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Original Article

Geographic and Sex Disparities in Psoriasis Prevalence in Spain

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ABSTRACT

Background: Although psoriasis prevalence varies by region, age and sex, there is a lack of comprehensive data for Spain. This study used data from the National Health System Primary Care Clinical Database (BDCAP) for 2023 to investigate demographic patterns and regional disparities in psoriasis prevalence.
Methods: We conducted a cross-sectional analysis of BDCAP data to identify psoriasis cases coded with International Classification of Primary Care code S91. Age-standardized prevalence ratios (ASPR) were calculated using the 2013 European Standard Population. To assess regional disparities, standardized prevalence ratios (SPRs) were calculated for each Autonomous Community using indirect standardization.
Results: In 2023, a total of 1,050,416 psoriasis cases were identified (51.7% men [n = 542,764] and 48.3% women [n = 507,652]). ASPRs were 2.25 per 100 person-years in men and 1.96 in women. Prevalence increased with age, peaking at 4.22 in men aged 70–74 and 3.29 in women aged 65–69. Regional ASPRs varied widely, with the highest rates being reported in Navarre (men, 3.17; women, 2.41) and the lowest in Castile-La Mancha (men, 0.27; women, 0.44). SPR analysis highlighted significant geographic disparities, with Navarre and Cantabria showing elevated prevalence, while Extremadura and Castile-La Mancha had lower-than-expected rates.
Conclusions: This study provides critical insights into psoriasis prevalence across Spain, highlighting significant gender and regional disparities. These findings emphasize the need for tailored public health strategies to address varying disease burdens. Future research should focus on elucidating the environmental, genetic, and health care access factors driving these disparities to inform region-specific interventions aimed at improving psoriasis management nationwide.

Introduction

Psoriasis is a chronic autoimmune disease that affects millions of people worldwide and represents a major public health challenge.[1,2] It significantly affects physical, emotional, and social well-being, thereby reducing quality of life.[3]

Although global psoriasis incidence rates have stabilized or declined in recent years,[4–6] prevalence continues to increase.[1,6–9] This apparent paradox likely reflects improved awareness, advances in diagnostic practices, demographic changes, and environmental factors.[10] In Spain, data from the Global Burden of Disease study show a slight decline in age-standardized incidence between 1990 and 2019.[11] However, prevalence has increased, suggesting that more individuals are living longer with the disease, possibly due to improved management and treatment.[12]

Psoriasis prevalence estimates vary considerably across regions, with adult rates ranging from 0.51% to 11.43% and childhood rates from 0% to 2.1%. These variations may be influenced by genetic, environmental, and sociodemographic factors, differences in case definitions, and disparities in health care access.[2,8,13–16] Even within countries, prevalence differences persist despite the use of consistent diagnostic criteria.[16,17]

In Spain, estimates of psoriasis prevalence have varied widely. Telephone surveys conducted in 2001 and 2014 reported rates of 1.43%

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and 2.3%, respectively, suggesting regional variations beyond changes in incidence rate.[18,19] A study conducted in Lleida using electronic medical health reported a prevalence of 1.72%, with 7.27% of cases classified as moderate to severe.[20] Similarly, the 2016 Catalan Health Survey found that 1.8% of the noninstitutionalized population aged 15 years and older had experienced psoriasis, with 1.7% reporting a recent episode.[21]

More recently, a retrospective observational study using electronic health records from the EpiChron Cohort (Aragón, Spain) analyzed individuals diagnosed with psoriasis between 2010 and 2019. This study reported a higher prevalence of 2.84% in 2019, with a greater burden among men (3.31% vs 2.43%).[22,23]

Despite these efforts, important gaps remain in understanding psoriasis prevalence across specific demographic and regional subgroups in Spain. The present study aims to address these gaps by analyzing the prevalence of psoriasis in Spain in 2023, focusing on sex, age, and regional distribution. To achieve this objective, we used the National Health System Primary Care Clinical Database (BDCAP), a resource that provides standardized clinical data across Spain's Autonomous Communities and represents a valuable tool for epidemiologic research on conditions such as psoriasis.[12]

Conducting an updated and comprehensive analysis of psoriasis prevalence will improve our understanding of its epidemiologic patterns and provide valuable insights for the development of public health strategies. These findings may help guide resource allocation and policy decisions, ultimately contributing to improved patient care and health outcomes in Spain.

