

# Prevalence and Demographics of Psoriasis in the Down Syndrome Population:

A Cross-Sectional Analysis Using the Epic Cosmos Data Set



MEDICINE

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### BACKGROUND

Down syndrome (DS) is the most common chromosomal condition in the United States (1). Alterations of chromosome 21 may translate to a variety of skin conditions including psoriasis (2,3). Limited studies of DS and psoriasis cite prevalence rates of 0.5-8%, but published cohorts are ~200 participants (2).

## **OBJECTIVES**

Estimate psoriasis prevalence and demographics in the DS population to improve understanding of disease burden and distribution.

#### METHODS

A cross-sectional analysis using Epic Cosmos dataset was performed to calculate a period prevalence. Inclusion criteria included at least one encounter with an ICD-10 diagnosis code for DS and at least two encounters for cutaneous psoriasis between January 1st, 2021, and December 31, 2023. Crude prevalences were calculated with associated 95% Confidence Intervals (CI). Odds ratios (OR) and 95% CIs from multivariable logistic regression were calculated to compare prevalence of psoriasis between subgroups of patients, adjusting for age and sex.

## RESULTS

The prevalence amongst pediatric patients (0-17) years) was 0.79% (95% CI 0.71-0.87) and adult patients (≥18 years) was 3.08% (95% Cl 2.94 – 3.22) (Table 1). Adults had approximately 4 times higher odds of having psoriasis than pediatric patients (OR = 4.03, p-value < .0001) (Figure 1). Males had about 17% higher odds of psoriasis than females (OR = 1.17, p-value = 0.0003). Non-Hispanic Black or African American had the lowest prevalence of psoriasis (0.76%, 95% CI 0.62 – 0.93).

#### **FUNDING**

**National Institutes of Health** INvestigation of Co-occurring conditions across the Lifespan to Understand Down syndrome (INCLUDE) Project R03 - RFA-OD-22-008

## CITATIONS



Medicare Medicaid Insurance Type Commerc Uninsure Unknown	0.92 (0.79, 1.05) 1.12 (1.00, 1.26) 1.03 (0.92, 1.16) Reference 0.44 (0.17, 0.90) 1.10 (0.88, 1.36)				
TABLE 1. Prevalence of			0.1		
Group Overall population	Psoriasis cases 2,125	DS population 107,759	Crude prevalence % (95%, CI) 1.97% (1.89, 2.06)		
Age category, years 0-12	180	41,692	0.43% (0.37, 0.50)		
13-17 18-29	228 670	10,242 20,046	2.23% (1.95, 2.54) 3.34% (3.10, 3.60)		
30-39 40-49 50-59	418 316 228	13,257 9,008 8,655	3.15% (2.87, 3.47) 3.51% (3.14, 3.91) 2.63% (2.31, 3.00)		
≥60 Race/ethnicity	85	8,655 4,844	1.75% (1.41, 2.18)		
Non-Hispanic Asian  Non-Hispanic Black or African Ame	84 erican 103	3,457 13,540	2.43% (1.95, 3.01) 0.76% (0.62, 0.93)		
Non-Hispanic White	1,475	60,075	2.46% (2.33, 2.58)		
Non-Hispanic other (including multi Hispanic	racial) 50 289	2,860 19,833	1.75% (1.31, 2.32) 1.46% (1.30, 1.64)		
Unknown Insurance Type	124	7,979	1.55% (1.30, 1.86)		
Medicare Medicaid	661 446	21,420 27,554	3.09% (2.86, 3.33) 1.62% (1.47, 1.78)		
Commercial (Miscellaneous oth Uninsured (self pay)	er) 919 6	53,249 824	1.73% (1.62, 1.84) 0.73% (0.30, 1.66)		
Unknown	93	4,697	1.98% (1.61, 2.43)		

#### OR (95% CI) Covariate

FIGURE 1. Odds ratios, 95% Confidence Intervals, and p-values from multivariable logistic regression adjusting for age and sex

Covariate		OR (95% CI)									P-value
Population Group Pediatric Adult	Pediatric	Reference -						•			
	Adult	4.03 (3.62, 4.49)								$\vdash \bullet \vdash$	<.0001
0-12 13-17 18-29 Age, Years 30-39 40-49 50-59 60+	0-12	0.13 (0.11, 0.16)		-							<.0001
	13-17	0.69 (0.59, 0.81)					•				<.0001
	18-29	1.05 (0.93, 1.19)									0.4055
	30-39	Reference -						•			
	40-49	1.11 (0.96, 1.29)									0.1694
	50-59	0.82 (0.70, 0.97)						-			0.0191
	60+	0.54 (0.43, 0.68)									<.0001
Sex Female Male	Female	Reference						•			
	Male	1.17 (1.08, 1.28)									0.0003
Race and Ethnicity  Non-Hispanic Asian Non-Hispanic Black Non-Hispanic White Non-Hispanic Multira Hispanic Unknown	Non-Hispanic Asian	1.23 (0.98, 1.53)									0.0684
	Non-Hispanic Black	0.35 (0.29, 0.43)									<.0001
	Non-Hispanic White	Reference -						ė –			
	Non-Hispanic Multiracial/Other	0.89 (0.66, 1.18)									0.4457
	Hispanic	0.83 (0.73, 0.94)						+			0.0051
	Unknown	0.77 (0.64, 0.92)									0.0005
U.S. Census Region Midwest  South  West	Midwest	Reference						•			
	Northeast	1.01 (0.89, 1.14)					-	<del>-</del>			0.8643
	South	0.83 (0.74, 0.92)									0.0006
	West	0.92 (0.79, 1.05)					H				0.2169
Medicare  Medicaid  Insurance Type  Commercial  Uninsured/Sel	Medicare	1.12 (1.00, 1.26)									0.0473
	Medicaid	1.03 (0.92, 1.16)									0.5865
	Commercial	Reference						<b>•</b>			
	Uninsured/Self-Pay	0.44 (0.17, 0.90)				•	+ +				0.0475
	Unknown	1.10 (0.88, 1.36)					-				0.3878
			0.1	0	.25	0.5 Odds F	0.75 Ratio (95%	1 1.5 CI)	Ż	4	

#### LIMITATIONS

Prevalence estimates can vary depending on the population of interest, methodology, and data source. Medical coding-based data relies upon provider diagnostic accuracy.

#### DISCUSSION & CONCLUSIONS

Psoriasis is a significant skin condition in people with DS. The prevalence in individuals with DS may be similar to the general pediatric population (estimated at 1%), and general adult population (estimated at 3%) (4,5). Psoriasis in people with DS proportionally affects more adults and is more common in men than women. Similar to the general population, Non-Hispanic Black or African American and Hispanic children and adults with DS have lower psoriasis prevalence rates. These preliminary prevalence data will help inform future epidemiologic research, pathophysiologic exploration, and health policies to improve the lives of patients with DS and psoriasis.

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