

Association between psoriasis and rheumatoid arthritis in a nationally representative US population

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Background

- Prior studies have shown an association between rheumatoid arthritis (RA) and psoriasis.^{1,2}
- The association between RA and psoriasis has yet to be investigated in a nationally representative United States population.
- The National Health and Nutrition Examination Survey (NHANES) is a United States-based survey that utilizes a complex multistage sampling design.

Objectives

- To investigate the association between RA and psoriasis in adults from a nationally representative United States (US) population.

Methods

- History of psoriasis and RA were assessed from “medical conditions questionnaire” responses
- 16,066 adults aged ≥ 20 years with known psoriasis and RA status were included in the study
- Statistical analysis was conducted using Stata/SE 16.1
- Odds ratios were calculated from multivariable logistic regression models
 - Dependent variable: RA
 - Independent variable: Psoriasis
 - Covariates: Sex, age, history of tobacco use, BMI, annual household income, ethnicity/race

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Results

Table I. Characteristics of US adults (aged ≥ 20 years) in the 2009-2014 NHANES

Characteristic ^a	Psoriasis-Yes, n/N (weighted percent) [‡]	Psoriasis-No, n/N (weighted percent) [‡]	P value
<i>History of RA</i>			
Yes	47/438 (8.1)	772/15628 (4.0)	0.0002
No	391/438 (91.9)	14856/15628 (96.0)	
<i>Sex</i>			
Male	210/438 (47.9)	7653/15628 (48.5)	0.8356
Female	228/438 (52.1)	7975/15628 (51.5)	
<i>Mean age \pm SD, years</i>			
	49.87 \pm 13.44	46.31 \pm 14.63	0.0010
<i>Mean BMI^b \pm SD, kg/m²</i>			
	29.51 \pm 5.81	28.73 \pm 5.91	0.0760
<i>Ethnicity/race</i>			
NHW	258/438 (79.7)	6587/15628 (66.2)	<0.0001
Mexican American/other Hispanic	79/438 (8.8)	3752/15628 (14.6)	
NHB	47/438 (5.1)	3298/15628 (11.3)	
Other race/multiracial	54/438 (6.4)	1991/15628 (7.9)	
<i>Annual household income^c</i>			
<\$20,000	100/419 (16.0)	3234/14847 (15.0)	0.5227
\geq \$20,000	319/419 (84.0)	11613/14847 (85.0)	
<i>History of tobacco use^{d,e}</i>			
Yes	237/438 (55.8)	6727/15621 (43.0)	0.0001
No	201/438 (44.2)	8894/15621 (57.0)	

[‡]Weighted percent calculated using NHANES survey design parameters; ^a1481/17,547 (8.4%) subjects aged ≥ 20 years with missing psoriasis and/or RA data were excluded from the analysis; ^bMissing for 713 subjects; ^cMissing for 800 subjects; ^dHistory of tobacco use assessed by “Have you smoked at least 100 cigarettes in your entire life?”; ^eMissing for 7 subjects; NHW = non-Hispanic white; NHB = non-Hispanic black; SD= standard deviation; RA = rheumatoid arthritis; Values that are statistically significant (2-sided P-value ≤ 0.05) are bolded

- From 17,547 subjects ≥ 20 years old \rightarrow 16,066 subjects with data on RA and psoriasis status were included in the analyses
- RA prevalence of 8.1% in psoriasis subjects vs 4.0% in subjects without psoriasis
- Adults with psoriasis were more likely to have RA compared to adults without psoriasis (adjusted OR 1.94, 95% confidence interval 1.27-2.97, p=0.003).

Table II. Association between psoriasis and rheumatoid arthritis in US adults (aged ≥ 20 years) from the 2009-2014 NHANES

Psoriasis Status	RA, n/N (weighted percent) [‡]	Crude OR (95% CI)	P value	Adjusted OR (95% CI) [†]	P value
<i>Participants aged ≥ 20 years</i>					
No	772/15628 (4.0)	1.00 (reference)	<0.0001	1.00 (reference)	0.003
Yes	47/438 (8.1)	2.13 (1.44-3.16)		1.94 (1.27-2.97)	
<i>Subgroup analysis of participants aged 20-49 years</i>					
No	153/8566 (1.9)	1.00 (reference)	0.003	1.00 (reference)	0.015
Yes	14/199 (5.8)	3.28 (1.53-7.04)		2.82 (1.23-6.44)	
<i>Subgroup analysis of participants aged ≥ 50 years</i>					
No	619/7062 (6.9)	1.00 (reference)	0.086	1.00 (reference)	0.057
Yes	33/239 (10.1)	1.52 (0.94-2.47)		1.64 (0.99-2.74)	

[‡]Weighted percent calculated using NHANES survey design parameters

[†]Adjusted for sex, age, history of tobacco use, BMI, annual household income, ethnicity/race
Values that are statistically significant (2-sided P-value ≤ 0.05) are bolded
CI – confidence interval
RA – rheumatoid arthritis
OR – odds ratio

Conclusion

- Our results suggest an association between RA and psoriasis in the US population
- Considering the adverse consequences of both diseases, prompt and effective treatment of individuals with concomitant psoriasis and RA is critical
- Further studies are needed to identify appropriate treatments for individuals with concomitant psoriasis and RA

References

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2. Ju HJ, Kim KJ, Kim DS, et al. Increased risks of autoimmune rheumatic diseases in patients with psoriasis: A nationwide population-based study. *J Am Acad Dermatol.* 2018;79(4):778-781. doi:10.1016/j.jaad.2018.06.026