Methods

Data source

Data for this study were obtained from the BDCAP (https://www.sanidad.[gob.es/estadEstudios/estadisticas/estadisticas/estMinisterio/SIAP/home.htm]). This database annually collects standardized clinical information on care provided at the primary care level, based on a large random sample (approximately 25%) of medical records from the population assigned to primary care and representative of each Autonomous Community. The data were projected to the population assigned to primary care within the public health care system, comprising 47,785,469 individuals, representing 98.9% of the Spanish population in 2023. Although the population covered by civil servant mutual insurance schemes (MUFACE, ISFAS, MUGEJU) and the private health care sector is not included, their exclusion from both the numerator and the denominator is expected to have minimal impact on prevalence estimates. Cases from 2023 were included in the main analysis, while data from 2018 to 2023 were used to assess temporal trends.

Individuals with psoriasis were identified using the International Classification of Primary Care code S91. Information on sex, age, and place of residence was included. The study population consisted of individuals assigned to primary care, including those with active or open health problems regardless of the date the health problem was recorded. This population served as the denominator for calculating prevalence rates, which were expressed per 100 person-years.

Crude prevalence rates were calculated using the population assigned to primary care each year as the denominator. To facilitate comparisons with other European countries, these rates were adjusted to the 2013 European standard population using 5-year age intervals and the direct standardization method.

To assess regional disparities, indirect standardization was used to calculate standardized prevalence ratios (SPRs) for each Autonomous Community relative to the national average. Expected cases for each Autonomous Community were calculated by applying national age- and sex-specific prevalence rates to the population of that region. SPRs were calculated as the ratio of observed cases (O) to expected cases (E) derived from the BDCAP data. Ninety-five percent confidence intervals (95%CI) were calculated using Byar approximation. The SPR represents a measure of relative risk (RR) compared with the national reference value.

This cross-sectional study adhered to the Declaration of Helsinki and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. All data extracted from BDCAP were anonymized in full compliance with good clinical practice and the Declaration of Helsinki. As no personal information was accessed and participants could not be identified, patient consent and ethics committee approval were not required.

Results

In 2023, 1,050,416 psoriasis cases were identified in Spain, with men accounting for 51.7% (n = 542,764) and women 48.3% (n = 507,652). Crude prevalence rates were 2.32 and 2.08 per 100 person-years for men and women, respectively.

Trends in age-standardized prevalence rates

Between 2018 and 2023, age-standardized prevalence rates (ASPRs) of psoriasis in Spain increased steadily in both sexes (Fig. 1). Among men, ASPRs rose from 1.62 to 2.25 per 100 person-years (+38.9%), while among women they increased from 1.34 to 1.96 (+46.3%). The largest annual increase occurred between 2018 and 2019, when ASPRs rose by 20.4% in men (1.62–1.95) and by 22.4% in women (1.34–1.64). Subsequent annual increases ranged from 1% to 8%.

The male-to-female ASPR ratio declined slightly, from 1.21 in 2018 to 1.15 in 2023, indicating a narrowing sex gap. Nevertheless, men consistently showed higher prevalence rates throughout the study period.

Age-specific prevalence patterns

Psoriasis prevalence increased with age in both sexes, peaking at 4.22 per 100 person-years in men aged 70–74 years and at 3.29 per 100 person-years in women aged 65–69 years (Fig. 2). Women showed slightly higher prevalence during childhood and early adulthood (<35 years). However, from age 35 years onward, men consistently showed higher prevalence rates. The sex disparity increased with age, reaching a male-to-female ratio of 1.56 in the 80–84 age group.

Regional variations and geographical patterns

Substantial regional differences in psoriasis prevalence were observed across Spain's 17 Autonomous Communities in 2023 (Tables 1 and 2; Fig. 3). Northern and eastern regions, including Navarre, Cantabria, and the Valencian Community, consistently showed ASPRs above the national average. In contrast, central and western regions such as Castile-La Mancha and Extremadura reported significantly lower prevalence rates.

Among men, the highest ASPRs were observed in Navarre (3.17), the Valencian Community (2.82), and Cantabria (2.70). Among women, the highest rates were recorded in the Valencian Community (2.57), Murcia (2.39), and Navarre (2.41). Conversely, Castile-La Mancha and Extremadura consistently showed the lowest ASPRs in both sexes.

Sex disparities by region

Regional differences in the male-to-female ASPR ratio highlighted geographic variation in sex disparities. Navarre (1.32), the Basque Country (1.25), and La Rioja (1.25) showed the largest differences between sexes. Conversely, the Canary Islands (1.02) and the Balearic Islands (1.05) demonstrated the most balanced prevalence rates.

