lateral epicondyle	54/1472 (3,7%)	**Biceps femoris muscle**	9/3496 (0,3%)
		Semimembranosus muscle	36/3496 (1%)
		Quadriceps femoris muscle	23/3496 (0,7%)
		Tibialis anterior muscle	19/3496 (0,5%)
		Tibialis posterior muscle	18/3496 (0,5%)
		Achilles tendon	27/3496 (0,8%)
		Plantar fascia	43/3496 (1,2%)
Total	144/1472 (9,8%)	**Total**	517/3496 (14,8%)**

*Notă. * p<0,05, **p<0,01.*

The frequency of synovitis was higher in the lower limbs compared with the upper limbs (20.3% vs. 16%, $\chi^2 = 3.897$, $p < 0.05$). Similarly, enthesitis was more prevalent in the lower limbs (14.8%) than in the upper limbs (9.8%, $\chi^2 = 22.502$, $p < 0.001$). Although grayscale changes may indicate chronic inflammation, the presence of Power Doppler vascularization is considered a

more specific marker of active inflammatory activity. Direct comparison of vascularization in the hip and ankle joints was not feasible due to anatomical limitations.

Analysis of enthesis vascularization revealed no significant differences between the lower (25%) and upper limbs (17.8%, $\chi^2 = 3.744$, $p > 0.05$). Clinically, the frequencies of NAT/14 (4.5%) and NAD/14 (11.3%) were lower than the ultrasonographic detection rate of synovitis (17.7%, $p < 0.001$). Similarly, the frequency of clinically detected enthesitis (7.7%) was significantly lower than that identified by ultrasound (13.3%, $p < 0.001$).

When comparing patients with isolated peripheral arthritis to those with additional axial involvement, no significant differences were observed in ultrasonographic scores or in the number of enthesitic sites. However, DAPSA, NAPSI, NAD/14, and high-sensitivity C-reactive protein (CRP-hs) levels were significantly higher in the group with axial disease involvement ($p < 0.05$). DAPSA correlated only with clinical enthesitis ($p < 0.01$) and not with ultrasonographic parameters.

Age did not correlate with clinical scores (DAPSA, NAD/14, NAT/14, LEI, etc.); however, it showed a positive association with the number of ultrasonographically detected synovitis lesions, enthesitis sites, and structural changes ($p < 0.05$). Significant correlations were observed between clinical parameters and LEI, MASES, and SPARCC indices ($p < 0.01$), as well as between synovitis and enthesitis ($p < 0.01$), with no other relevant ultrasonographic associations identified. SPARCC correlated significantly with SEI ($r = 0.215$, $p < 0.05$) and GUESS ($r = 0.249$, $p < 0.05$). Articular syndrome was associated with ESR and hs-CRP levels, whereas clinical enthesitis did not correlate significantly with these inflammatory markers. Ultrasonographic vascularization was not associated with PASI or DAPSA but correlated positively with ESR ($r = 0.3$, $p < 0.01$) and hs-CRP ($r = 0.225$, $p = 0.032$).

Syndesmophytes were identified ultrasonographically in 85.9% of patients. Their number increased with age, body mass index (BMI), and ESR ($p < 0.01$) but showed no relationship with disease duration or clinical scores. A positive correlation was found between the number of syndesmophytes and the presence of enthesitis, synovitis, vascularized entheses, and structural ultrasonographic changes ($p < 0.01$). The absence of association with clinical data supports the hypothesis of subclinical inflammation.

Syndesmophytes were categorized as localized (1–2 joints) or generalized (≥3 joints). Comparison between the two groups revealed significant differences in ESR ($p = 0.011$) and the number of comorbidities ($p < 0.05$). ESR values were higher in patients with generalized syndesmophytes ($p < 0.01$), suggesting that BMI, age, disease duration, and subclinical inflammation contribute to their development.

In a subgroup of 50 patients, a detailed ultrasonographic evaluation (952 joints, 3,672 entheses) was performed using both Power Doppler and Superb Microvascular Imaging (SMI) techniques. Vascularization was detected in 52.6% of cases with SMI and in 44.4% with Power Doppler, without a significant difference ($p > 0.05$), but with excellent concordance between the two modalities ($\kappa = 0.806$, $p < 0.01$).

In the analysis of entheses with normal grayscale appearance, no detectable blood flow was observed. However, 12.1% of all entheses ($n = 444$) demonstrated ultrasonographic abnormalities. SMI-positive enthesitis was identified in 33.3% of cases, significantly more frequently than Power Doppler–positive enthesitis (17.1%, $p < 0.001$). This finding underscores the higher sensitivity of SMI for detecting the microvascularization characteristic of active enthesitis. Agreement between the two techniques was moderate for enthesitis detection ($\kappa = 0.504$, $p < 0.01$).

3.2. Structure of Comorbid Pathology in Patients with Psoriatic Arthritis

Comorbid pathology (CP) was present in 77.2% of patients with psoriatic arthritis (PsA), and more than one comorbidity was identified in 60.9% of cases. Smoking was reported by 31.5% of patients. No significant differences were observed between sexes or between peripheral and combined forms of arthritis regarding the number of comorbidities ($p > 0.05$). The distribution of comorbidities is illustrated in Figure 10. Other musculoskeletal and connective tissue disorders

not directly associated with psoriasis were identified in 42.4% of patients, including osteoarthritis in 39.1% and gout in 3.3%.

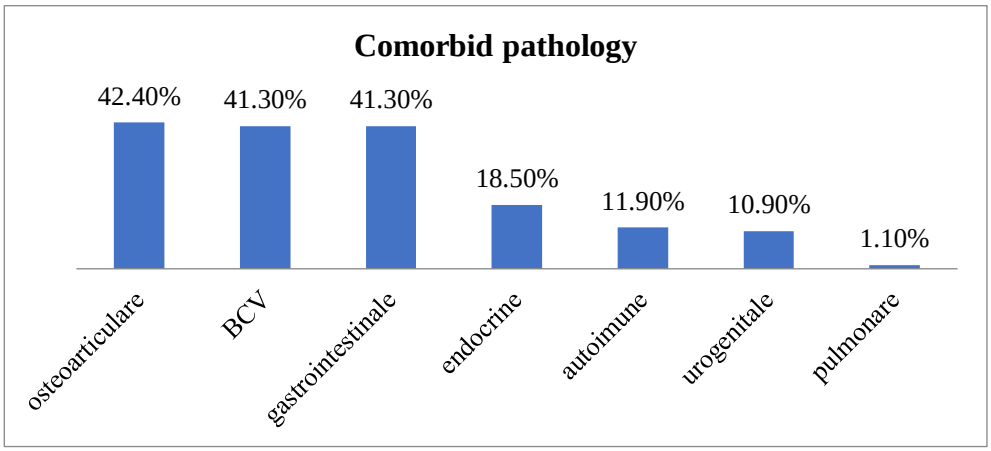


Figure 10. Structure of comorbid pathology in patients with PsA

Cardiovascular pathology was the second most frequent comorbidity, identified in 38 patients (41.3%) (Figure 11).

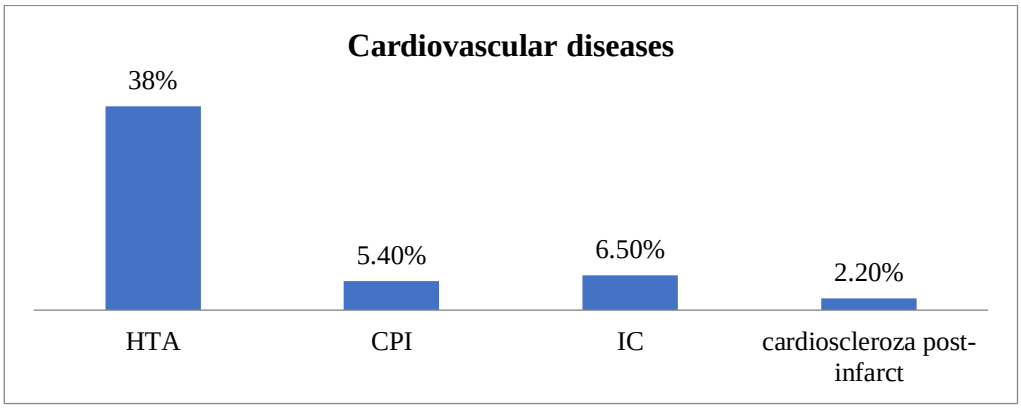


Figure 11. Structure of cardiovascular diseases in patients with PsA

In a study conducted on 92 patients with psoriatic arthritis (excluding those with major cardiovascular risk factors prior to disease onset), cardiac symptoms were identified, including precordial pain (12 cases), palpitations (7 cases), exertional dyspnea (11 cases), and peripheral edema (4 cases). Arterial hypertension was the most frequent comorbidity (38%), followed by coronary artery disease (5.4% angina pectoris, 2.2% silent myocardial ischemia), heart failure (6.5%), and cerebrovascular pathology (3.3%).

Electrocardiographic (ECG) examination revealed various rhythm and conduction disturbances, including supraventricular extrasystoles (26%) and ventricular extrasystoles (8%), atrial fibrillation (8%), tachycardia (10%), bradycardia (16%), atrioventricular and bundle branch blocks (22%, 16%, 10%, 8%), and Wolff-Parkinson-White syndrome (4%). Left ventricular hypertrophy was detected in 50% of patients, while diffuse repolarization abnormalities were present in 64%. Early repolarization syndrome was observed in 14%, and QT prolongation in 18% of cases.

Echocardiography confirmed these findings and demonstrated a significant correlation with disease activity (DAPSA) ($r = 0.781$, $p < 0.01$) (Figure 12), highlighting the utility of these simple, non-invasive methods in detecting cardiac complications in patients with psoriatic arthritis.

