Running head: Prevalence of Psoriatic arthritis

The National Prevalence of Clinically Diagnosed Psoriatic Arthritis in Sweden 2017

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Conflict of interest

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Ethics approval and consent to participate

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ABSTRACT

Objectives

Psoriatic arthritis (PsA) prevalence estimates vary across studies; studies based on national data are few. We aimed to estimate the prevalence of clinically diagnosed PsA in Sweden in 2017, overall and stratified by sex/age/education/geography, and to quantify disease-modifying anti-rheumatic drug (DMARD) use among those in contact with specialized rheumatology care 2015-2017.

Methods

Individuals, 18-79 years (y), alive, residing in Sweden on December 31, 2017, with a prior PsA diagnosis were identified from the National Patient Register (NPR) and/or the Swedish Rheumatology Quality Register (SRQ). The PsA prevalence was estimated according to a base case (BC) definition (≥1 main PsA ICD-code from rheumatology or internal medicine departments in NPR, or a PsA diagnosis in SRQ), four sensitivity analysis definitions, and for those seen in specialized rheumatology care 2015-2017. In the latter group, DMARD use during 2017 was also assessed. Data for stratifications were retrieved from national registers.

Results

The crude national prevalence of PsA (18-79y) was estimated at 0.39% (BC), 0.34% after accounting for diagnostic misclassification and 0.32-0.50% across all sensitivity analyses. The prevalence was lower in males and in those with higher level of education. The prevalence for those seen in specialized rheumatology care 2015-2017 was estimated at 0.24%. In this population, 32% received biologic or targeted synthetic DMARDs, and 41% conventional synthetic DMARDs only, during 2017.

Conclusion

The prevalence of clinically diagnosed PsA (18-79y) in Sweden in 2017 was around 0.35%. Among PsA cases in recent contact with specialized rheumatology care, almost 3/4 received DMARD therapy in 2017.

INTRODUCTION

Psoriatic arthritis (PsA) is a chronic inflammatory disease strongly associated with psoriasis (PsO) and a member of the spondyloarthritis (SpA) family.(1)

Previous prevalence estimates of PsA in the general population vary considerably, ranging from 0.02% to 0.67% across studies.(2) This variation can be partly attributed to methodological differences, but may also reflect ethnic and geographic variations in genetic or environmental factors related to PsA onset, as well as variations over time in the prevalence of PsA. A recent meta-analysis estimated the pooled global prevalence of PsA at 0.13% (Asia 0.20%, North America 0.14%, South America 0.12%) and showed pooled estimates in North Europe to exceed those in South Europe (0.17% and 0.10% respectively), with no clear gender difference.(2)

PsA leads to reduced health-related quality of life in many cases and imposes a considerable economic burden on patients and society, comparable to that of rheumatoid arthritis and ankylosing spondylitis.(3, 4) Contemporary and nationwide estimates of the PsA occurrence are thus important in order not only to better understand and characterize the disease, but also to gain insight into the unmet requirements on healthcare systems from patients with PsA.

The present study aimed to estimate the national prevalence of clinically diagnosed PsA among adults in Sweden in 2017, overall as well as stratified by sex, age, geographical and socioeconomic factors, and for those in contact with specialized rheumatology care 2015-2017. In the latter group, the use of disease-modifying anti-rheumatic drugs (DMARDs) during 2017 was also assessed.

METHODS

Study setting - Data sources

This is a nationwide, observational study based on prospectively collected data from a number of national Swedish administrative, healthcare and quality control registers. Use of the unique personal identity number that each individual residing in Sweden on a permanent basis has since 1947, enabled linkage of these registers.

Health provision in Sweden is tax funded, with equal access to public care, independent of individual financial or insurance considerations. Moreover, there is an upper limit to an individual's annual costs for medical consultations and prescription medications.(5, 6) PsA is typically diagnosed and treated at public (or less commonly private) rheumatology or internal medicine departments, although milder cases, not requiring DMARD therapy, may be referred back to primary care after the diagnosis has been made.