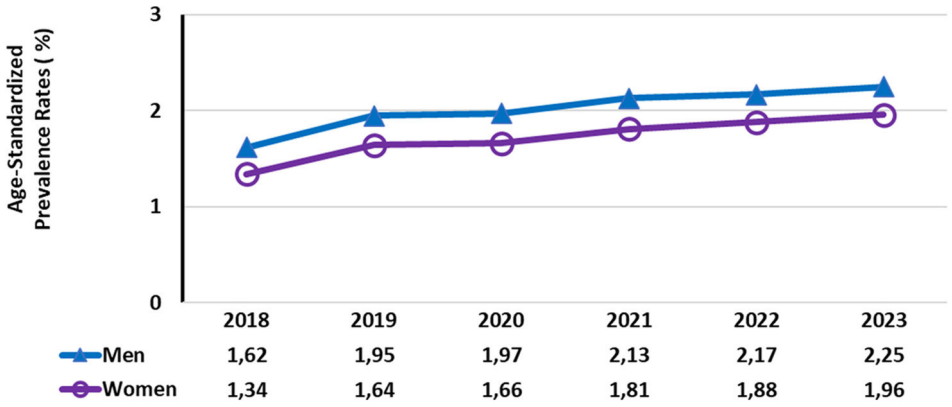

Fig. 1. Age-standardized prevalence rates (ASPR) of psoriasis in Spain from 2018 through 2023 by sex.

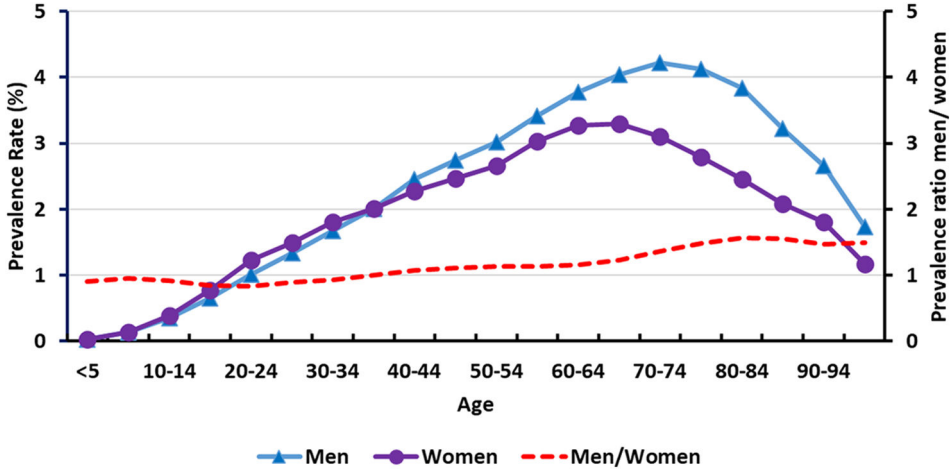

Fig. 2. Prevalence of psoriasis by age, sex, and male-to-female prevalence ratio in Spain, 2023.

Table 1
Crude prevalence rates, age-standardized prevalence rates (ASPR), and standardized prevalence ratios (SPR) for psoriasis in men by Autonomous Community in Spain, 2023.

Autonomous Community	Observed cases	Expected cases	Crude rate (%)	ASPR	95%CI	SPR	95%CI
Andalusia	94,447	94,384.7	2.28	2.24	2.23–2.25	1.00	0.99–1.01
Aragón	16,981	15,683.4	2.56	2.43	2.39–2.46	1.08	1.07–1.10
Asturias	14,157	12,306.2	2.98	2.59	2.54–2.63	1.15	1.13–1.17
Balearic Islands	14,511	13,559.1	2.40	2.45	2.41–2.50	1.07	1.05–1.09
Canary Islands	25,931	24,424.5	2.48	2.38	2.35–2.39	1.06	1.05–1.07
Cantabria	8,250	6,841.0	2.97	2.70	2.64–2.76	1.21	1.18–1.23
Castile and León	29,057	28,627.3	2.55	2.30	2.28–2.33	1.02	1.00–1.03
Castile-La Mancha	6,223	22,801.9	0.63	0.61	0.59–0.63	0.27	0.27–0.28
Catalonia	94,060	89,524.4	2.39	2.37	2.36–2.38	1.05	1.04–1.06
Valencian Community	71,477	57,057.2	2.92	2.82	2.80–2.84	1.25	1.24–1.26
Extremadura	4,837	12,049.2	0.96	0.91	0.88–0.94	0.40	0.39–0.41
Galicia	29,424	31,757.6	2.33	2.10	2.08–2.13	0.93	0.92–0.94
Madrid	73,477	74,917.5	2.22	2.22	2.20–2.22	0.98	0.97–0.99
Murcia	20,225	16,899.2	2.62	2.68	2.64–2.70	1.20	1.18–1.21
Navarre	10,640	7,527.3	3.25	3.17	3.11–3.24	1.41	1.39–1.44
Basque Country	25,054	30,655.3	2.01	1.84	1.81–1.86	0.82	0.81–0.83
La Rioja	4,013	3,742.2	2.55	2.43	2.35–2.51	1.07	1.04–1.11

