

# Exploring the Relationship Between Psoriasis and Mobility Among US Adults

Sara Osborne, BS; Olivia Kam, BA; Raquel Wescott, BS; Shivani Thacker, DO; Carolynne Vo, BS; Jashin J. Wu, MD

## PRACTICE POINTS

- Mobility issues are more common in patients who have psoriasis than in those who do not.
- It is important to assess patients with psoriasis for mobility issues regardless of age or comorbid conditions such as arthritis, obesity, and diabetes.
- Dermatologists can help patients with psoriasis and impaired mobility overcome potential barriers to care by incorporating telehealth services into their practices and informing patients of direct-to-home delivery of prescriptions.

To the Editor:

Psoriasis is a chronic inflammatory condition that affects individuals in various extracutaneous ways.<sup>1</sup> Prior studies have documented a decrease in exercise intensity among patients with psoriasis<sup>2</sup>; however, few studies have specifically investigated baseline mobility in this population. Baseline mobility denotes an individual's fundamental ability to walk or move around without assistance of any kind. Impaired mobility—when baseline mobility is compromised—is an aspect of the wider diversity, equity,

and inclusion framework that underscores the significance of recognizing challenges and promoting inclusive measures, both at the point of care and in research.<sup>3</sup> Our study sought to analyze the relationship between psoriasis and baseline mobility among US adults (aged 45 to 80 years) utilizing the latest data from the National Health and Nutrition Examination Survey (NHANES) database for psoriasis.<sup>4</sup> We used three 2-year cycles of NHANES data to create a 2009–2014 dataset.

The overall NHANES response rate among adults aged 45 to 80 years between 2009 and 2014 was 67.9%. Patients were categorized as having impaired mobility if they responded “yes” to the following question: “Because of a health problem, do you have difficulty walking without using any special equipment?” Psoriasis status was assessed by the following question: “Have you ever been told by a doctor or other health professional that you had psoriasis?” Multivariable logistic regression analyses were performed using Stata/SE 18.0 software (StataCorp LLC) to assess the relationship between psoriasis and impaired mobility. Age, income, education, sex, race, tobacco use, diabetes status, body mass index, and arthritis status were controlled for in our models.

Our analysis initially included 9982 participants; 14 did not respond to questions assessing psoriasis and

Sara Osborne is from the University of Minnesota, Twin Cities School of Medicine, Minneapolis. Olivia Kam is from the Stony Brook School of Medicine, New York. Raquel Wescott is from the University of Nevada, Reno School of Medicine. Dr. Thacker is from the KPC Hemet Medical Center, California. Carolynne Vo is from the University of California, Riverside School of Medicine. Dr. Wu is from the University of Miami Miller School of Medicine, Florida.

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Correspondence: Jashin J. Wu, MD, University of Miami Miller School of Medicine, 1600 NW 10th Ave, RMSB, Room 2023-A, Miami, FL 33136 (jashinwu@gmail.com).

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impaired mobility and were excluded. The prevalence of impaired mobility in patients with psoriasis was 17.1% compared with 10.9% among those without psoriasis (Table 1). There was a significant association between psoriasis and impaired mobility among patients aged 45 to 80 years after adjusting for potential confounding variables (adjusted odds ratio [AOR], 1.54; 95% CI, 1.04-2.29;  $P=.032$ ) (Table 2). Analyses of subgroups yielded no statistically significant results.

Our study demonstrated a statistically significant difference in mobility between individuals with psoriasis compared with the general population, which remained significant when controlling for arthritis, obesity, and diabetes ( $P=.032$ ). This may be the result of several influences. First, the location of the psoriasis may impact mobility. Plantar psoriasis—a manifestation on the soles of the feet—can cause discomfort and pain, which can hinder walking and standing.<sup>5</sup> Second, a study by Lasselin et al<sup>6</sup> found that systemic inflammation contributes to mobility impairment through alterations in gait and posture, which suggests that the inflammatory processes inherent in psoriasis could intrinsically modify walking speed and stride, potentially exacerbating mobility difficulties independent of other comorbid conditions. These findings suggest that psoriasis may disproportionately affect individuals with impaired mobility, independent of comorbid arthritis, obesity, and diabetes.

These findings have broad implications for diversity, equity, and inclusion. They should prompt us to consider the practical challenges faced by this patient

population and the ways that we can address barriers to care. Offering telehealth appointments, making primary care referrals for impaired mobility workups, and advising patients of direct-to-home delivery of prescriptions are good places to start.

Limitations to our study include the lack of specificity in the survey question, self-reporting bias, and the inability to control for the psoriasis location. Further investigations are warranted in large, representative US adult populations to assess the implications of impaired mobility in patients with psoriasis.