In Sweden, inpatient and specialized outpatient care is recorded in the Swedish National Patient Register (NPR).(7) The NPR encompasses the Inpatient Register (IPR) which contains data from inpatient healthcare episodes since 1964 (complete national coverage since 1987), and the Outpatient Register (OPR), which was launched in 2001 and contains information about visits to specialized outpatient care (not primary care). The coverage of the OPR is not complete, mainly due to missing data from private caregivers, but has improved over time and is now close to 100%.(8) Apart from the administrative data (e.g. date of admission/discharge, date of visit to specialized outpatient care, type of department etc.), one main and optionally secondary diagnoses are registered in the NPR at each discharge/visit. Diagnoses are registered according to the International Classification of Diseases (ICD)-system.(9)

For the present study, the NPR was one of the sources used to identify prevalent PsA cases. The validity of clinical ICD-10 codes for PsA (L40.5, M07.0, M07.1, M07.2, M07.3) in the NPR has been shown to be good, with a PPV (positive predictive value) of 86% for fulfillment of established PsA classification criteria.(10) Additionally, NPR was used to identify exclusion diagnoses (e.g. rheumatoid arthritis) and extra-musculoskeletal manifestations (inflammatory bowel disease and anterior/posterior uveitis; for ICD-codes see Supplementary Table S1)

The Swedish Rheumatology Quality Register (SRQ),(11) which contains clinical data on diagnosis, treatments and follow-up for patients with rheumatic diseases since 1999, was used as an additional data source for identification of PsA cases, as well as exclusion diagnoses.

The Swedish Prescribed Drug Register (PDR),(12) which includes information about all prescribed drugs dispensed by Swedish pharmacies since 2005, was used to identify pharmacological treatments with non-steroidal anti-inflammatory drugs (NSAIDs), oral glucocorticoids, conventional synthetic DMARDs (csDMARDs), targeted synthetic DMARDs (tsDMARDs) and subcutaneous biological DMARDs (bDMARDs), and served as an auxiliary source for identification of intravenous bDMARD treatments. The SRQ was used as main source for identification of intravenous bDMARDs, which to a lower extent are captured by the PDR (for Anatomical Therapeutic Chemical – ATC-codes see Supplementary Table S2).

Data on the total Swedish population in 2017, as well as information about demographics and levels of formal education for both PsA cases and the Swedish population were retrieved from the Total Population Register.(13) Vital status of the prevalent PsA cases in 2017 was retrieved from the Cause of Death Register, which entails data on dates and cause of death since 1961.(14)

Study population – PsA case definitions

All individuals, 18-79 years, alive and residing in Sweden on December 31, 2017, having received at least one ICD-code for PsA (Supplementary Table S1) in the NPR (1968-2017) or registered with a diagnosis of PsA in SRQ were identified.

The base case (BC) definition for PsA prevalence estimation required having received at least one main ICD-code for PsA from a department of rheumatology or internal medicine in the NPR, or a PsA diagnosis in SRQ (Table 1). The distribution of specific ICD-codes for PsA is presented in detail in Supplementary Table S3. Apart from the BC definition, a number of more liberal and stricter sensitivity analysis case definitions were also used, as described in Table 1. A validation-adjusted case definition was also applied in order to account for possible misclassification, and was based on the results of a prior validation of the BC definition in which 86% of 400 cases fulfilled established PsA classification criteria.(10) Furthermore, we assessed the prevalence of PsA in contemporary contact with specialized rheumatology care, using a 3-year time frame (2015-2017) based on the clinical observation that PsA patients with mild or well-controlled disease may be visiting rheumatologists less frequently than every two years.

Outcomes

The primary outcome was the estimation of the national prevalence of clinically diagnosed and registered PsA among adults (18-79 years) in Sweden on December 31, 2017 based on the BC definition. As secondary outcomes, the prevalence (according to BC definition), was stratified by sex, age groups (18-29, 30-39, 40-49, 50-59, 60-69, 70-79 years), levels of formal education (≤9 years, 10-12 years, >12 years), and healthcare regions (Northern, Uppsala-Örebro, Stockholm, Western, Southeastern, Southern), and was also assessed restricted to patients in contemporary contact with

specialized rheumatology care 2015-2017. Sensitivity analyses were performed by estimating the prevalence of clinically diagnosed PsA among adults (18-79 years) based on more liberal or stricter case definitions (Table 1).

Among all individuals having at least one registered PsA diagnosis (main or secondary) from any department of specialized care in the NPR 1968-2017, 345 patients had registered PsA, juvenile PsA or juvenile idiopathic arthritis (JIA) diagnosis/diagnoses only in childhood (before 16 years of age) but never in adulthood. These cases were a priori decided to be excluded, since the validity of diagnoses during childhood has not been previously assessed and this group may represent self-limiting disease or misdiagnosis. Individuals who received a first ICD-diagnosis of PsA, juvenile PsA or JIA (all 1.10%; juvenile PsA 0.62%; JIA 0.50%) before the age of 18, but also at least one PsA diagnosis during adulthood, were, however, included in the prevalence estimates.

