

## The prevalence of psoriasis in African Americans: Results from a population-based study

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**Background:** Psoriasis is a common disease with substantial effects on quality of life. The prevalence of psoriasis in African Americans has been previously reported as rare. However, there have been no population-based studies to assess the prevalence and burden of psoriasis in African Americans.

**Objective:** We sought to measure the prevalence and burden of psoriasis in African Americans compared with Caucasians.

**Methods:** Patients were randomly selected from the United States population and were asked standard demographic questions. Patients who reported a physician diagnosis of psoriasis were asked additional questions related to quality of life.

**Results:** The total sample included 27,220 individuals of which 21,921 were Caucasian and 2443 were African American. The prevalence of psoriasis was 2.5% in Caucasian patients and was 1.3% in African American patients. African Americans had an approximately 52% reduction in the prevalence of psoriasis compared with Caucasians ( $P < .0001$ ). African Americans and Caucasians had similar impacts on quality of life and treatment satisfaction based on single global questions.

**Conclusion:** Although psoriasis is less common in African Americans than in Caucasians, it is not rare in either demographic and carries a substantial burden in both groups. (J Am Acad Dermatol 2005;52:23-6.)

Psoriasis is a common chronic condition characterized by thick scaling red plaques that can be localized or widespread. A variety of studies from a diverse set of countries have estimated the prevalence of psoriasis to be 0.6% to 4.8% of the population.<sup>1</sup> In the United States, the prevalence of psoriasis has been estimated at 2.2% to 2.6% using samples randomly selected from the US population.<sup>2,3</sup> The estimates of psoriasis prevalence are variable based on country studied, definition of prevalence used (eg, point prevalence, period

prevalence, lifetime prevalence), method used to determine if a patient has psoriasis (eg, patient self-report with or without physician confirmation), and sampling method used.

The prevalence of psoriasis may also vary based on patient ethnicity. For example, psoriasis was undetectable in 25,000 Latin American Indians.<sup>1</sup> Psoriasis has also been described as rare in African Americans.<sup>4</sup> The prevalence of psoriasis in African Americans has been estimated at 0.7% based on 3860 consecutive patients seen in a private dermatology

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**Table I.** Demographic characteristics of study population

Demographic characteristic	Total	No. self-reporting a diagnosis of psoriasis by a physician	Prevalence of psoriasis (95% confidence interval)
Caucasian	21,921	541	2.5% (2.2, 2.7)
African American	2443	27	1.3% (0.7, 1.8)

practice in Cleveland, Ohio.<sup>5</sup> This study was not population-based and, therefore, may suffer from bias and generalizability concerns, limiting the validity of the findings. To our knowledge, there have been no population-based studies of the prevalence of psoriasis in African Americans. Understanding if the prevalence of psoriasis varies between US Caucasians and African Americans is important to understanding genetic and environmental determinants of psoriasis. Furthermore, in a diverse population it is important to understand the burden of an illness in various subpopulations to properly address varying health needs. The purpose of this study was to determine the prevalence of psoriasis in African Americans compared with Caucasians using population-based methods.

## METHODS

### Survey development, administration, and sampling techniques

A questionnaire was created to survey the epidemiologic characteristics of psoriasis in the continental US population. The survey items were generated by a committee of dermatologists in collaboration with the National Psoriasis Foundation. Items included sociodemographic variables, extent and treatment of disease, and quality of life. Patients were classified as having psoriasis if they reported having been given a diagnosis of psoriasis by a physician in the past. Those individuals with psoriasis were also asked global questions to determine the degree to which psoriasis was a problem in everyday life and the degree to which they were satisfied with treatment based on a 10-point scale. Patients were also asked to report their current extent of psoriasis based on the amount of psoriasis that could be covered by the palm of the respondent's hand. Respondents could choose no or very little psoriasis, only a few patches that could be covered by 1 to 2 palms, scattered patches that could be covered by between 3 and 10 palms, or extensive psoriasis covering large areas of the body that would require more than 10 palms to cover. Previous investigators have demonstrated that patients can reliably report body surface area of involvement with psoriasis.<sup>6</sup>

**Table II.** Characteristics of patients with psoriasis

	Caucasian N (%)	African American N (%)
Sex		
Male	219 (40.48)	10 (37.04)
Female	322 (59.52)	17 (62.96)
Amount of psoriasis that can be covered with the palm of the patient's hand		
None or very little	302 (55.82)	15 (55.56)
1-2 palms	144 (26.62)	3 (11.11)
3-10 palms	58 (10.72)	8 (29.63)
>10 palms	18 (3.33)	0 ( <i>P</i> = .023, Fisher's exact)
Don't know/refused	19 (3.51)	1 (3.70)
Age, y		
<25	26 (4.81)	3 (11.11)
25-34	78 (14.42)	7 (25.93)
35-44	117 (21.63)	4 (14.81)
45-54	115 (21.26)	10 (37.04)
55-64	92 (17.01)	2 (7.41)
>65	111 (20.52)	1 (3.70)

Between November and December 2001, the National Psoriasis Foundation commissioned two contract survey organizations to interview a representative sample of the general population aged 18 years or older who were residents of the contiguous 48 United States to identify people who reported having been given a diagnosis of psoriasis by a physician. The questions about psoriasis were part of a larger omnibus survey on a variety of other unrelated topics, and occurred at the end of the survey. The respondents did not know that psoriasis was the topic of the survey and, therefore, completion of the survey was unlikely to be related to having psoriasis.