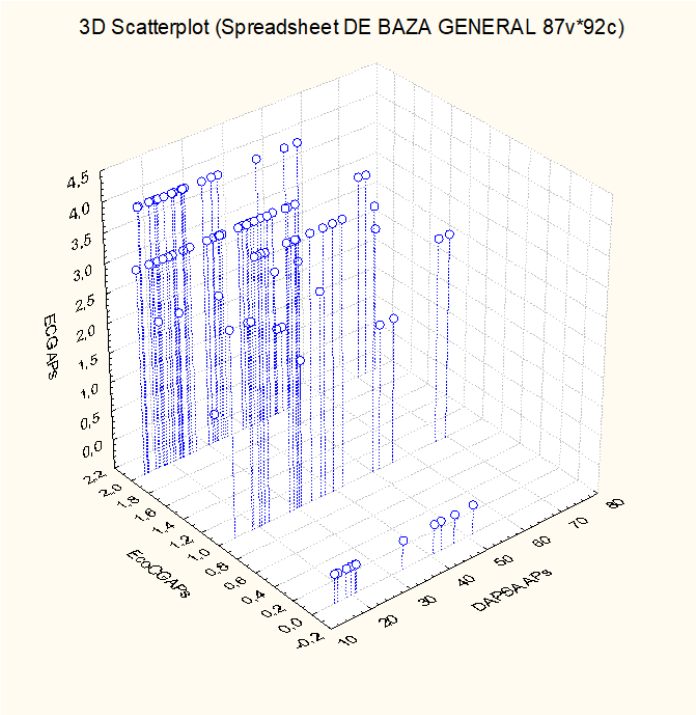


Figure 12. Relationship of the DAPSA index with ECG and echocardiography data in comorbid pathology detected in patients with psoriatic arthritis

In the cohort of 92 patients with psoriatic arthritis (PsA), valvular involvement was identified by echocardiography in 21 cases, including mitral regurgitation (2 cases), aortic regurgitation (6), combined mitral valve disease (4), and combined mitral-aortic involvement (9). Two cases of transient endocarditis and valvulitis were also reported. Mitral valve disease was more frequent in women. Valvular involvement was variably associated with different clinical types of psoriasis.

Cardiac syndrome in PsA affected multiple cardiac structures. Myocarditis, adhesive pericarditis, and valvular regurgitations are the most commonly reported manifestations. Aortitis was correlated with sacroiliitis and axial forms of PsA. The most vulnerable patients for cardiovascular complications are those with active and severe disease. In Moldova, cardiovascular diseases account for 55.8% of deaths, highlighting the need for systematic cardiovascular risk screening.

Assessment included estimation of SCORE risk. Patients with a cardiovascular risk ≥5% or with established cardiovascular disease were considered high-risk. Dyslipidemia, post-onset hypertension, and abdominal obesity were the most common risk factors. Systolic blood pressure (SBP) distribution was as follows: <130 mmHg – 10%, 130–139 mmHg – 14%, 140–159 mmHg – 34%, 160–179 mmHg – 24%, ≥180 mmHg – 18%. Diastolic blood pressure (DBP) distribution: <85 mmHg – 10%, 85–89 mmHg – 28%, 90–99 mmHg – 44%, 100–109 mmHg – 12%, ≥110 mmHg – 6%.

Total cholesterol was <5 mmol/L in 20% of patients and 6.0–6.9 mmol/L in 54%. Only 38% of patients were receiving antihypertensive therapy. SCORE distribution was <5% in 20%, 5.0–9.9% in 44%, 10–14.9% in 28%, and ≥15% in 8%, emphasizing the importance of preventive interventions in PsA.

Digestive disorders were present in 41.3% of patients: 14.1% with upper gastrointestinal pathology, 23.9% with biliary or pancreatic disease, 15.2% with liver disease, and 2.2% with viral hepatitis. Combined digestive pathology was found in 9.8% of cases.

Endocrine disorders were observed in 18.5% of patients: type 2 diabetes mellitus – 8.7%, type 1 diabetes mellitus – 2.2%, thyroid dysfunction – 13%. Obesity (BMI >30 kg/m²) was present in

25% of patients, and 32.6% were overweight. Elevated total cholesterol was detected in 65.2%, and an elevated total cholesterol/HDL cholesterol ratio in 54.3%.

Osteoporosis and osteopenia were identified in 10.9% of patients. Genitourinary pathology was present in 10.9%, predominantly urolithiasis (5.4%) and chronic pyelonephritis (3.3%). Respiratory diseases were rare (1.1%). Autoimmune disorders were observed in 11.9% of patients, including autoimmune thyroiditis (5.4%), type 1 diabetes mellitus (2.2%), Crohn's disease (1.1%), uveitis (2.2%), and glomerulonephritis (1.1%) – see Table 16.

Table 16. Frequency of immune-mediated disorders in patients with PsA

Pathology	n (%)
Autoimmune thyroiditis	5 (5,4)
Type 1 diabetes mellitus	2 (2,2)
Crohn's disease	1 (1,1)
Uveitis	2 (2,2)
Glomerulonephritis	1 (1,1)

The transnosological condition profile was analyzed in patients with psoriatic arthritis (PsA) (Figure 13).

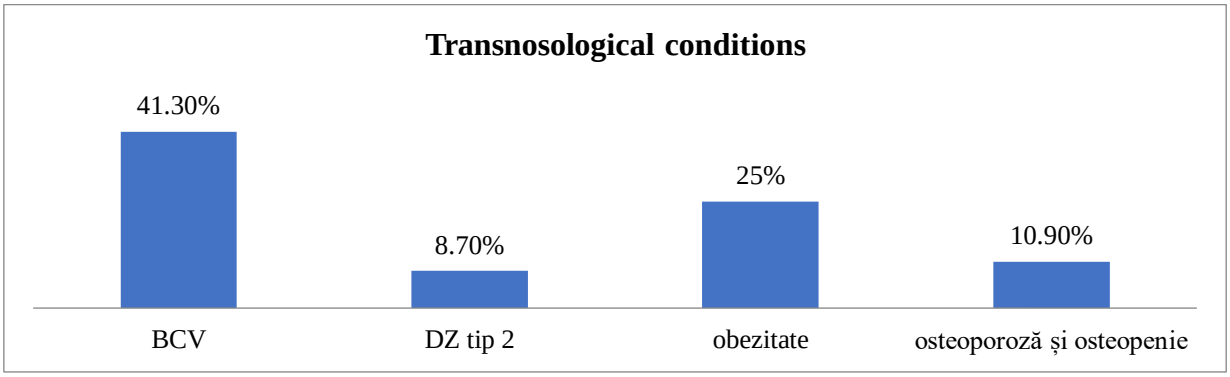


Figure 13. Structure of transnosological conditions in patients with PsA

It should be noted that 31.6% of patients presented with a combination of multiple transnosological conditions: 2 conditions in 16.3%, 3 in 6.5%, 4 and 6 in 3.3%, and 5 and 7 in 1.1% of patients (Figure 14).

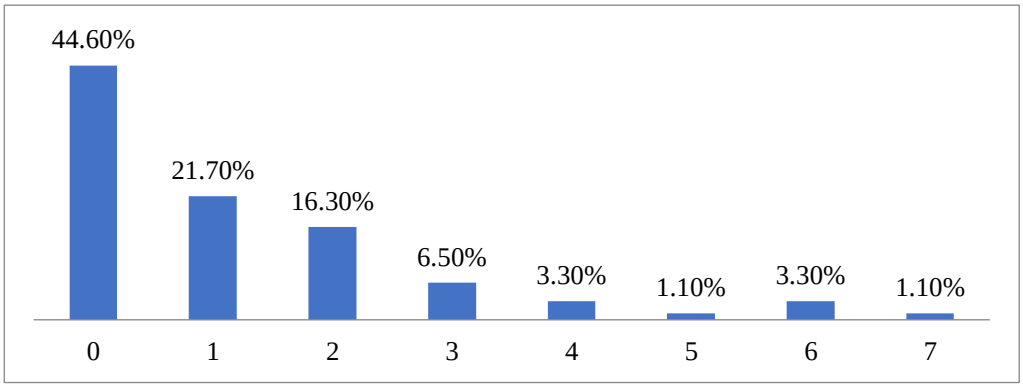


Figure 14. Frequency of transnosological conditions in patients with PsA

In the assessment of the association between the number of comorbid conditions (PC) and clinical data (Table 17), it was found that the number of PCs correlated with BMI, waist circumference (WC), hip circumference (HC), and the WC/HC ratio ($p<0.01$).

Table 17. Interdependence of the number of PCs with anthropometric and clinical data

Index	Correlation coefficient (r)	P
BMI *(Body Mass Index)*	0,416	<0,01
WC *(Waist Circumference)*	0,345	<0,01
HC *(Hip Circumference)*	0,312	<0,05
WC/HC *(Waist-to-Hip Ratio)*	0,219	<0,05
DAPSA *(Disease Activity in Psoriatic Arthritis)*	0,141	>0,05
PASI *(Psoriasis Area and Severity Index)*	0,024	>0,05

At the same time, no association was detected with the activity indices of psoriatic arthritis or cutaneous psoriasis ($p>0.05$) (Figure 15).

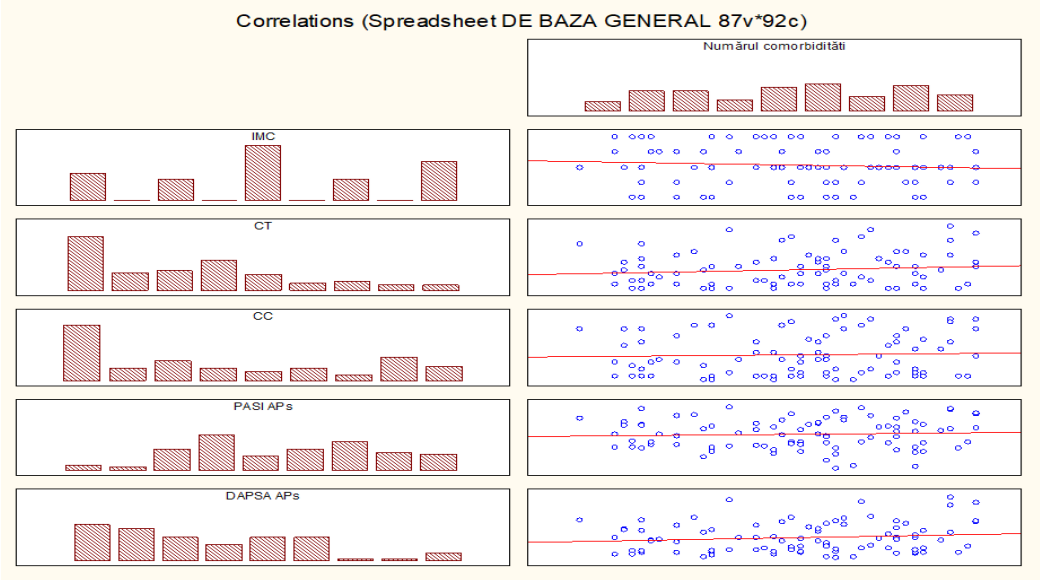


Figure 15. Correlation between the number of comorbidities and anthropometric data, as well as indices of skin involvement in psoriasis (PASI) and psoriatic arthritis activity (DAPSA)

The frequency of comorbid conditions (PC) in patients with psoriatic arthritis (PsA) was 77.2%, with ≥2 PCs present in 60.9%. No significant differences were observed between sexes or between peripheral and combined forms of the disease ($p>0.05$). Musculoskeletal (42.4%), cardiovascular, and digestive diseases (each 41.3%) were the most common, with hypertension (38%) and osteoarthritis (39.1%) predominating. Autoimmune diseases were present in 11.9%, with uveitis (2.2%) and Crohn's disease (1.1%) as extra-articular manifestations. Although obesity (BMI >30) was found in 25%, 32.6% were overweight, 65.2% had increased waist circumference,

and 54.3% had an elevated WC/HC ratio. PCs correlated significantly with elevated BMI, waist circumference, and hip circumference ($p<0.01$).