An upper age limit of 79 years was set since estimates showed a substantial drop in the PsA prevalence at the age group 80 years or older (Supplementary Figure S1), and prevalence estimates stratified by levels of education were limited to individuals 30-79 years. (For additional information see Supplementary Data S1).

Apart from the PsA prevalence estimates, the treatment penetrance during 2017 was assessed in prevalent PsA cases (18-79 years) overall and among those in contemporary contact with specialized rheumatology care (2015-2017).

Statistics

Crude prevalence estimates are presented for all PsA case definitions and all secondary analyses. Both crude and age-/sex-standardized (to the Swedish population 18-79 years in 2017) prevalence estimates by levels of education and by healthcare regions as well as 95% confidence intervals (95% CI) are shown. Use of the different pharmacological treatments was described by case definition and stratified by sex for the base case definition.

Ethical approval

Ethical approval for the study was granted by the Regional Ethics Committee in Stockholm, Sweden (Dnr. 2015/1844-31/2).

RESULTS

General population

On December 31, 2017, the adult (≥18 years) population of Sweden was almost 8 million (n=7 998 644), of which 93.6% (n=7 485 974) were aged 18-79 years (50.6% males).

Characteristics of prevalent PsA cases

A total of 29 359 subjects (18-79 years, alive and residing in Sweden on December 31, 2017) with clinically diagnosed PsA according to the BC definition were identified (Table 2). The vast majority of these had a registered diagnosis in the NPR; only 1.5% were derived from the SRQ exclusively. The corresponding numbers of PsA cases identified when instead applying the liberal and strict case definitions were 37 288 and 24 062, respectively (Table 2). Of those fulfilling the BC definition of PsA, 46% were males. The mean age on Dec 31, 2017 was 56.6 years (SD 13.3) and similar between the sexes (Table 2). The majority of the prevalent PsA cases (30-79 years) with available information about educational level had achieved at least 10 years of formal education (Table 2). Almost 30% were ranked as highly educated (>12 years), with a female predominance in this group. Of those

fulfilling the BC definition, 62% (n=18 097) had a contemporary contact with specialized rheumatology care in 2015-2017. Finally, in regards to PsA phenotype, the proportion of PsA cases according to our BC definition with registered diagnoses indicating a more predominant axial disease is described in Supplementary Table S4.

Prevalence estimates

The national prevalence of clinically diagnosed PsA in the adult (18-79 years) population in Sweden in 2017 according to the BC and all sensitivity analysis case definitions are presented in Figure 1. The PsA prevalence according to the BC definition was estimated at 0.39%. Corresponding estimates when instead applying the liberal and strict case definitions were 0.50% and 0.32%. The use of the validation-adjusted BC definition resulted in a prevalence estimate of 0.34%. After exclusion of PsA cases who had also received a main diagnosis of rheumatoid arthritis the prevalence was estimated at 0.36%. Moreover, the prevalence of PsA in contact with specialized rheumatology care 2015-2017 was 0.24%.

Irrespective of age group or the PsA case definition applied, the PsA prevalence was numerically higher among females, with a total female to male ratio of 1.2 to 1 (0.43% vs 0.35%, by the BC definition (Figure 2). The prevalence increased with age up to the age of 69 years, before decreasing again in the age group 70-79 years in both sexes (Figure 2), a pattern observed regardless of the case definition used (data not shown).

High level of formal education was associated with numerically lower PsA prevalence, according to both crude and age- and sex- standardized estimates (Table 3). Crude and age- and sex- standardized prevalence estimates stratified by healthcare region were quite homogeneous (at around 0.40%) across Sweden, with the exception of Stockholm region where a numerically clearly lower prevalence of PsA was found (Table 3).

Use of pharmacological treatment

During 2017, NSAIDs and oral glucocorticoids were used by 42% and 19%, respectively, of the PsA cases according to the BC definition, more frequently among females (males: 40%/17% versus females 43%/21%) (Table 1). Overall, 23% of cases meeting the BC definition were treated with either bDMARDs or tsDMARDs during 2017 (with or without concomitant use of csDMARDs), while an additional 30% received csDMARDs only. Both the use of bDMARDs/tsDMARDs and the solely use of csDMARDs were numerically more common among males (males: 25%/32% versus females 21%/27%) (Table 1). Methotrexate was the most frequently used csDMARD and tumor necrosis factor inhibitors (TNFi) most common among the bDMARDs (Table 1). Among the 18 097 PsA cases in contact with specialized rheumatology care 2015-2017 (62% of all PsA cases by the BC definition), the proportion treated with any type of DMARDs during 2017 was 72%, still numerically higher among males. Thirty-two percent of such PsA cases were treated with either a bDMARD or a tsDMARD (with or without concomitant use of csDMARDs) and 41% with csDMARDs only (Figure 3).