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**TABLE 1. Characteristics of US Adults With and Without Psoriasis<sup>a</sup> in NHANES 2009-2014 (N=9968)**

Characteristic	Psoriasis	No psoriasis	P value
Impaired mobility, <sup>b</sup> n (weighted % <sup>c</sup> )			
Yes	75/331 (17.1)	1497/9637 (10.9)	.0008 <sup>d</sup>
No	256/331 (82.9)	8140/9637 (89.1)	
Mean age (SD), y	60.23 (9.06)	60.46 (9.54)	.734
Sex, n (weighted % <sup>c</sup> )			
Male	167/331 (49.0)	4684/9637 (46.9)	.5349
Female	164/331 (51.0)	4953/9637 (53.1)	
Annual household income, <sup>e</sup> n (weighted % <sup>c</sup> )			
≥\$20,000	232/319 (82.9)	6854/9115 (84.3)	.4732
<\$20,000	87/319 (17.1)	2261/9115 (15.7)	
Race/ethnicity, n (weighted % <sup>c</sup> )			
Non-Hispanic White	197/331 (82.9)	5011/9637 (73.3)	.0003 <sup>d</sup>
Non-Hispanic Black	42/331 (5.7)	1846/9637 (10.6)	
Other Hispanic/Mexican American	60/331 (7.4)	1668/9637 (9.8)	
Other race/multiracial	32/331 (4.0)	1112/9637 (6.3)	
Education, <sup>f</sup> n (weighted % <sup>c</sup> )			
Did not graduate high school	84/331 (16.8)	2773/9620 (18.4)	.7345
High school graduate	81/331 (22.7)	2165/9620 (22.4)	
Some college	95/331 (32.7)	2547/9620 (29.2)	
College graduate	71/331 (27.8)	2135/9620 (30.0)	
Diabetes status, <sup>g,h</sup> n (weighted % <sup>c</sup> )			
Yes	80/331 (19.3)	1829/9631 (14.8)	.0789
No	251/331 (80.7)	7802/9631 (85.2)	
Arthritis status, <sup>i,j</sup> n (weighted % <sup>c</sup> )			
Yes	182/330 (53.1)	3809/9612 (38.8)	.0008
No	148/330 (46.9)	5803/9612 (61.2)	
Tobacco use, <sup>k,l</sup> n (weighted % <sup>c</sup> )			
Yes	206/331 (63.1)	4682/9632 (48.2)	<.0001 <sup>d</sup>
No	125/331 (36.9)	4950/9632 (51.8)	
Mean BMI (SD)	30.46 (6.22)	29.23 (5.92)	.011 <sup>d</sup>

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TABLE 1. (continued)

Abbreviations: BMI, body mass index (calculated as kilograms divided by meters squared); NHANES, National Health and Nutrition Examination Survey.

<sup>a</sup>Psoriasis status was assessed by the question, "Have you ever been told by a doctor or other health professional that you had psoriasis?"

<sup>b</sup>Impaired mobility was assessed by the question, "Because of a health problem, do you have difficulty walking without using any special equipment?"

<sup>c</sup>Weighted percentages will not reflect raw numbers, as they were calculated using NHANES survey design parameters.

<sup>d</sup>Statistically significant (2-sided  $P \leq .05$ ).

<sup>e</sup>Patients missing: 534.

<sup>f</sup>Patients missing: 17.

<sup>g</sup>Diabetes status was assessed by the question, "Other than during pregnancy, have you ever been told by a doctor or health professional that you have diabetes or sugar diabetes?"

<sup>h</sup>Patients missing: 6.

<sup>i</sup>Arthritis status was assessed by the question, "Has a doctor or other health professional ever told you that you had arthritis?"

<sup>j</sup>Patients missing: 26.

<sup>k</sup>Tobacco use was assessed by the question, "Have you smoked at least 100 cigarettes in your entire life?"

<sup>l</sup>Patients missing: 5.

**TABLE 2. Association Between Psoriasis and Impaired Mobility Among US Adults in NHANES 2009-2014 (N=9968)**

Psoriasis	Impaired mobility (weighted % <sup>a</sup> )	OR (95% CI)	P value	Adjusted OR (95% CI)	P value
All participants (aged 45-80 y)					
Yes	75/331 (17.1)	1.67 (1.25-2.25)	.001 <sup>b</sup>	1.54 (1.04-2.29)	.032 <sup>b</sup>
No	1497/9637 (10.9)	1.00 (reference)		1.00 (reference)	
Females					
Yes	41/164 (21.0)	1.89 (1.15-3.12)	.014 <sup>b</sup>	1.67 (0.94-2.95)	.078
No	835/4953 (12.3)	1.00 (reference)		1.00 (reference)	
Males					
Yes	34/167 (13.0)	1.44 (0.93-2.24)	.101	1.40 (0.76-2.60)	.277
No	662/4684 (9.4)	1.00 (reference)		1.00 (reference)	
Aged 45-60 y					
Yes	28/157 (11.1)	1.94 (1.11-3.39)	.022 <sup>b</sup>	1.59 (0.81-3.13)	.174
No	397/4483 (6.06)	1.00 (reference)		1.00 (reference)	
Aged 60-80 y					
Yes	50/186 (24.6)	1.65 (1.12-2.45)	.012 <sup>b</sup>	1.56 (0.99-2.48)	.056
No	1149/5509 (16.4)	1.00 (reference)		1.00 (reference)	

Abbreviations: NHANES, National Health and Nutrition Examination Survey; OR, odds ratio.

<sup>a</sup>Weighted percentages will not reflect raw numbers, as they were calculated using NHANES survey design parameters.

<sup>b</sup>Statistically significant (2-sided  $P \leq .05$ ).