Obesity and dyslipidemia in patients with PsA

Dyslipidemia, involved in atherogenesis, was common in PsA patients with cardiovascular comorbidities. The mean cholesterol in the group without cardiovascular comorbidities was 4.08±0.02 mmol/l, significantly lower compared with the group with comorbidities (6.32±0.02 mmol/l, $p<0.05$) (Table 18).

Table 18. Distribution of lipid metabolism index values in patients with PsA

	Group 1 (n = 36 patients without cardiovascular complaints)	**Group 2 (n = 56 patients with cardiovascular complaints)**	
	(M±m)	**(M±m)**	**p**
Total cholesterol, mmol/L	**4,08±0,02**	**6,32±0,02**	**<0,05**
LDL, mmol/L	**3,38±0,01**	**4,4±0,03**	**<0,05**
HDL, mmol/L	**1,31±0,002**	**1,15±0,03**	**<0,05**
TG, mmol/L	**1,22±0,001**	**1,97±0,001**	**>0,05**

Pearson correlation analysis revealed a significant association between total cholesterol and hs-CRP ($r = 0.97$; $p<0.001$), indicating the impact of inflammation on lipid metabolism in patients with psoriatic arthritis (PsA). LDL levels were elevated in the group with cardiovascular comorbidities (4.4±0.03 mmol/l; $p<0.05$), while HDL was at the lower limit of normal. Triglycerides remained within normal ranges without significant differences. Most lipid parameters, except triglycerides, correlated with hs-CRP.

3.3. Comparative analysis of the incidence and prevalence of comorbidities in patients with psoriatic arthritis and cutaneous psoriasis

The prevalence of comorbidities was significantly higher in PsA (77.2%) compared with psoriasis (PSO) (48.9%), and multiple comorbidities were more frequent in PsA (60.9% vs. 32.6%). Osteoarthritis (OA) was observed in 39.1% of PsA patients versus 19.6% in PSO (ratio 1.99), and gout in 3.3% vs. 1.1% (ratio 3.00). Hypertension (HTA) prevalence was 38% in PsA and 19.6% in PSO (ratio 1.94), while heart failure (HF) was present in 6.5% and 3.3% (ratio 1.97). Type 2 diabetes mellitus was twice as frequent in PsA (8.7% vs. 4.3%), as was obesity (25% vs. 13%; ratio 1.92). Autoimmune thyroiditis was reported in 5.4% of PsA patients versus 3.3% in PSO. Uveitis was observed only in PsA (2.2%). These differences reflect the deeper systemic impact of PsA, with an overall comorbidity incidence 1.58 times higher than in PSO (Table 19).

Table 19. Proportion of comorbid nosological entities in patients with PsA and PsO

Pathology	**PsA (n = 92)**	**PsO (n = 92)**	**PsA/PsO ratio**	**p**
Total comorbidities	77,2%	48,9%	1,58	<0,05
Osteoarthritis (OA)	39,1%	19,6%	1,99	<0,05
Gout	3,3%	1,1%	3,00	<0,01
Arterial hypertension (AH)	38%	19,6%	1,94	<0,05
Chronic heart failure (CHF)	6,5%	3,3%	1,97	<0,05
Type 2 diabetes mellitus	8,7%	4,3%	2,02	<0,01
Autoimmune thyroiditis	5,4%	3,3%	1,64	<0,05
Obesity	25%	13%	1,92	<0,05

Comorbiditățile sunt semnificativ mai frecvente în artrita psoriazică (APs) comparativ cu psoriazisul cutanat (PSO), cu o prevalență de 77,2% în APs față de 48,9% în PSO, ceea ce corespunde unui raport de 1,58. Diferențele sunt evidente în majoritatea categoriilor analizate. Osteoartrita a fost identificată la 39,1% dintre pacienții cu APs versus 19,6% în PSO (raport 1,99), iar guta la 3,3% vs. 1,1% (raport 3,00). Hipertensiunea arterială a fost întâlnită la 38% în APs și 19,6% în PSO (raport 1,94), iar insuficiența cardiacă cronică la 6,5% față de 3,3% (raport 1,97). Diabetul zaharat tip 2 a fost diagnosticat la 8,7% în APs și 4,3% în PSO (raport 2,02). Tiroidita autoimună a avut o prevalență de 5,4% în APs și 3,3% în PSO (raport 1,64), iar obezitatea (IMC >30 kg/m²) a fost mai frecventă în APs (25%) comparativ cu PSO (13%) (raport 1,92).

Diferențele pot fi explicate printr-o inflamație sistemică mai intensă, dereglări metabolice și predispoziție autoimună mai accentuată în APs, ceea ce crește riscul pentru boli cardiovasculare, metabolice și autoimune.

Analiza comparativă vizuală a prevalenței comorbidităților (figura 17) a permis aprecierea proporțională a fiecărei categorii. Graficul radial (figura 16) a reprezentat axele corespunzătoare comorbidităților specifice (OA, gută, HTA, ICC, diabet tip 2, tiroidită autoimună, obezitate), indicând raporturile APs/PSO pe o scală 0–3. Valoarea 1 semnifică prevalență egală, valori >1 indică comorbidități mai frecvente în APs, iar valori <1 nu au fost identificate.

Raportul global de aproape 2,5 arată că prevalența totală a comorbidităților este de 2,5 ori mai mare în APs comparativ cu PSO, sugerând o implicare sistemică mai severă. Pentru osteoartrită, raportul de ~2 reflectă afectarea musculo-scheletică mai frecventă în APs. Guta are un raport de ~1,5, semnalând prevalență crescută, posibil datorită disfuncției metabolismului acidului uric. În cazul hipertensiunii arteriale, raportul de ~2 indică o dublare a frecvenței în APs, asociată cu inflamația sistemică și afectarea vasculară.

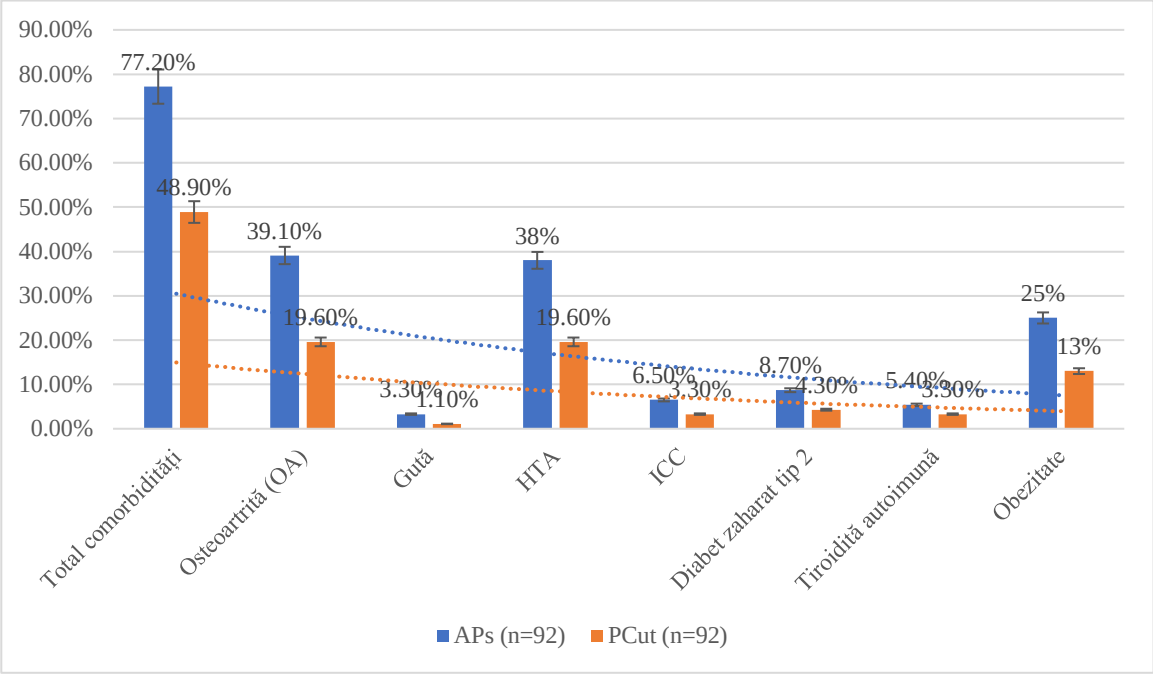


Figure 16. Prevalence of comorbidities in patients with PsA and PsO

The ratio for chronic heart failure (CHF) is below 2 but remains statistically significant, indicating an increased cardiac involvement in patients with psoriatic arthritis (PsA). In type 2 diabetes mellitus, a ratio of approximately 1.5 suggests an elevated metabolic risk, potentially mediated by chronic systemic inflammation. Autoimmune thyroiditis exhibited a ratio of approximately 1.8, reflecting a more pronounced autoimmune predisposition in PsA. Obesity demonstrated a ratio of 2, indicating a doubling of prevalence, likely associated with systemic

inflammatory processes. These findings underscore the higher burden of comorbidities in PsA compared to cutaneous psoriasis (PSO), highlighting the systemic severity of PsA and the necessity for a comprehensive, integrated management strategy.