DISCUSSION

In this nationwide, register-based study, the national prevalence of clinically diagnosed PsA in the adult (18-79 years) Swedish population in 2017 was estimated at around 0.35% (0.39% according to the BC definition, 0.34% according to the validation-adjusted BC definition and 0.32%-0.50% across sensitivity analyses). The prevalence was slightly lower in men and in those with the highest level of education. Among the 62% of PsA cases according to the BC definition who were seen in specialized

rheumatology care for PsA during the last 3 years of our study period (2015-2017), almost 75% received DMARD therapy in 2017.

Our national PsA prevalence estimates are among the highest reported. Higher estimates derive mainly from population-based studies, using self-reported questionnaire data or telephone interviews, from Italy (0.42% in 2005), Norway (0.67% in 2008) and Spain (0.42% in 2016).(15-17) Although a direct comparison to our study is complicated by the different study designs, a higher risk for misclassification of other diagnoses as PsA and overestimation of the prevalence is usually expected from studies with such a design. Lower PsA prevalence estimates derive from previous register-based studies.(18-23) In Canada and in Israel, the PsA prevalence in 2015, based on health administrative register data, was estimated at 0.15%.(18, 19) The national prevalence of PsA in adults in Denmark was estimated by a register-based study at 0.28% in 2012.(23) The prevalence of PsA in Sweden has been previously assessed by three register-based studies based on the Skåne Health Care Register that holds information about primary and specialized healthcare utilization in the southernmost county of Sweden.(20-22) Haglund et al. reported a prevalence of PsA leading to a physician consultation at 0.25% in 2007.(20) Löfvendahl et al. estimated the prevalence of clinically diagnosed PsA with a co-existing PsO diagnosis at 0.21% in 2010,(21) while the prevalence of PsA leading to at least one physician consultation was estimated by Jordan et. al. at 0.30% in 2010. (22) The corresponding PsA prevalence estimate from the Southern region of Sweden in our study (encompassing not only Skåne, but also some other counties) was 0.43%. While our assessment was limited to adults 18-79 years old, the above mentioned studies did not utilize the same age restrictions [all ages (21-23), ≥15 years (20)]. Low prevalence in the youngest and oldest age groups, demonstrated previously,(18, 20, 23) may have contributed to lower total prevalence estimates in the previous studies. Furthermore, the higher estimates of our study may reflect the much wider case identification period used (49 years in our study versus 4-7 years in previous Swedish studies),(20-22) extending all the way back to 1968. This may result in inclusion of PsA cases with limited contact with the specialized healthcare system during the years leading up to 2017. Indeed the prevalence estimate of PsA in our study dropped to 0.24%, more analogous to the previous estimates, when only cases seen in specialized rheumatology care 2015-2017 were included. Finally, an increasing prevalence of PsA over time, indicated in some studies,(18, 19, 24) may have contributed to a higher estimate in the current study.

In our study, the prevalence of clinically diagnosed PsA was numerically slightly higher in women than in men. Although some previous studies support this observation,(16, 20, 21, 23, 25) there is inconsistency among prior results and a recent meta-analysis indicated no gender differences.(2) Moreover, the prevalence estimates in our study peaked in the age group 60-69 years, which is in accordance with previous observations from Denmark and Canada.(18, 23)

The present study also suggests a lower PsA prevalence among individuals with a high level of formal education, traditionally used as a proxy for the individual's socioeconomic status (SES). This observation is in contrast to the findings of an Israeli study, indicating that PsA was most frequent in people with a higher SES.(19) The validity of our results is enhanced by the use of a more generally accepted individual-based rather than an area-based proxy for the SES, as the latter may underestimate associations between SES and health outcomes.(26) Moreover, such an inverse relationship has also been shown previously for other chronic inflammatory diseases, such as RA and ankylosing spondylitis, as for chronic diseases in general.(27-29) Our observation may indicate that environmental factors and exposures related to lower SES may play a role in PsA development. However, further studies are needed in order to assess this hypothesis.