ASPR, age-standardized prevalence rate; SPR, standardized prevalence ratio; 95%CI, 95% confidence interval.

Standardized prevalence ratios

Standardized prevalence ratios (SPRs), which compare regional prevalence with national expectations, further highlighted geographic disparities (Tables 1 and 2). Among men, Navarre (SPR, 1.41; $P < .05$) and Cantabria (SPR, 1.21; $P < .05$) showed significantly higher-than-expected prevalence, whereas Castile-La Mancha (SPR, 0.27) reported the lowest values. Among women, Murcia (SPR, 1.22; $P < .05$), Navarre

Table 2
Crude prevalence rates, age-standardized prevalence rates (ASPR), and standardized prevalence ratios (SPR) for psoriasis in women by Autonomous Community in Spain, 2023.

Autonomous Community	Observed cases	Expected cases	Crude rate (%)	ASPR	95%CI	SPR	95%CI
Andalusia	94,182	88,504.0	2.19	2.09	2.08–2.10	1.06	1.06–1.07
Aragón	15,271	14,230.0	2.24	2.11	2.08–2.14	1.07	1.06–1.09
Asturias	13,336	11,806.0	2.55	2.23	2.19–2.27	1.13	1.11–1.15
Balearic Islands	14,704	12,408.3	2.41	2.34	2.30–2.38	1.19	1.17–1.20
Canary Islands	27,201	22,755.4	2.52	2.34	2.34–2.37	1.20	1.18–1.21
Cantabria	7,438	6,420.8	2.51	2.27	2.22–2.32	1.16	1.13–1.19
Castile and León	24,681	25,741.0	2.09	1.91	1.88–1.93	0.96	0.95–0.97
Castile-La Mancha	5,144	20,378.8	0.52	0.50	0.49–0.52	0.25	0.25–0.26
Catalonia	85,318	83,611.2	2.10	1.99	1.98–2.01	1.02	1.01–1.03
Valencian Community	69,725	53,353.1	2.73	2.57	2.55–2.58	1.31	1.30–1.32
Extremadura	4,323	10,915.9	0.84	0.79	0.77–0.82	0.40	0.38–0.41
Galicia	26,557	30,035.5	1.94	1.77	1.74–1.79	0.88	0.87–0.89
Madrid	68,631	74,219.7	1.91	1.81	1.80–1.82	0.92	0.92–0.93
Murcia	18,586	15,239.7	2.42	2.39	2.36–2.43	1.22	1.20–1.24
Navarre	8,462	6,854.0	2.52	2.41	2.35–2.41	1.23	1.21–1.26
Basque Country	20,727	27,800.3	1.61	1.47	1.45–1.47	0.75	0.74–0.76
La Rioja	3,366	3,386.3	2.08	1.95	1.88–2.02	0.99	0.96–1.03

ASPR, age-standardized prevalence rate; SPR, standardized prevalence ratio; 95%CI, 95% confidence interval.