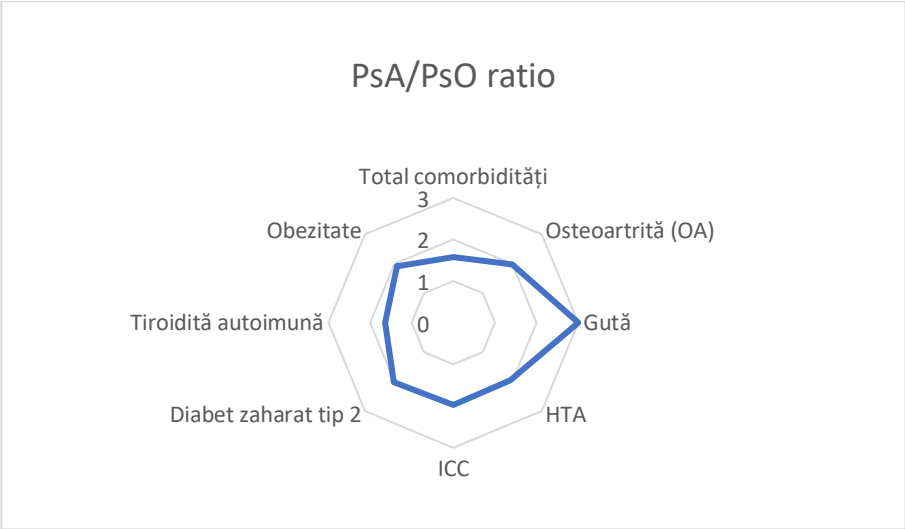


Figure 17. Distribution of comorbidities in the PsA vs. PsO groups

Comorbidities are significantly more frequent in psoriatic arthritis (PsA) than in cutaneous psoriasis (PSO). Hypertension (38%), osteoarthritis (OA, 39.1%), and hepatic pathology (15.2%) predominate in PsA, compared with PSO (hypertension and OA – 19.6%). Dyslipidemia is more severe in PsA, with total cholesterol significantly higher in PsA patients with cardiovascular comorbidities (6.32 ± 0.02 mmol/L) than in those without (4.08 ± 0.02 mmol/L, $p < 0.05$). LDL cholesterol was elevated in PsA patients with comorbidities (4.4 ± 0.03 vs. 3.38 ± 0.01 mmol/L, $p < 0.05$), whereas HDL cholesterol was lower (1.15 ± 0.03 vs. 1.31 ± 0.002 mmol/L, $p < 0.05$). Triglycerides remained within normal limits, with no significant differences. In PSO, dyslipidemia was less pronounced.

Obesity was more prevalent in PsA (25%) compared to PSO (13%), and overweight status was also more frequent. Total cholesterol, LDL, and HDL levels correlated significantly with hs-CRP ($r = 0.97$; $p < 0.001$), indicating the impact of systemic inflammation on lipid metabolism. Triglycerides did not show significant correlations. These findings confirm the influence of chronic inflammation in PsA on lipid metabolism and underscore the need for intensive cardiovascular risk management compared with PSO.

3.4. Health-Related Quality of Life in Patients with Psoriatic Arthritis

Impact on quality of life assessed using the PsAQoL questionnaire

The PsAQoL questionnaire is a validated instrument for assessing quality of life in patients with psoriatic arthritis (PsA), reflecting the physical, emotional, and social impact of the disease. The study included 50 patients (52% female), aged between 23.1 and 66.5 years, with a mean disease duration of 8.3 years. Most patients (54%) reported moderate disease severity, and 26% perceived their health status as poor. At the time of assessment, 54% were experiencing symptom exacerbation. Internal consistency of the PsAQoL was high (Cronbach's $\alpha = 0.87$), and reproducibility was excellent ($r = 0.95$). Strong correlations were observed with the SF-36 dimensions: general health (-0.68), vitality (-0.61), social functioning (-0.58), mental health (-0.56), physical functioning (-0.53), and pain (-0.47), confirming the sensitivity of PsAQoL to psychosocial and physical aspects of quality of life. Analysis of PsAQoL scores by sex and age showed no significant differences ($p > 0.05$). The median score in men was 8 (IQR 4.8–11.5) and

in women 10 (IQR 5–13.8), with no statistical difference (p = 0.55). These results support the use of PsAQoL as a reliable tool for evaluating quality of life in PsA, independent of sex and age (Table 23).

Table 23. Mean PsAQoL Values by Sex and Age

Index	n	Median (interquartile range)
Sex		
Men	26	8 (4,8 – 11,5)
Women	24	10 (5 – 13,8)
p		0,55
Age		
Below median	25	8 (4,5 – 11,5)
Peste mediană	25	9 (5 – 13,5)

Analysis of PsAQoL scores according to age, dividing patients into two groups relative to the median age, showed similar medians: 8 (IQR 4.5–11.5) below the median and 9 (IQR 5–13.5) above the median, with no statistically significant differences (p > 0.05), suggesting that age does not influence perceived quality of life. To evaluate the influence of perceived disease severity and overall health status on PsAQoL, patients were stratified according to these variables. Data demonstrated significantly higher scores in patients who perceived their disease as "severe/very severe" compared with "mild/moderate" (p < 0.05). Additionally, patients reporting overall health as "fair/poor" had significantly higher PsAQoL scores than those with "good/excellent" health (p < 0.01), highlighting the major subjective impact of the disease. Figure 20 illustrates the high internal consistency of the PsAQoL (Cronbach's α > 0.8) and excellent reproducibility (test-retest), validating the use of this instrument for longitudinal monitoring. These findings support the relevance of PsAQoL in assessing disease impact and justify its integration into personalized clinical management.

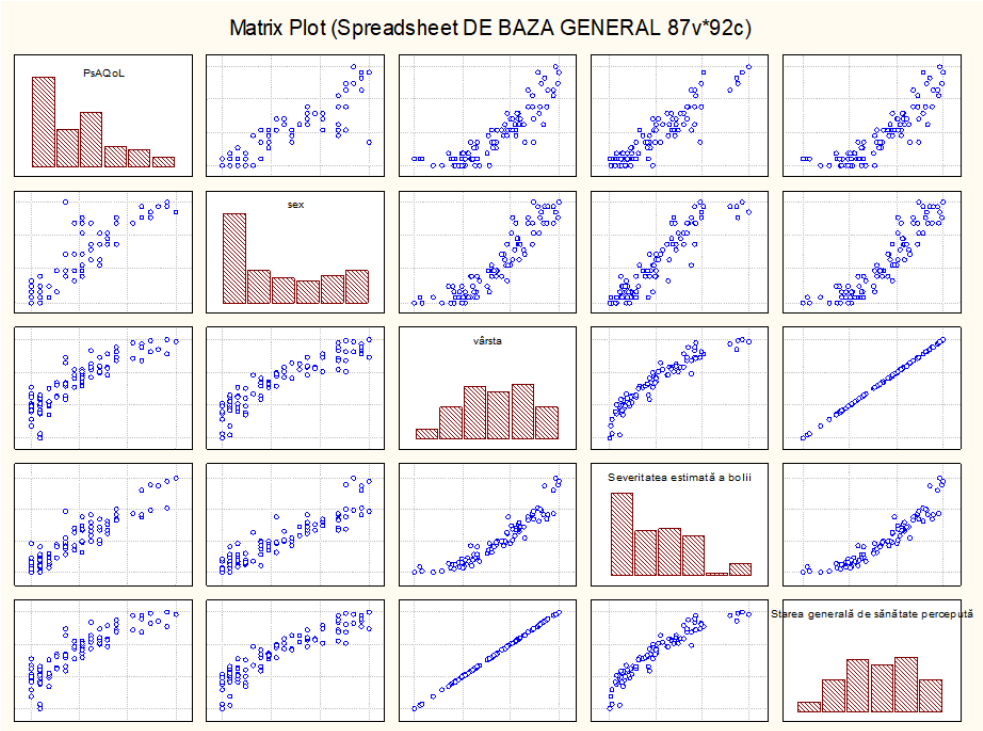


Figure 20. The C-Alpha correlation coefficients for PsAQoL indicate that the questionnaire is appropriately reliable.

Moderate correlations between PsAQoL and SF-36 indicate that the two instruments assess complementary aspects of quality of life: PsAQoL focuses on the disease-specific impact of PsA, whereas SF-36 evaluates general health status. Figure 20 confirms the validity of the Romanian version of PsAQoL, highlighting its consistency and sensitivity in differentiating patients according to perceived disease severity and overall health status. These properties support the use of PsAQoL in both research and clinical practice for precise assessment of quality of life in patients with PsA.

Quality of life in patients with psoriatic arthritis

To evaluate quality of life in PsA, validated instruments were employed: HAQ-DI, DLQI, SF-36, FACIT-F, and PsAQoL. DLQI scores demonstrated a variable impact of psoriasis: 23.9% of patients reported no effect on quality of life, 27.2% reported a small impact, 23.9% moderate, 18.5% very large, and 6.5% extreme.

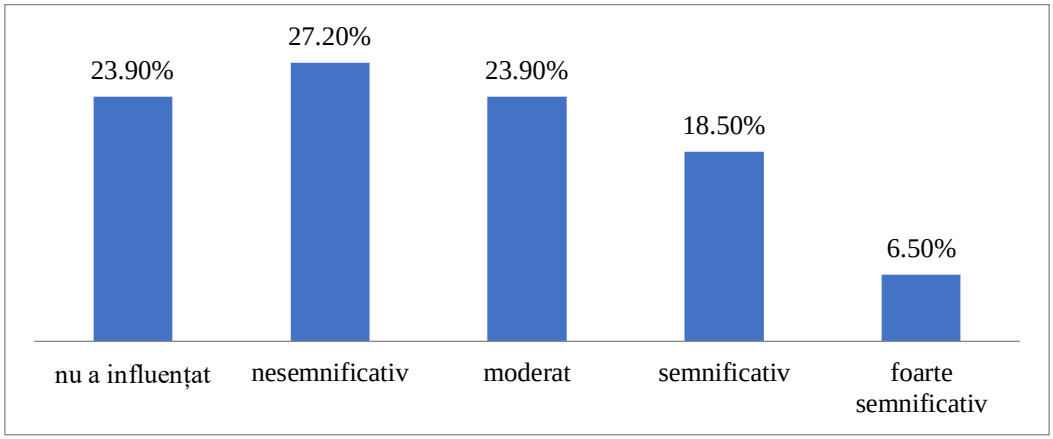


Figure 21. Impact of psoriasis on health-related quality of life in patients with psoriatic arthritis, as assessed by the DLQI questionnaire.

Figure 21 illustrates these distributions, highlighting the need for a personalized approach that considers perceived disease severity and the psychosocial components of psoriatic arthritis.
Correlation analysis of DLQI scores demonstrated a deterioration in quality of life with increasing psoriasis activity and severity of onychodystrophy: PASI ($r = 0.457$, $p<0.01$), NAPSI ($r = 0.543$, $p<0.01$). DLQI also correlated with clinical enthesitis: MASES ($r = 0.22$, $p=0.04$), SPARCC ($r = 0.306$, $p<0.01$), and the number of tender entheses ($r = 0.34$, $p<0.01$). No significant correlations were found with DAPSA, inflammatory markers (ESR, hs-CRP), or imaging parameters ($p>0.05$).

Physical and mental component scores of SF-36 correlated with DAPSA, number of tender entheses, LEI, MASES, SPARCC, and ESR ($p<0.05$), without correlation with imaging data, age, disease duration, or PASI scores ($p>0.05$).