No clear geographic pattern regarding the PsA prevalence was seen in our study. Prevalence estimates were quite homogeneous across Sweden, with the exception of the Stockholm region, where a lower prevalence of PsA was found. It appears unlikely that this finding would stem from discrepancies in population genetics between Stockholm and the rest of the country. Environmental exposures or factors related to SES, may play a role. Referral patterns may also differ due to a higher availability of private caregivers operating in Stockholm (all of whom may not report ICD-codes to the NPR) compared to other parts of Sweden, resulting in lower registration of PsA cases in the NPR.

In our study 53% of all PsA cases were treated with any type of DMARD during 2017 (23% bDMARD or tsDMARDs), a proportion that increased to 72% (32% bDMARDs or tsDMARDs) when assessing PsA cases with active contact with the specialized rheumatology care during the last 3 years of the study. These results are in analogy with those shown for PsA patients with established disease from a large international PsA database.(30) Some sex differences were also observed regarding treatment, with more frequent use of NSAIDs and oral glucocorticoids among females and more frequent use of any DMARDs among males. Considering the previously described higher disease burden (pain, disability and fatigue) as well as higher disease activity and persistent poly-articular disease in women,(31, 32) our findings may indicate sex differences in the management of PsA, or differences in other factors that may influence treatment decisions.

Strengths and limitations

The present study is one of only a few available nationwide prevalence studies on clinically diagnosed PsA.(17, 23) The national, register-based approach, the uniform case ascertainment and the large sample size enabled the assessment of potential sex, age, geographical and socioeconomic variations in disease occurrence and the sex-specific description of pharmacological treatment penetrance. Moreover, the large number of sensitivity analyses enhances the precision of our results.

However, despite the almost complete national coverage of the NPR, a selection bias may exist, as cases with a mild disease course that do not seek healthcare are not detected. Although this could lead to underestimation of the real PsA prevalence, the aim of our study was to assess the prevalence of clinically diagnosed PsA, i.e. PsA that poses a burden on the healthcare system.

An underestimation of the prevalence of clinically diagnosed PsA may also be expected, as the NPR does not capture PsA cases managed exclusively in primary care and captures to a lesser extent those managed exclusively in a private specialized care setting. The proportion of individuals with only primary care health contacts for PsA has been estimated at 26.7% and 8.5%, respectively, in two studies prior to 2010 from southern Sweden.(21, 22) The exact size of underestimation for our study is difficult to gauge. However, in the latter of the two previous studies, only 18-24% of the PsA cases with a diagnosis deriving exclusively from primary care were found to fulfill established PsA classification criteria.(21) Furthermore, the proportion of PsA cases exclusively followed in primary care is expected to be lower in 2017, considering the diagnostic and therapeutic advances in PsA. The number of PsA cases exclusively followed in private specialized care is expected to differ regionally depending on the availability of private caregivers. However, patients followed at such units might occasionally also consult public rheumatology departments. The small number of PsA cases meeting the BC definition that was derived exclusively from the SRQ, offers some approximation of the proportion of PsA cases followed exclusively by private caregivers (Data not shown).

The validity of the ICD-based PsA diagnoses may also be questioned. To address this issue, the validity of clinical ICD-10 codes for PsA in the NPR was assessed in a separate study and has been shown to be good, with a PPV of 86% for fulfillment of established PsA classification criteria.(10)

Based on this, to account for such potential misclassification, a validation-adjusted BC definition was included among the current sensitivity analyses of PsA prevalence.

Conclusion

In this nationwide, register-based study, the contemporary estimate of the prevalence of clinically diagnosed PsA in Sweden was around 0.35%. The results, including the description of pharmacological treatment penetrance, illustrate the burden that PsA places on the healthcare system and can support future discussions on healthcare planning and treatment algorithms. Moreover, the interesting sociodemographic variations in disease occurrence may provide clues to the aetiopathogenesis of PsA.

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Figure 1.

Title: National prevalence of clinically diagnosed psoriatic arthritis in Sweden 2017.

Legend: The national prevalence of clinically diagnosed psoriatic arthritis among adults (18-79 years) in Sweden in 2017, according to different case definitions. *RA: Rheumatoid arthritis*

Figure 2.

Title: National prevalence of clinically diagnosed psoriatic arthritis in Sweden 2017.

Legend: The national prevalence of clinically diagnosed psoriatic arthritis in adults (18-79 years) in Sweden in 2017, according to the base case definition, stratified by sex and age.

Figure 3.

Title: Use of pharmacological treatment in prevalent psoriatic arthritis.