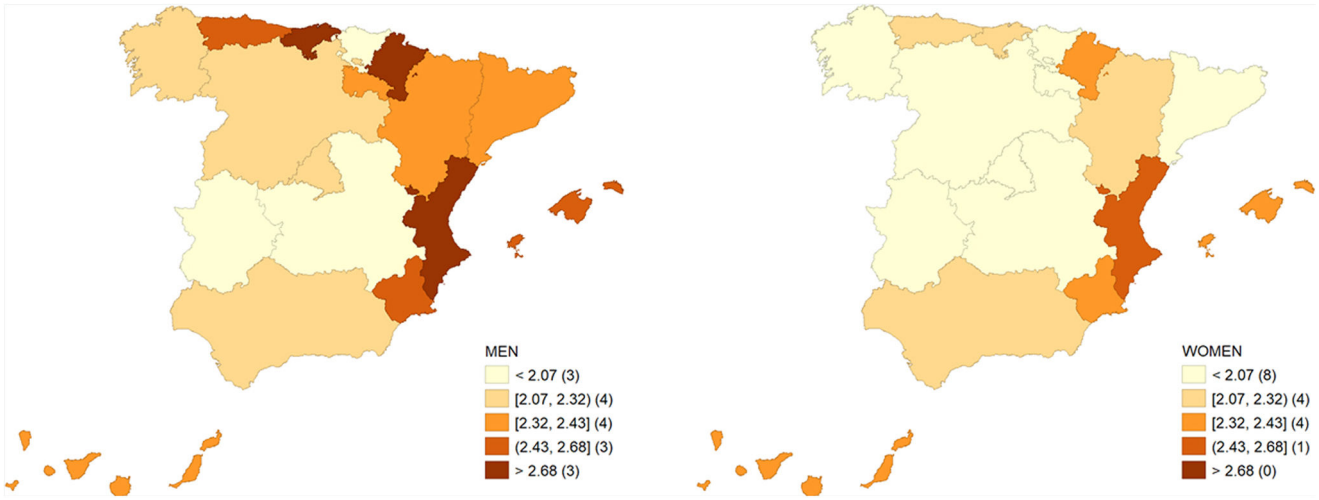

Fig. 3. Age-standardized prevalence rates (ASPR) for psoriasis by Autonomous Community in Spain, 2023.

(SPR, 1.23; $P < .05$), and the Valencian Community (SPR, 1.31; $P < .05$) showed significantly elevated prevalence, whereas Extremadura (SPR, 0.67) and Castile-La Mancha (SPR, 0.44) showed markedly lower rates.

Discussion

This study provides the first comprehensive nationwide analysis of psoriasis prevalence across all Spanish Autonomous Communities using robust data from the BDCAP. By offering a standardized overview of the psoriasis landscape in Spain, this analysis expands beyond previous regional or age-specific studies[18–21] and provides a more comprehensive picture of psoriasis prevalence across the country.

Accurate estimates of psoriasis prevalence are important for several reasons. They provide essential epidemiologic data to identify at-risk populations, inform health policy decisions through resource allocation, and serve as a basis for future research, enabling the study of specific subpopulations and the identification of long-term trends.

Our findings are consistent with previous studies reporting psoriasis prevalence rates between 1% and 4% in predominantly White populations.[6,12,13,18–20,22,23] However, meaningful comparisons across studies remain challenging because of methodological differences, including variations in prevalence definitions, diagnostic criteria, and population characteristics. A particularly important limitation is the frequent absence of age-standardized estimates in the literature. This methodological gap complicates comparisons both within and between countries, especially when populations differ in age structure. Without age standardization, demographic differences may distort interpretations and potentially obscure true variations in disease burden.[13] Implementing standardized age-adjusted reporting would improve the reliability of prevalence comparisons and advance our understanding of psoriasis epidemiology across different populations.

Furthermore, our results are consistent with established epidemiologic evidence showing a higher prevalence of psoriasis in men (2.25%) vs women (1.96%).[22,23] Interestingly, the sex gap in prevalence appears to have narrowed slightly in recent years. This trend may reflect improved access to healthcare, greater awareness of gender disparities in dermatologic care, and the implementation of public health initiatives aimed at promoting equitable treatment.[12] It may also be associated with changes in health-related behaviors, such as increasing smoking rates and obesity, which now affect both sexes more similarly.[12] Emerging evidence further suggests that hormonal factors, traditionally considered

important in psoriasis pathogenesis, may not fully explain the observed sex differences in prevalence.[24,25]

This study also provides additional insights into age-specific prevalence patterns. Although psoriasis prevalence generally increases with age,[26] we observed a decline in prevalence after age 64 years in women and after age 79 years in men. This pattern may reflect depletion of the psoriasis population in older age groups, potentially associated with increased all-cause mortality among individuals with psoriasis, particularly those with severe disease.[26] Chronic systemic inflammation associated with severe psoriasis may contribute to this increased mortality risk and could partially explain the observed decline in prevalence among older adults.[27]

Differences in health care utilization may also contribute to sex-related disparities in psoriasis management. Younger women are more likely to consult primary care physicians and engage in self-management, whereas younger men are more likely to seek specialized dermatologic care. Consequently, men may receive systemic therapies and biologic treatments more frequently despite comparable or even greater disease burden in women. In addition, phototherapy – an effective treatment modality for psoriasis – appears to be underutilized among young women.[28]

Across all Autonomous Communities, psoriasis prevalence was consistently higher in men than in women. However, sex-related disparities remain complex and not fully understood.[6,14,25] Some studies report higher prevalence in women,[5] whereas others show higher prevalence in men[19] or no significant differences.[18] These inconsistencies likely reflect differences in study design, population characteristics, health care access, and diagnostic practices.[6,13]

Potential explanations include hormonal influences, differences in immune responses, and lifestyle-related factors such as smoking and alcohol consumption. Hormonal influences may play a role in disease onset and progression,[24,25] while behavioral factors – particularly smoking and alcohol consumption – are more strongly associated with disease progression in men.