HAQ-DI showed relatively preserved physical function: 67.4% of patients had minimal disability, 29.3% moderate, and 3.3% severe. Most patients reported performing daily activities with slight difficulty (68.5%), while 31.5% had no difficulty.
HAQ-DI correlated significantly with DAPSA ($r = 0.524$, $p<0.01$), PsA duration ($r = 0.295$, $p<0.01$), age ($r = 0.247$, $p<0.05$), ESR ($r = 0.396$, $p<0.01$), clinical enthesitis: LEI ($r = 0.319$, $p<0.01$), MASES ($r = 0.470$, $p<0.01$), SPARCC ($r = 0.299$, $p<0.01$), and the number of tender entheses ($r = 0.38$, $p<0.01$). Fatigue (FACIT-F <34) was present in 50% of patients, with severe fatigue (<20 points) in 3.3%. These data highlight a significant functional and subjective impact of PsA, correlated with disease activity and systemic inflammation.

Analysis of fatigue in PsA showed significant correlations with disease duration (psoriasis: $r = -0.228$; PsA: $r = -0.273$), severity of joint and enthesial inflammation (NAD/14: $r = -0.426$; NAT/14: $r = -0.274$), DAPSA ($r = -0.394$), LEI ($r = -0.256$), MASES ($r = -0.345$), SPARCC ($r =$

-0.332), and the number of tender entheses (r = -0.37) ($p<0.05$). These data emphasize the influence of fatigue on quality of life, associated with systemic inflammation (Figure 24).
PsAQoL scores increased with DAPSA (r = 0.402), PsA duration (r = 0.231), LEI (r = 0.359), MASES (r = 0.478), SPARCC (r = 0.394), number of tender entheses (r = 0.423), ESR (r = 0.244), NAPSI (r = 0.258), fatigue (r = 0.605), and functional impairment (HAQ-DI: r = 0.679) ($p<0.05$). In the subgroup with axial involvement, HAQ-DI (p = 0.017) and PsAQoL ($p<0.05$) scores were significantly higher than in patients with isolated peripheral arthritis.

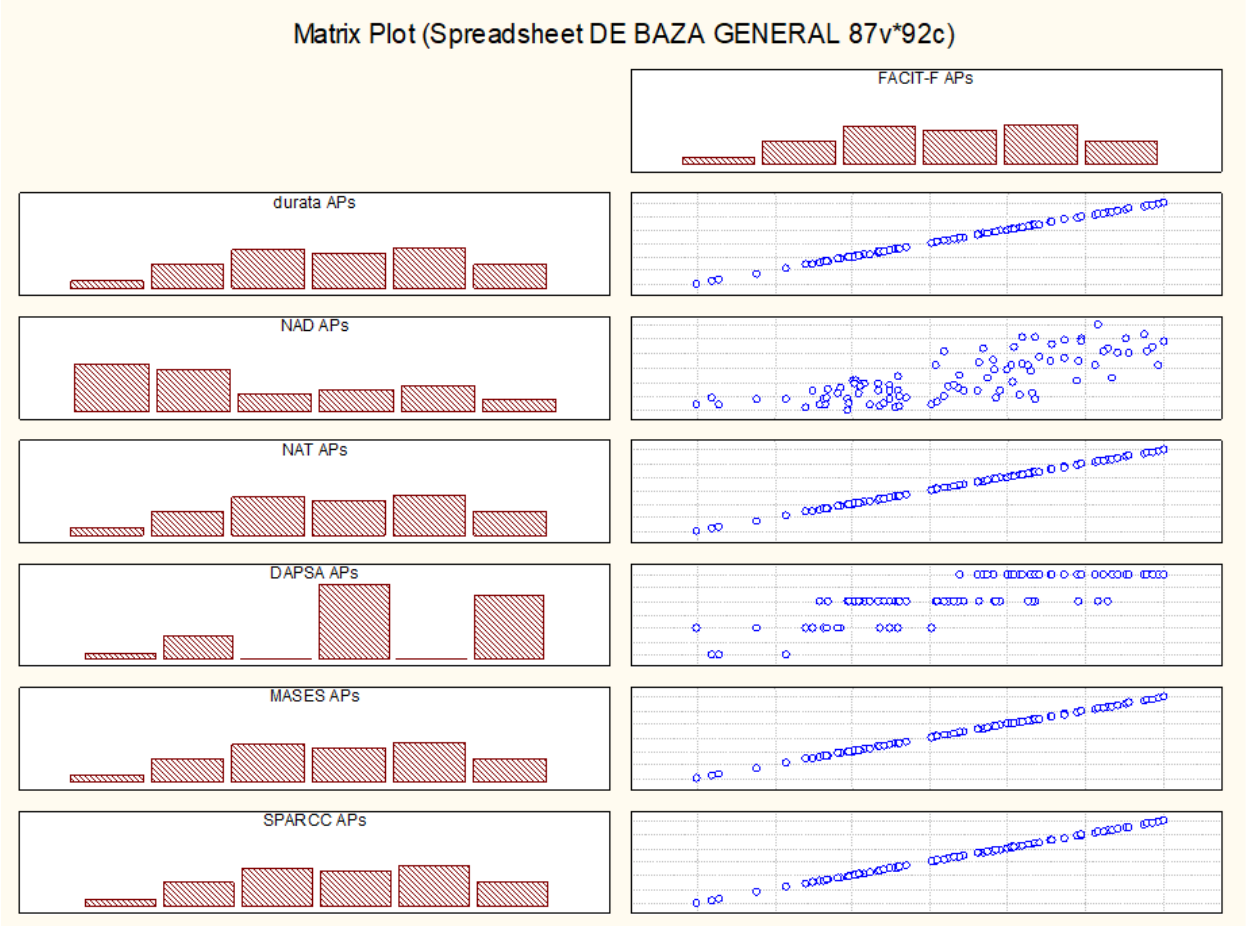


Figure 24. Correlation of FACIT-F questionnaire data with clinical indices of disease activity.

Increased Comorbidities and Quality of Life in Psoriatic Arthritis (PsA)**:** a higher number of comorbidities was associated with poorer quality of life: general health (SF-36: r = -0.25), HAQ-DI (r = 0.242), PsAQoL (r = 0.214) ($p<0.05$). No associations were observed between quality-of-life scores and imaging parameters (number of synovitides, enthesitis, vascularized or structurally altered entheses) or scores from GUESS, MASEI, SEI, BUSES ($p>0.05$). DLQI correlated with psoriasis activity (PASI: r = 0.457; NAPSI: r = 0.543) and clinical enthesopathy (MASES, SPARCC, number of tender entheses) ($p<0.01$). Most patients presented with minimal or moderate functional impairment, correlated with DAPSA, PsA duration, age, ESR, and clinical enthesitis. Fatigue (FACIT-F <34) was present in 50% of patients and was associated with disease activity and severity of enthesopathy.

Thus, quality of life in PsA is significantly influenced by clinical disease activity, fatigue, functional impairment, and comorbidities, whereas imaging data did not show relevant correlations.

Quality of Life in PsA versus Psoriasis (PSO)

DLQI (Dermatology Life Quality Index)

DLQI scores showed clear differences between groups: in PsA, only 23.9% of patients reported no impact, compared with 44.6% in PSO. Conversely, 24% of PsA patients reported moderate impact, and 24% reported large or very large impact, compared with only 5% in PSO. In PsA, DLQI correlated with PASI ($r = 0.457$), NAPSI ($r = 0.543$), and SPARCC ($r = 0.306$) ($p<0.01$).

Physical Function (HAQ-DI)

Physical disability was more frequent in PsA: moderate or severe impairment in 32.6% versus 15.2% in PSO. HAQ-DI correlated with DAPSA ($r = 0.524$), age ($r = 0.247$), and disease duration ($r = 0.295$) ($p<0.05$). In PSO, these correlations were not significant.

Fatigue (FACIT-F)

Moderate fatigue was reported by 50% of PsA patients (vs. 30.4% in PSO), while severe fatigue was present in 3.3% (vs. 1.1%). Significant negative correlations were found in PsA with disease duration ($r = -0.273$), DAPSA ($r = -0.394$), and SPARCC ($r = -0.332$) ($p<0.01$).

Physical and Mental Health (SF-36)

Both physical and mental components were more affected in PsA. SF-36 scores in PsA correlated significantly with DAPSA, SPARCC, and ESR ($p<0.05$). In PSO, no significant correlations were observed with these parameters.

PsA-Specific Quality of Life (PsAQoL)

PsAQoL scores were higher in PsA and correlated with DAPSA ($r = 0.402$), enthesitis (LEI, MASES, SPARCC), fatigue (FACIT-F, $r = 0.605$), ESR ($r = 0.244$), and NAPSI ($r = 0.258$) ($p<0.05$). In PSO, PsAQoL scores remained relatively stable and were minimally influenced by these factors.

Impact of Comorbidities

In PsA, the number of comorbidities negatively influenced HAQ-DI ($r = 0.242$), SF-36 ($r = -0.25$), and PsAQoL ($r = 0.214$) ($p<0.05$). In PSO, these correlations were weak and not significant.

Patients with PsA exhibit significantly greater impairment in quality of life compared to PSO. These differences are influenced by disease activity, enthesitis, fatigue, comorbidities, and inflammatory markers. In PSO, impairment is more localized and primarily driven by skin lesions. A multidisciplinary approach and personalized treatment are recommended for PsA patients, focusing on inflammation control and psychosocial support.

3.5. Relationship of Comorbidities with Clinical, Laboratory, and Ultrasound Parameters of Psoriatic Arthritis Activity and Quality of Life

Comorbidities influence the course of PsA, affecting both disease activity and quality of life. In this subchapter, patients were divided into two groups: 1a (0–1 comorbidity; $n = 37$) and 1b (≥2 comorbidities; $n = 55$). Demographic and Anthropometric Data: Group 1b included older patients with longer psoriasis duration, higher BMI, waist circumference (WC), and hip circumference (HC) ($p<0.05$). NAD/14 scores were higher in group 1b ($p<0.05$), while clinical enthesitis did not differ between groups ($p>0.05$). Inflammatory Markers: ESR and hs-CRP levels showed no significant differences between groups ($p>0.05$). Ultrasound Findings: Group 1b exhibited a higher number of synovitides ($p<0.01$) and vascularized synovitides ($p<0.05$), as well as a greater number of enthesitis ($p<0.01$). Global ultrasound scores, however, did not differ significantly ($p>0.05$). Quality of Life: No differences were observed in FACIT-F, DLQI, HAQ-DI, or the physical and mental components of SF-36 ($p>0.05$). However, general health (SF-36) and PsAQoL scores were significantly worse in group 1b ($p<0.01$) (Table 26).

The presence of two or more comorbidities (≥2 comorbidities) in patients with PsA was associated with older age, increased BMI, waist circumference, and hip circumference ($p<0.05$). Clinically, NAD/14 scores were higher in patients with ≥2 comorbidities ($p<0.05$), while ultrasound evaluations revealed an increased number of non-Doppler enthesitis ($p<0.05$), synovitides ($p<0.01$), and vascularized synovitides ($p<0.01$) compared with patients with 0–1 comorbidity.