Legend: The proportion of prevalent psoriatic arthritis cases (18-79 years) with contemporary contact with specialized rheumatology care (2015-2017)[a] treated with disease modifying anti-rheumatic drugs[b] during 2017. *[a]Defined as ≥1 main ICD diagnosis of PsA from a rheumatology or internal medicine department in the NPR or ≥1 visit in SRQ 2015-2017; constituting 62% of all prevalent PsA patients according to the base case definition. [b]csDMARDs: Sulfasalazine, Leflunomide, Ciclosporine, Azathioprine, Methotrexate, Sodium aurothiomalate, Auranofin, Chloroquine, Hydroxychloroquine; bDMARDs: Adalimumab, Certolizumab pegol, Etanercept, Golimumab, Infliximab, Abatacept, Secukinumab, Ustekinumab; tsDMARDs: Apremilast. NPR: National Patient Register; SRQ: Swedish Rheumatology Quality Register; csDMARDs: conventional synthetic disease modifying anti-rheumatic drugs; bDMARDs: biological disease modifying anti-rheumatic drugs; tsDMARDs: targeted synthetic disease modifying anti-rheumatic drugs*

Table 1.
Title: Definitions used for the identification of psoriatic arthritis cases

Case definition	Description
Base case (BC) definition	≥ 1 main ICD-code for PsA diagnosis from a department of rheumatology or internal medicine in the NPR, or a PsA diagnosis in SRQ
Liberal case definition	≥ 1 main or secondary ICD code of PsA diagnosis from any department in the NPR or a PsA diagnosis in SRQ
Strict case definition	≥ 2 ICD diagnoses of PsA in the NPR, of which ≥ 1 as main diagnosis from a department of rheumatology or internal medicine.
Validation-adjusted BC definition	As BC but reducing the number of cases by 14%, in line with a prior validation of the BC definition in which 86% of 400 cases fulfilled established PsA classification criteria
BC minus rheumatoid arthritis	As BC but excluding cases that had received ≥ 1 ICD main diagnosis of rheumatoid arthritis from rheumatology or internal medicine in the NPR
BC in contemporary contact with specialized rheumatology care	As BC but limiting the cases to those in contemporary contact with specialized care, i.e. to those with ≥ 1 ICD diagnosis of PsA from rheumatology or internal medicine in the NPR or ≥ 1 visit in SRQ between 2015 and 2017

ICD: International Classification of Diseases (ICD-7: 1964-1967; ICD-8: 1968-1986; ICD-9: 1987-1996; ICD-10: 1997-present); PsA: psoriatic arthritis; NPR: National Patient Register; SRQ: Swedish Rheumatology Quality Register

Table 2.

Title: Characteristics of prevalent psoriatic arthritis cases.

Legend: Demographics and pharmacological treatment use in prevalent psoriatic arthritis patients (18-79 years) in Sweden on Dec 31, 2017, according to the base case, liberal and strict case definitions.

	Base case definition			**Liberal case definition**	**Strict case definition**
	Men n=13426	**Women n=15933**	**Total n=29359**	**Total n=37288**	**Total n=24062**
Demographics					
Male sex	NA	NA	13426 (45.73)	16813 (45.09)	11172 (46.43)
Age on Dec 31 2017, mean (SD)	56.4 (12.9)	56.8 (13.5)	56.6 (13.3)	57.0 (13.5)	56.8 (13.2)
Level of education (30-79y)[a]	**n=13060**	**n=15319**	**n=28379**	**n=35910**	**n=23280**
≤9 years	2668 (20.43)	2474 (16.15)	5142 (18.12)	6689 (18.63)	4252 (18.26)
10 - 12 years	6754 (51.72)	7698 (50.25)	14452 (50.92)	18257 (50.84)	11946 (51.31)
>12 years	3594 (27.52)	5115 (33.39)	8709 (30.69)	10862 (30.25)	7020 (30.15)
Pharmacological treatment during 2017[b]					
NSAIDs[b]	5424 (40.40)	6833 (42.89)	12257 (41.75)	15025 (40.29)	10319 (42.89)
Oral glucocorticoids[b]	2224 (16.56)	3267 (20.50)	5491 (18.70)	6673 (17.90)	4825 (20.05)
csDMARDs[b]	5971 (44.47)	6112 (38.36)	12083 (41.16)	14024 (37.61)	11001 (45.72)
Methotrexate	5243 (39.05)	5077 (31.86)	10320 (35.15)	11930 (31.99)	9429 (39.19)
csDMARDs other than methotrexate	1100 (8.19)	1509 (9.47)	2609 (8.89)	3050 (8.18)	2334 (9.70)
TNFi therapy	2942 (21.91)	2717 (17.05)	5659 (19.28)	6573 (17.63)	5227 (21.72)
Adalimumab[b]	926 (6.90)	808 (5.07)	1734 (5.91)	2081 (5.58)	1575 (6.55)
Certolizumab pegol[b]	134 (1.00)	135 (0.85)	269 (0.92)	316 (0.85)	252 (1.05)
Etanercept[b]	1269 (9.45)	1321 (8.29)	2590 (8.82)	3026 (8.12)	2416 (10.04)
Golimumab[b]	307 (2.29)	247 (1.55)	554 (1.89)	615 (1.65)	514 (2.14)