Psoriasis prevalence also demonstrated considerable regional variability across Spain, with particularly high rates observed in northern and eastern regions, notably Navarre (Fig. 3). This geographic variability likely results from complex interactions among genetic, environmental, and healthcare-related factors. Understanding these determinants is essential to explain the observed distribution patterns and to guide targeted public health interventions.[18,19]

Environmental triggers – including obesity, streptococcal infections, air pollution, ultraviolet radiation, and smoking – are well-established contributors to psoriasis onset and progression.[29] Obesity is a particularly important risk factor and is associated with more severe forms of the disease. This relationship is observed in both sexes, although the association between psoriasis and metabolic syndrome may vary by sex. Smoking and alcohol consumption also contribute to disease severity, with stronger associations reported in men, possibly reflecting higher exposure to these risk factors.

Regional differences in health care infrastructure may also contribute to variability in reported prevalence. Regions with more developed health care systems and greater access to dermatologic services may diagnose psoriasis more frequently, whereas regions with limited access may experience underdiagnosis or misclassification, contributing to geographic disparities.

The complex interaction between genetic susceptibility, environmental exposures, and health care access highlights the importance of integrated public health and clinical strategies for psoriasis management. Educational initiatives addressing modifiable risk factors – such as smoking cessation, weight control, stress management, and healthy lifestyle habits – should form part of a comprehensive approach to psoriasis care. Increasing awareness of the association between obesity and psoriasis severity may be particularly important, as weight management interventions may improve clinical outcomes. Furthermore, emerging research suggests that environmental exposure management and microbiome-targeted therapies could represent future therapeutic approaches. These strategies should be integrated into individualized treatment plans, with clinicians emphasizing lifestyle modification alongside pharmacologic therapies.[29]

This study has several limitations. Although the large nationwide dataset provided by BDCAP allows robust prevalence estimates, reliance on administrative health records and the use of the International Classification of Primary Care (ICPC) code S91 may lead to misclassification or underreporting of psoriasis cases. Diagnostic coding practices may also vary between health care providers and across regions, potentially introducing bias. Although the ICD-10 coding system used in BDCAP provides standardized diagnostic criteria, validation studies specifically evaluating psoriasis codes in Spanish primary care databases remain limited. In addition, BDCAP excludes individuals treated through private mutual insurance schemes for civil servants; however, because these individuals are excluded from both the numerator and denominator, the resulting prevalence estimates should still approximate population prevalence.

Moreover, the cross-sectional design limits our ability to establish causal relationships between regional factors and psoriasis prevalence. Longitudinal studies would help clarify temporal associations and the natural history of psoriasis across demographic groups. Furthermore, although analyses were adjusted for age and sex, other potential confounders – such as socioeconomic status, urbanization, and environmental exposures – were not included and may have influenced regional differences. Information regarding disease severity, psoriasis subtypes, and treatment patterns is also not available within BDCAP, limiting more detailed clinical analyses.

Despite these limitations, this study provides valuable insights into the epidemiology of psoriasis in Spain and establishes a foundation for future research and public health initiatives addressing this common and impactful dermatologic condition.

Conclusions

This nationwide analysis of psoriasis prevalence in Spain provides important insights into the epidemiology of the disease, revealing significant sex- and region-related differences. Men – particularly those older than 35 years – show higher prevalence rates, although the sex gap appears to have narrowed in recent years. The observed decline in prevalence among older age groups raises important questions regarding the long-term impact of psoriasis and its potential association with increased mortality, highlighting the need for further investigation into the role of chronic systemic inflammation. Marked regional differences, particularly in northern and eastern Spain, underscore the influence of genetic, environmental, and healthcare-related factors on disease distribution. These findings emphasize the need for region-specific and sex-specific public health strategies, alongside clinical interventions targeting modifiable environmental.

Conflict of interest

The authors declare no conflict of interest.

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