Table 26. Comparison of quality of life between groups according to the number of PCs

Parameter	Group 1a (n=37)	Group 1b (n=55)	Mann–Whitney U test	P
DLQI	6 (1;12)	4,5 (2;8,3)	869	>0,05
SF-36: Mental Health Component	38,2 (31,7;47,2)	35,3 (28,5;43,3)	837,5	>0,05
Vitality	50 (40;60)	45 (40;50)	789	>0,05
Social Functioning	62,5 (50;75)	62,5 (37,5;75)	906,5	>0,05
Role-Emotional	33,3 (0;100)	33,3 (0;100)	887,5	>0,05
Mental Health	56 (52;68)	56 (48;68)	833,5	>0,05
SF-36: Physical Health Component	40,2 (35,1;48,3)	40,7 (35;48,3)	959,5	>0,05
Physical Functioning	55 (40;80)	45 (30; 65)	769,5	>0,05
Basic Physical Functioning	25 (0;100)	25 (0;100)	914	>0,05
Pain Intensity	41 (22,2;61)	41 (22;51)	891	>0,05
General Health	47 (37;57)	40 (35;50)	612,5	<0,01
HAQ-DI	0,6 (0;1,1)	0,9 (0,4;1,4)	789	>0,05
FACIT-F	15 (11;24)	17 (13;24)	888,5	>0,05
PsAQoL	5 (3; 9)	10 (5; 13)	647,5	<0,01

Note. Data are presented as median (25th–75th percentiles)

At quality-of-life assessment, patients with multiple comorbidities reported significantly worse general health according to the SF-36 general health scale ($p<0.01$). Additionally, PsAQoL scores were significantly higher ($p<0.01$), despite no differences in disease activity (DAPSA) or PsA duration, reflecting the negative impact of comorbidities on PsA-specific quality of life.

Simple linear regression analysis confirmed that each additional comorbidity was associated with an increase of 0.21 points in NAD/14 scores ($\beta=0.217$; $p<0.05$), 0.28 painful entheses ($\beta=0.281$; $p<0.01$), as well as significant increases in LEI ($\beta=0.24$; $p<0.05$) and MASES ($\beta=0.37$; $p<0.01$) indices. Ultrasound evaluation showed that one additional comorbidity was associated with an increased number of enthesitis ($\beta=0.269$; $p=0.01$), total synovitides ($\beta=0.254$; $p=0.015$), and Doppler-confirmed synovitides ($\beta=0.247$; $p=0.018$).

Regarding quality of life, each additional comorbidity was associated with an increase of 0.222 points in HAQ-DI scores ($p=0.034$) and 0.211 points in PsAQoL scores ($p=0.044$).

In conclusion, the number of comorbidities significantly influences both clinical parameters (joint and enthesitis activity) and ultrasound findings, as well as quality-of-life scores. These results highlight the key role of comorbidities in aggravating disease severity and functional status in patients with PsA.

4. COMORBIDITIES IN PSORIATIC ARTHRITIS

Patients with psoriatic arthritis (PsA), typically in the most active period of their lives, require early assessment of comorbidities, disease activity, and quality of life. Our study confirmed the significant impact of PsA on general health, highlighting increased prevalence of arterial hypertension (38%), obesity (25%), gastrointestinal disorders (41.3%), and musculoskeletal diseases (42.4%). These prevalence rates are consistent with data from recent meta-analyses, although the incidence of gastrointestinal disorders was lower than reported in other studies, likely

due to the younger age of our sample. Some studies have even reported a global reduction in gastrointestinal involvement among patients with rheumatic diseases [4, 8, 12, 19].

Osteoarthritis (OA), reported in 39.1% of our patients, was less frequent compared to spondyloarthritis cohorts (60.1%) [10, 14, 17, 24], possibly due to younger age and absence of OA symptoms. Overweight status was observed in 33.3% of patients, with an elevated waist-to-hip ratio in 57.1% of cases. Increases in BMI, waist circumference (WC), and hip circumference (HC) were significantly associated with a higher number of comorbidities ($p<0.01$), confirming the link between obesity, increased metabolic risk, and systemic inflammation, as described in previous studies [9, 16, 21, 27].

Age-related differences demonstrated a significant increase in transnosological comorbidities with age ($p<0.05$) but no chronological differences ($p>0.05$), suggesting a pathogenetic relationship with PsA progression. Interestingly, axial lesions did not influence the number of comorbidities, despite patients with axial involvement presenting with longer disease duration ($p=0.013$), higher disease activity (DAPSA), systemic inflammation (hs-CRP, $p<0.05$), and more severe nail involvement (NAPSI, $p<0.01$).

Ultrasound (US) examination frequently identified subclinical synovitis and enthesitis, with synovitis detected by US in 17.7% vs. only 4.7% clinically ($p<0.01$), and enthesitis in 13.3% vs. 7.7% clinically ($p<0.001$). These differences confirm findings in the literature [1, 6, 17, 29] and support the routine inclusion of US in PsA patient evaluation. Similar to other studies [7, 11, 24], synovitis and enthesitis were more frequently observed in the lower limbs, potentially explained by the biomechanical stress theory [9, 15, 26].

US did not reveal a significant association between DAPSA scores and inflammatory changes, supporting the complementary role of clinical and ultrasound assessment [13, 15, 19, 25]. Correlations between clinical and US-detected enthesitis and synovitis support the synovio-entheseal complex theory [14, 15, 18, 26]. A moderate association was observed between clinical and ultrasound scores (SPARCC-SEI: $r=0.215$; SPARCC-GUESS: $r=0.249$), though with limitations in overlap.

The number of synovitides and enthesitides increased with age ($r=0.387$ and $r=0.425$), but these changes were not correlated with DAPSA or ESR/hs-CRP, suggesting a role of age-related degenerative processes. In contrast, vascularized enthesitis correlated with inflammatory markers ($p<0.01$) but not with age or clinical activity, indicating that enthesis vascularization is a marker of active inflammation rather than degeneration.

When comparing SMI versus Power-Doppler, SMI detected vascularized enthesitis more frequently (33.3% vs. 17.1%, $p<0.001$), confirming the superior sensitivity of this method [11, 27, 29]. For joint synovitis, differences between the techniques were not significant (52.6% vs. 44.4%), likely due to larger vascular calibers in these structures. Kappa analysis indicated high consistency between methods for synovitis ($k=0.806$) but moderate consistency for enthesitis ($k=0.504$).

Quality-of-life assessment using PsAQoL confirmed its validity, showing high internal consistency (Cronbach $\alpha = 0.87$) and excellent reproducibility ($r=0.95$). PsAQoL effectively differentiated patients according to disease severity, enthesitis involvement, fatigue (FACIT-F), disability (HAQ-DI), and systemic inflammation levels. Associations of PsAQoL scores with DAPSA, LEI, SPARCC, NAPSI, and ESR confirm the combined impact of clinical and inflammatory factors on quality of life.

Patients with a high number of comorbidities (≥ 2) reported poorer general health (SF-36, $p<0.01$) and significantly higher PsAQoL scores ($p<0.01$), without increased disease activity (DAPSA). This observation suggests an independent influence of comorbidities on perceived quality of life. Regression analysis confirmed that each additional comorbidity was associated with increases in NAD/14, LEI, MASES, HAQ-DI, and PsAQoL scores ($p<0.05$), supporting their cumulative contribution to functional impairment and negative health perception.

Overall, these findings emphasize the complexity of PsA as a systemic disease, where subclinical inflammation, active enthesitis, associated comorbidities, and age significantly

influence quality of life. The inclusion of advanced imaging techniques and validated questionnaires, such as PsAQoL, enables more nuanced assessment and personalized management of PsA patients.

CONCLUSIONS

1. Clinical assessment revealed a significantly higher frequency of synovitisand enthesitis in the lower limbs compared to the upper limbs ($p<0.01$). While clinical examination demonstrated substantial articular and periarticular inflammatory manifestations, correlations with disease activity parameters varied depending on the presence of comorbidities, without a clear association between symptom intensity and inflammation severity ($p>0.05$).
2. Clinical scores (NAD/14, NAT/14, LEI, MASES, SPARCC) were significantly correlated with ultrasound parameters (number of synovitides and enthesitides) and laboratory inflammatory markers (hs-CRP, ESR). DAPSA scores correlated with clinical enthesitis indices but showed no significant association with ultrasound findings ($p>0.05$). Elevated ESR and hs-CRP values were associated with systemic inflammation severity and overall disease activity ($p<0.01$).
3. The number of comorbidities was significantly correlated with anthropometric indices (BMI, waist circumference, hip circumference) ($p<0.01$), but showed no association with disease activity (DAPSA, PASI) or ultrasound inflammatory parameters ($p>0.05$). Hypertension and dyslipidemia were more frequent in PsA patients, highlighting the link between systemic inflammation and cardiovascular risk.
4. Comorbidities, particularly hypertension and obesity, were associated with significantly impaired quality of life, as measured by PsAQoL and SF-36 ($p<0.05$). Patients with multiple comorbidities reported significantly higher PsAQoL scores, reflecting a negative perception of daily life.
5. Physical functioning (HAQ-DI) and fatigue (FACIT-F) were significantly more affected with increasing numbers of comorbidities ($p<0.01$). The mental health component of SF-36 was more strongly influenced by disease severity and the number of comorbidities than by arthritis-specific clinical factors ($p<0.05$).
6. Patients with axial involvement exhibited higher DAPSA scores and more severe psoriatic nail dystrophy (NAPSI) compared to those with isolated peripheral arthritis ($p<0.01$). Ultrasound parameters did not show significant differences between groups, but quality of life (HAQ-DI, PsAQoL) was significantly lower in patients with axial involvement ($p<0.05$).

PRACTICAL RECOMMENDATIONS

1. Clinical and Ultrasound Monitoring: Periodic assessment of synovitis and enthesitis should be performed using both clinical examination and ultrasonography, including Power Doppler. Clinical scores, such as DAPSA, along with inflammatory markers (ESR, hs-CRP), should guide therapeutic decisions.
2. Management of Comorbidities: Regular cardiovascular screening is recommended, including blood pressure and lipid profile monitoring. Weight management and diabetes control should be implemented through dietary interventions and physical activity. Liver function should be monitored in patients at risk of drug-induced hepatotoxicity.
3. Improving Quality of Life: Quality of life should be evaluated using standardized tools such as PsAQoL and SF-36. Access to psychological counseling and patient education programs for pain and inflammation management is encouraged.
4. Multidisciplinary Approach: Collaboration between rheumatologists, dermatologists, cardiologists, and other specialists is essential for integrated disease management. Individualized treatment plans should focus on complication prevention and holistic patient care.

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ADNOTARE
Dutca Lucia „Comorbidități în artrita psoriazică”.
Teză de doctor în științe medicale, Chișinău, 2025.