Infliximab[c]	461 (3.43)	402 (2.52)	863 (2.94)	957 (2.57)	800 (3.32)
tsDMARDs or bDMARDs other than TNFi					
Abatacept[c]	21 (0.16)	70 (0.44)	91 (0.31)	132 (0.35)	77 (0.32)
Apremilast[b]	224 (1.67)	298 (1.87)	522 (1.78)	662 (1.78)	475 (1.97)
Secukinumab[b]	275 (2.05)	377 (2.37)	652 (2.22)	778 (2.09)	609 (2.53)
Ustekinumab[b]	124 (0.92)	143 (0.90)	267 (0.91)	364 (0.98)	243 (1.01)
bDMARDs or tsDMARDs	3417 (25.45)	3346 (21.00)	6763 (23.04)	7983 (21.41)	6231 (25.90)
Only csDMARDs	4337 (32.30)	4375 (27.46)	8712 (29.67)	10194 (27.34)	7855 (32.64)

N (%) if not otherwise stated.

[a]Information on level of education was not retrieved for residents <30 years, who may not have completed their edcucation

[b]Based on dispensed medications registered in the Prescribed Drugs Register according to ATC-codes.

[c]Based on dispensed medications registered in the Prescribed Drugs Register according to ATC-codes or medication registered in the Swedish Rheumatology Quality Register (SRQ)

SD: Standard Deviation; NSAIDs: Non-steroidal anti-inflammatory drugs; csDMARDs: conventional synthetic disease modifying anti-rheumatic drugs; TNFi: tumor necrosis factor inhibitors; tsDMARDs: targeted synthetic disease modifying anti-rheumatic drugs; bDMARDs: biological disease modifying anti-rheumatic drugs

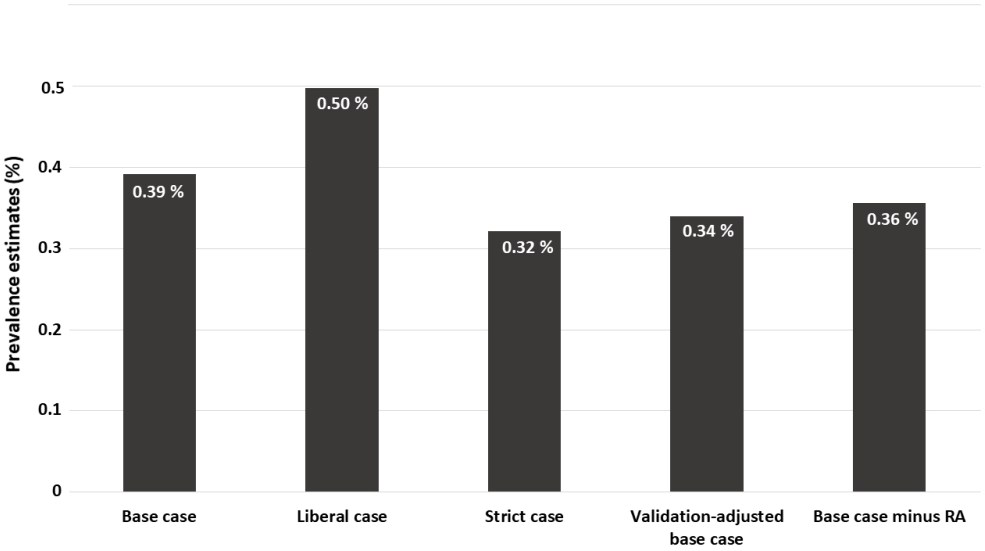
Table 3.

Title: National prevalence of clinically diagnosed psoriatic arthritis in Sweden 2017.

Legend: Crude and standardized prevalence estimates of psoriatic arthritis in adults in Sweden in 2017, according to the base case definition, stratified on levels of education and healthcare regions.

	Crude prevalence **%**	**Standardized prevalence[a]** **% (95% CI)**
Level of education[b]		
≤9 years	0.54	0.49 (0.48-0.51)
10-12 years	0.56	0.55 (0.54-0.59)
>12 years	0.38	0.40 (0.40-0.41)
Healthcare region		
Northern	0.43	0.41 (0.40-0.43)
Uppsala-Örebro	0.44	0.43 (0.42-0.44)
Stockholm	0.29	0.30 (0.29-0.31)
Western	0.41	0.41 (0.40-0.43)
Southeastern	0.40	0.40 (0.38-0.41)
Southern	0.43	0.43 (0.42-0.44)

[a]Standardized to age and sex. [b]Estimates for people aged 30–79 years, as people aged <30 years may not have completed their education yet (n=28 379).



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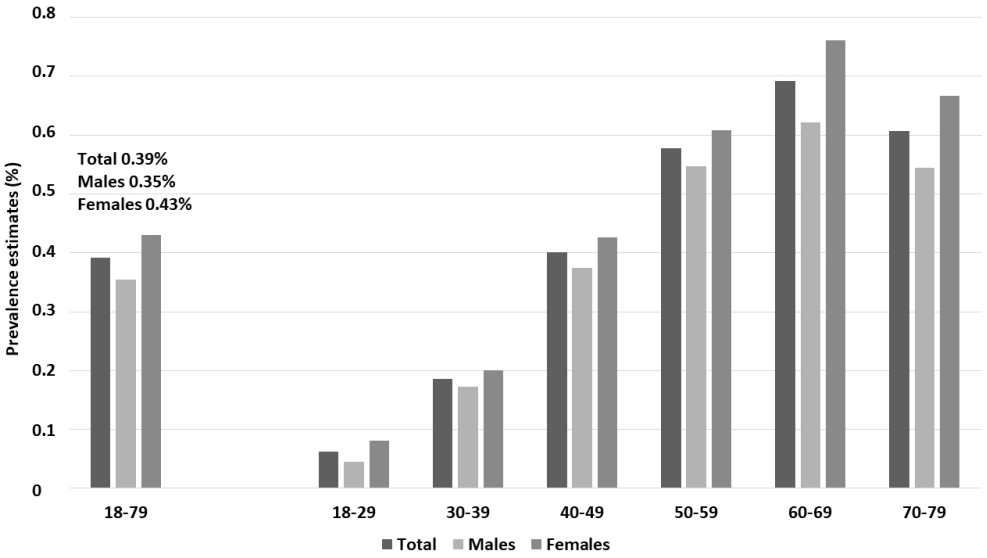

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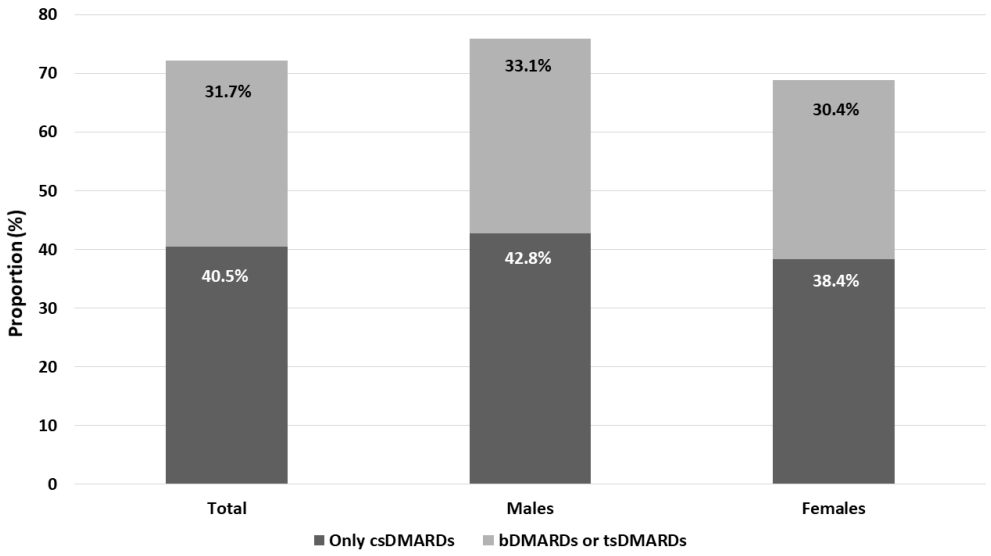

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