Structura tezei. Lucrarea a fost expusă pe 131 pagini de text electronic și se compartimentează în: introducere, 4 capitole de cercetări, 6 concluzii şi 4 recomandări, indice bibliografic (140 titluri), 24 de figuri, 31 de tabele, 15 anexe. Rezultatele cercetării au fost prezentate în 52 de publicaţii.
Cuvinte-cheie: artrita psoriazică, psoriazis cutanta, comorbidități, calitatea vieții, diagnostic, indici articulari, prognostic.
Domeniul de studiu: Reumatologie
Scopul studiului: este de a evalua impactul comorbidităților asupra severității clinice și a calității vieții la pacienții cu artrită psoriazică, analizând relațiile dintre inflamația sistemică, parametrii clinici și gradul de afectare funcțională.
Obiectivele studiului: 1. Analizarea caracteristicilor clinice ale artritei și ale entezitei și depistarea comorbidităților la pacienții cu artrită psoriazică: Investigarea distribuției și a severității sinovitelor, a entezitelor în funcție de localizare, utilizând examinarea clinică, pentru a înțelege mai bine relațiile dintre inflamația articulară și entezală cu depistarea comorbidităților. 2. Determinarea asocierilor dintre markerii clinici și imagistici ai inflamației cu severitatea bolii: Identificarea relațiilor dintre scorurile clinice (NAD/14, NAT/14, LEI, MASES, SPARCC) și indicatorii ecografici (numărul sinovitelor, al entezitelor și al entezelor vascularizate), precum și evaluarea rolului markerilor inflamatori de laborator în activitatea bolii. 3. Evaluarea relației dintre comorbidități și severitatea inflamației sistemice, măsurată prin parametrii clinici, de laborator și imagistici.4. Analiza impactului comorbidităților asupra activității clinice și a calității vieții pacienților cu APs, utilizând scoruri standardizate precum DAPSA, PsAQoL și SF-36. 5. Identificarea corelațiilor dintre numărul de comorbidități și deteriorarea funcționării fizice și mentale, folosind indicatori precum HAQ-DI, FACIT-F și componenta fizică/mintală din SF-36. 6. Examinarea diferențelor între pacienții cu artrită periferică izolată și cei cu artrită periferică, asociată leziunilor axiale. Compararea severității clinice, a scorurilor ecografice, a calității vieții și a funcționării fizice între aceste subgrupuri, pentru a sublinia particularitățile asociate afectării axiale în APs.
Noutatea şi originalitatea ştiinţifică Originalitatea constă în comparația dintre pacienții cu PsA și cei cu psoriazis cutanat fără artrită, evidențiind diferențe în evoluția bolii și influența comorbidităților asupra severității clinice. Prin utilizarea ecografiei Power-Doppler și SMI, s-a demonstrat corelația dintre inflamația sinovială/entezială și severitatea inflamației sistemice. S-a evidențiat asocierea numărului de comorbidități (HTA, obezitate, tulburări digestive) cu gradul de afectare a bolii. Analiza impactului asupra calității vieții, realizată prin instrumente specifice, susține integrarea acestor evaluări în practica clinică și elaborarea unor strategii terapeutice personalizate. În plus, studiul confirmă legătura între entezita și sinovita clinică/imaginistică, oferind perspective noi asupra mecanismelor patogenetice
Problema ştiinţifică importanţă soluţionată în teză. Teza analizează impactul comorbidităților asupra APs, evidențiind diferențele clinico-funcționale și imagistice față de PSO. Aplicând metode clinico-statistice și ecografie avansată, s-a demonstrat frecvența inflamației subclinice și corelația dintre sinovită, entezită și activitatea bolii, fără asociere directă cu manifestările clinice. S-a constatat o legătură între comorbidități, parametrii antropometrici și severitatea bolii, precum și un impact semnificativ asupra calității vieții. Rezultatele susțin necesitatea unui management personalizat și multidisciplinar, contribuind la optimizarea tratamentului și a prognosticului în APs.
Semnificaţia teoretică. Lucrarea aprofundează relația dintre inflamația sistemică și comorbiditățile în APs, demonstrând influența inflamației asupra metabolismului lipidic și riscului cardiovascular. Corelațiile dintre colesterol, hs-CRP și markerii imunologici susțin înțelegerea mecanismelor patogenetice și a rolului investigațiilor imagistice moderne.
Valoarea aplicativă. Studiul evidențiază impactul inflamației asupra profilului lipidic și cardiovascular în APs și PSO, oferind date utile pentru managementul personalizat. Rezultatele sprijină elaborarea strategiilor multidisciplinare de reducere a riscului metabolic și optimizare a ghidurilor clinice.
Implementarea rezultatelor: Datele obținute vor fi aplicate în activitatea Disciplinei de reumatologie și nefrologie, a IMSP SCR „Timofei Moșneaga” și IMSP SCM „Sfânta Treime”, or. Chişinău, Republica Moldova.

SUMMARY

Lucia Dutca "Comorbidities in Psoriatic Arthritis".
PhD thesis in Medical Sciences, Chișinău, 2025.

Thesis structure: The thesis consists of 131 pages of electronic text and is structured into the following sections: introduction, 4 chapters of research, 6 conclusions, and 4 recommendations, followed by a bibliography (140 references), 24 figures, 31 tables, and 15 annexes. The research findings were disseminated through 52 publications.

Keywords: psoriatic arthritis, psoriasis, comorbidities, quality of life, diagnosis, prognosis.

Domain of research: Rheumatology

Aim of the study: To assess the impact of comorbidities on clinical severity and quality of life in patients with psoriatic arthritis (PsA), by analyzing the relationships between systemic inflammation, clinical parameters, and the degree of functional impairment.

Study Objectives: 1.To analyze the clinical features of arthritis and enthesitis, and to identify comorbidities in patients with PsA: Investigating the distribution and severity of synovitis and enthesitis based on anatomical location, using clinical examination, to better understand the relationship between joint and entheseal inflammation and the presence of comorbidities. 2. To determine the associations between clinical and imaging markers of inflammation and disease severity: Identifying correlations between clinical scores (NAD/14, NAT/14, LEI, MASES, SPARCC) and ultrasound indicators (number of synovitis and enthesitis sites, and vascularized entheses), as well as evaluating the role of laboratory inflammatory markers in disease activity. 3. To evaluate the relationship between comorbidities and the severity of systemic inflammation, as measured through clinical, laboratory, and imaging parameters. 4. To analyze the impact of comorbidities on clinical disease activity and quality of life in PsA patients using standardized scoring tools such as DAPSA, PsAQoL, and SF-36. 5. To identify correlations between the number of comorbidities and the decline in physical and mental functioning using indicators such as HAQ-DI, FACIT-F, and the physical/mental components of the SF-36. 6.To examine differences between patients with isolated peripheral arthritis and those with peripheral arthritis associated with axial involvement. Clinical severity, ultrasound scores, quality of life, and functional outcomes were compared between these subgroups to highlight the specific characteristics related to axial involvement in PsA.

Scientific novelty and originality: The originality lies in the comparison between patients with PsA and those with cutaneous psoriasis without arthritis, highlighting differences in disease progression and the influence of comorbidities on clinical severity. By employing Power Doppler and Superb Microvascular Imaging (SMI) ultrasound techniques, the correlation between synovial/entheseal inflammation and systemic inflammation severity was demonstrated. The impact on quality of life, assessed using specific instruments, supports integrating such evaluations into clinical practice and developing personalized therapeutic strategies. Furthermore, the study confirms the link between clinical and imaging-based enthesitis and synovitis, offering new insights into pathogenic mechanisms.

The scientific problem solved in the thesis: This thesis explores the impact of comorbidities on PsA, emphasizing clinical, functional, and imaging differences compared to cutaneous psoriasis (PSO). Using clinical-statistical methods and advanced ultrasound, the study demonstrated the frequency of subclinical inflammation and the correlation between synovitis, enthesitis, and disease activity, even in the absence of overt clinical manifestations. It also identified associations between comorbidities, anthropometric parameters, and disease severity, along with a significant impact on quality of life. The findings support the need for personalized and multidisciplinary management approaches, contributing to improved treatment strategies and prognoses in PsA.

The theoretical significance: The thesis deepens the understanding of the relationship between systemic inflammation and comorbidities in PsA, demonstrating the influence of inflammation on lipid metabolism and cardiovascular risk. Correlations between cholesterol, high-sensitivity CRP, and immunological markers enhance the understanding of pathogenic mechanisms and the role of modern imaging investigations.

Application value of the study: The study highlights the impact of inflammation on lipid and cardiovascular profiles in PsA and PSO, providing valuable data for personalized management. The findings support the development of multidisciplinary strategies to reduce metabolic risk and optimize clinical guidelines.

Results implementation: The results will be implemented in the activities of the Rheumatology and Nephrology Department, the Republican Clinical Hospital "Timofei Moșneaga," and the Municipal Clinical Hospital "Sfânta Treime," in Chișinău, Republic of Moldova.

List of Publications and Scientific Forum Participations

Scientific Works

- **Articles in Accredited National Scientific Journals**
    - **Articles published in category B journals**

1. **Dutca L.**, Groppa L., Nistor A., Chiaburu L., Bețiu M., Russu E. The relationship between metabolic syndrome and psoriatic arthritis. In: International Journal of Medical Dentistry. 2020;2(24):268. ISSN 2066-6063

2. Groppa L., Cepoi D., Bodiul L., **Dutca L.** Psoriatic arthritis. In: International Journal of Medical Dentistry. 2020;2(24):264. ISSN 2066-6063

3. **Dutca L**. Impact of comorbidities on the clinical and ultrasound features of psoriatic arthritis. In: *Moldovan Journal of Health Sciences.* 2022; 30(4):10-15.ISSN 2345-1467. DOI:10.52645/MJHS.2022.4.02

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9. **Dutca L.**, Groppa L., Agachi S,. Chiaburu L., Russu E., Corotaș V., Bețiu M. Frecvența sindromului metabolic în artrita psoriazică vs psoriazis cutanat non-artrită. În: *Lucrările Congresului Societății Române de reumatologie. Romanian Journal of Rheumatology, vol XXVII, Suppliment, Poiana Brașov,* 2018, p. 41. ISSN **1843-0791** | e-ISSN 2069-6086. ISSN-L 1843-0791. DOI: 10.37897/RJR. Indexed. DOI - Crossref. https://rjr.com.ro/rjr-vol-xxvii-no-1-year-2018/

10. **Dutca L.**, Agachi S,.Pascari-Negrescu A., Chiaburu L., Popa S., Bețiu M., Russu E., Groppa L.Alterări renale în artrita psoriazică. În: *Lucrările Congresului Societății Române de reumatologie. Romanian Journal of Rheumatology, vol XXVIII, Suppliment, Poiana Brașov,* 2019, p. 131 https://rjr.com.ro/rjr-vol-xxviii-no-2-year-2019/
11. **Dutca L**. Cardiovascular disease in patients with psoriasic arthritis in the Republic of Moldova. In: *Abstract book of Congresulul consacrat aniversării a 75-a de la fondarea Universităţii de Stat de Medicină şi Farmacie „Nicolae Testemiţanu". Chişinău,* 2020, p. 215. ISSN 2537-6381

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13. Groppa L., Cepoi D., Bodiul L., **Dutca L.** Psoriatic arthritis. *Congresul Internațional al Universității „Apollonia" din Iași cu genericul Pregătim viitorul promovând excelența.* Iași 27 februarie-01 martie 2020. In: *International Journal of Medical Dentistry.* 2020;2(24):264. ISSN 2066-6063
14. Russu E., Groppa L., Chișlari L., Rotaru L., **Dutca L.** Impactul determinantelor HLA asupra diagnosticului precoce a artritei psoriazice. În: *Suplimentul Revistei de Științe ale Sănătății din Moldova. Materialele Conferinței științifice anuale cu genericul Cercetarea în biomedicină și sănătate: calitate, excelență și performanță. Chișinău*. 2022, p. 173. ISSN 2345-1467 https://cercetare.usmf.md/sites/default/files/inline-files/MJHS_29_3_2022_anexa_0.pdf

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16. **Dutca L.**, Groppa L., Rotaru L., Nistor A., Bețiu M. Comorbiditatea osteoarticulară la pacienții cu artrită psoriazică. În: *Suplimentul Revistei de Științe ale Sănătății din Moldova. Materialele Conferinței științifice anuale cu genericul Cercetarea în biomedicină și sănătate: calitate, excelență și performanță. Chișinău.* 2022, p. 178. ISSN 2345-1467 https://cercetare.usmf.md/sites/default/files/inline-files/MJHS_29_3_2022_anexa_0.pdf

17. **Dutca L.**, Groppa L., Agachi S., Chiaburu L. Comorbid pathology among patients with psoriasis arthritis of young and middle age. In: *Selection of Abstracts of International Congress "By promoting excellence we prepare the future". Iași.* 2022, p.323. https://www.ijcr.eu/articole/604_08%20Proceedings%20131-142.pdf

18. **Dutca L.**, Groppa L., Stog V., Homițchi M., Russu E., Chiaburu L., Munteanu-Covila D. Valoarea comorbidităților în artrita psoriazică În: *Lucrările Congresului Societății Române de reumatologie. Romanian Journal of Rheumatology, Ediția 29, vol 32, Suppliment. Cluj-Napoca*, 2023, p. 49. e-ISSN 2069-6086 https://rjr.com.ro/rjr-vol-32-no-2-year-2023/

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20. **Dutca L.,** Russu E., Chișlari L., Munteanu-Covila D., Groppa L. Influența comorbidităților asupra evoluției clinico-ecografice ale artritei psoriazice. În: *Lucrările Congresului Societății Române de reumatologie. Romanian Journal of Rheumatology, vol XXXIII, Suppliment.* Iași, 2024, p. 105-106.e-ISSN 2069-6086 DOI:10.37897/RJR https://rjr.com.ro/rjr-vol-33-no-1-year-2024/

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22. Russu E., Groppa L., Chișlari L., **Dutca L.**, Munteanu-Covilă D., Țîgulea A. Artrita psoriazică – presupunerea clinică a diagnosticului în perioada precoce. În: *Suplimentul Revistei de Științe ale Sănătății din Moldova. Materialele Conferinței științifice anuale cu genericul Cercetarea în biomedicină și sănătate: calitate, excelență și performanță. Chișinău*, 2024, p. 241. ISSN 2345-1467 https://cercetare.usmf.md/sites/default/files/inline-files/MJHS_11_3_2024_anexa2__site.pdf

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24. Chișlari L., Groppa L., Russu E., **Dutca L.**, Munteanu-Covila D., Chiaburu L. Diferențierea artritei psoriazice și spondilitei anchilozante în stadiu precoce. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.77.

25. Russu E., Groppa L., Chițlari L., Gonța L., **Dutca L.**, Munteanu-Covila D. Dificultatea aprecierii spondiloartritei nediferențiate în rândul rudelor de gradul întâi cu artrită psoriazică. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.75.

26. Munteanu-Covila D., Russu E., Chișlari L., **Dutca L.**, Groppa L. Mobilitatea articulațiilor în artrita psoriazică – valoarea activității bolii și modificările radiologice. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.73.

27. Russu E., Groppa L., Cișlari L., **Dutca L.**, Munteanu-Covila D. Dificultățile de diagnostic clinic în evoluția spondiloartritei psoriazice și nediferențiate. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.74.

28. Nistor A., Russu E., Groppa L., Agachi S., **Dutca L.**, Munteanu-Covila D. Particularitățile diagnosticului precoce ale artritei reumatoide seronegative comparative cu artrita psoriazică. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.92.

29. **Dutca L.**, Homițchi M., Groppa L., Russu E., Chișlari L., Agachi S. Asocierile comorbide cardiovasculare, renale și dismetabolice la pacienții cu hiperuricemie asociată artritei psoriazice. În: *Mold J Health Sci*, 2024; 11(2) / ANEXA1, ISSN 2345-1467, p.94.

30. **Dutca L.**, Russu E., Groppa L. Comorbidities of osteoarthritis, osteoporosis, and sarcopenia in psoriatic arthritis: clinical and therapeutic perspectives. In: *Abstract Book of the World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO. April 10-13, 2025),Rome, Italy*. p. 369. ISSN: 0937941x https://www.wco-iof-esceo.org/download/2025/abstract-book
31. **Dutca L.,** Russu E., Groppa L**.** Profilul comorbidităților neurologice în artrita psoriazică. *In*: *Mold J Health Sci*, 2025 / ANEXA1 *Culegere de rezumate a Congresului Societății Neurologilor din Republica Moldova, ediția a VIII-a*, ISSN 2345-1467, p. https://cercetare.usmf.md/sites/default/files/2025 06/Anexa%201%20MJHS_12_2_2025_site.pdf

- **Invention patents, registration certificates, and materials presented at invention fairs**

32. Groppa L, **Dutca L,** Russu E. Utilizarea scorului dermatologic a calității vieții (DLQI) la pacienții cu artrită psoriazică. Certificat de inovație Nr. 6274. 02 Sep 2024.
33. Groppa L, **Dutca L,** Russu E. Utilizarea scorului de fatigabilitate FACIT-F pentru aprecierea impactului asupra calității la pacienții cu artrită psoriazică. Certificat de inovație Nr. 6275.02 Sep 2024.
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Active participation in scientific forums

- **Participation with presentations at scientific forums**:

International

35. **Dutca L**., Groppa L., Agachi S,. Chiaburu L., Russu E., Corotaș V., Bețiu M. Frecvența sindromului metabolic în artrita psoriazică vs psoriazis cutanat non-artrită . *Congresul Național de Reumatologie ediția 25-a.* Poiana Brașov 11-13 octombrie 2018.
36. **Dutca L**., Groppa L., Nistor A., Chiaburu L., Bețiu M., Russu E. Relația dintre sindromul metabolic și artrita psoriazică. *Congresul Internațional al Universității „Apollonia" din Iași Pregătim viitorul promovând excelența.* Iași 27 februarie-01 martie 2020.
37. **Dutca L**., Groppa L., Agachi S., Chiaburu L.Patologia comorbidă printre pacienții cu artrită psoriazică de vârstă tînără și medie. *Congresul Internațional al Universității „Apollonia" din Iași Pregătim viitorul promovând excelența. Ediția a XXXII-a.* Iași 28 februarie-2 martie 2022.
38. **Dutca L**., Groppa L., Russu E., Chișlari L., Chiaburu L., Popa S. Calitatea vieții și patologia comorbidă la pacienîii cu artrită psoriazică. *Congresul Internațional al Universității „Apollonia" din Iași Pregătim viitorul promovând excelența. Ediția a XXXIII-a.* Iași 2–5 martie 2023.
39. **Dutca L**.,Russu E., Munteanu-Covila D., Groppa L. Comorbiditățile în artrita psoriazică – dificultatea managementului clinic. *Congresul international – Pregătim viitorul promovând*

excelența, ediția a XXXIV-a, Universitatea "Apollonia", 29 februarie – 3 martie 2024, Iași, România. F2.Tribuna practicianului – MG + AMG + BFKTR, 1 martie 2024.

naţional

40. Dutca L. Comorbidități în artrita psoriazică. *Conferința științifică anuală în cadrul Zilelor USMF „Nicolae Testemițanu".* Chișinău 15-18 octombrie 2019.

Participation with posters at scientific forums:

International

***41.* Dutca L**., Agachi S,.Pascari-Negrescu A., Chiaburu L., Popa S., Bețiu M., Russu E., Groppa L.Alterări renale în artrita psoriazică.*Congresul Național de Reumatologie.* Poiana Brașov 3-5 octombrie 2019.

***42.* Dutca L**., Groppa L., Stog V., Homițchi M., Russu E., Chiaburu L., Munteanu-Covila D. Valoarea comorbidităților în artrita psoriazică. *Congresul Național de Reumatologie.* Cluj-Napoca 5-7 octombrie 2023.

43. Russu E., Chislari L., Nistor A., Homitchi M., Gonta L., **Dutca L**. The combination of psoriatic arthritis with osteoporosis. *World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2024).11-14 Aprilie2024.* Londra, Marea Britanie. (online)

***44.* Dutca L.,** Russu E., Chișlari L., Munteanu-Covila D., Groppa L. Influența comorbidităților asupra evoluției clinico-ecografice ale artritei psoriazice. Al *XXX-lea Congres Naţional de Reumatologie,* 26-28 Septembrie, Iași, România. 2024.

45. Munteanu D., Russu E., Chișlari L**., Dutca L**., Groppa L. (PS.20) Impactul activității artritei psoriazice asupra funcționalității articulațiilor. *Congresul Național de Reumatologie.* Iași 26-28 septembrie 2024.

46. Dutca L., Russu E., Groppa L. Comorbidities of Osteoarthritis, osteoporosis and Sarcopenia in psoriatic arthritis: clinicak and therapeutical perspectives. *World Congress of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases WCO IOF-ESCEO,* Rome 10-13 April 2025.

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49. Dutca L. Afectarea cardio-vasculară la pacienții cu artrită psoriazică din Republica Moldova. *Congresulul consacrat aniversării a 75-a de la fondarea Universităţii de Stat de Medicină şi Farmacie „Nicolae Testemiţanu".* Chişinău 21-23 octombrie 2020.

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