The two organizations conducted their surveys independently and on different study participants, but used the same sampling method and questionnaires. More than 11,000 cities and towns were included in the sampling schema. Participants with a residential telephone number from the contiguous 48 United States were selected by random-digit dialing techniques and were weighted for inclusion based on age, sex, income, and region. The sampling weights were created to ensure that the randomly selected sample was representative of the US population based on census data. Households to be contacted were called up to 3 times in the evening before being replaced by a next randomly selected telephone number. This study was

**Table III.** Psoriasis quality of life, treatment, and education

Question	Caucasians	African Americans
Problem in everyday life (1, no problem; 10, very large problem)	Mean 3.57 (median, 3, 25th percentile 1, 75th percentile 5)	Mean 3.76 (3, 2, 5) $P = .66$
Treatment satisfaction (1, very unsatisfied; 10, very satisfied)	Mean 6.45 (7, 4, 10)	Mean 6.33 (7, 4, 10) $P = 0.66$
Has seen a general practitioner for care of psoriasis	N = 402 (74.86%)	N = 18 (66.67%) ( $P = .37$ )
Has seen a dermatologist for care of psoriasis	N = 370 (68.90%)	N = 20 (74.07%) ( $P = .67$ )
Has looked up psoriasis info on the Internet	N = 137 (25.56%)	N = 4 (14.81%) ( $P = .26$ )
Has sought psoriasis information from organizations	N = 84 (15.64%)	N = 1 (3.7%) ( $P = .102$ )
Has read about psoriasis in magazines	N = 263 (48.98%)	N = 12 (44.44%) ( $P = .70$ )
Has spoken to family members or friends who have psoriasis	N = 238 (44.32%)	N = 9 (33.33%) ( $P = .32$ )

approved by the Western Institutional Review Board and by the University of Pennsylvania Institutional Review Board.

### Data analysis

The prevalence of psoriasis was determined by dividing the number of patients who identified themselves as having been given a diagnosis of psoriasis by a physician by the number of people in the study with adjustment for the sampling procedure. Descriptive data were generated to determine the demographic characteristics of the study population. Categorical outcomes were tested using the Wilcoxon rank sum test. Dichotomous variables were tested simultaneously using the Chi-square test or Fisher's exact test. Missing data were dropped from the analysis. For any given question the maximum amount of missing data was less than 4%. Data were analyzed using software (Version 7.0, STATA, College Station, Tex).

### RESULTS

Approximately 37% of people who could be reached by a residential telephone number agreed to be interviewed regarding a variety of unrelated topics, of which approximately 77% completed the survey up to the point that psoriasis was addressed. The total sample analyzed included 27,220 individuals who completed the psoriasis questions of which 21,921 were Caucasian and 2443 were African American. Similar to US census figures, African Americans were more likely to report lower income and fewer years of education compared with Caucasians ( $P < .0001$ , chi-square, data not shown).<sup>7</sup> The prevalence of psoriasis was 2.5% in Caucasian patients and was 1.3% in African American patients (see Table I). African Americans had an approximately 52% reduction in the prevalence of psoriasis compared with Caucasians ( $P < .0001$ , Fisher's exact test). In both groups women were more likely to report having been given a diagnosis of psoriasis

than men (see Table II). African Americans were more likely to have 3 to 10 palms of psoriasis than Caucasians and were less likely to have only 1 to 2 palms of skin involvement ( $P = .023$ ).

Several factors related to psoriasis-related quality of life, treatment, satisfaction, and education were explored (see Table III). Caucasians and African Americans had similar effects of psoriasis on their everyday life and similar satisfaction levels with treatment. Both groups sought care for their psoriasis from general practitioners and dermatologists at similar rates. African Americans were less likely to have sought information about psoriasis from the Internet or advocacy organizations and were less likely to discuss their disease with family members or friends who also have psoriasis; however, these observations were not statistically significant. Both groups read about psoriasis in magazines at similar rates.

### DISCUSSION

To our knowledge, this is the first population-based study to investigate the prevalence of psoriasis in African Americans. A particular strength of this study is that it surveyed more than 27,000 individuals who were randomly selected from the US population and interviewed over the telephone to determine the prevalence of psoriasis. Given the broadly representative nature of the sample studied, it is expected that the findings of this study would generalize to the broader US population. Furthermore, to our knowledge, this is the largest and most representative sample of African Americans used to study the prevalence of psoriasis.

The results suggest that African Americans are approximately 52% less likely to report having been given a diagnosis of psoriasis by a physician in the past. African Americans may have a lower prevalence of psoriasis caused by genetic or environmental factors. In Africa, variations in the prevalence of psoriasis have been observed between West African

countries such as Nigeria (0.8%) and East African countries such as Kenya (2.6%).<sup>8,9</sup> It is unclear if these observed variations are caused by genetic or environmental differences or because of bias in the study designs.

Our findings confirm previous investigations that have suggested that psoriasis is less common in African Americans than in Caucasians. However, according to our study, psoriasis is certainly not rare in African Americans. Therefore, it is important to recognize the health burden associated with psoriasis in the African American community. The burden a disease creates in a population is also measured through the impact a disease has on quality of life. Health-related quality of life measures the impact a disease has on patients' physical, mental, and social well-being. It is possible that the burden psoriasis creates on health-related quality of life may vary between people of different ethnic backgrounds. For example, the National Center for Health Statistics reported that African Americans are consistently more likely to report poor health status compared with Caucasians based on 1998 data.<sup>10</sup> Ibrahim et al<sup>10</sup> recently demonstrated that African Americans have greater impairment in quality of life related to arthritis compared with Caucasians after controlling for potential demographic, clinical, and psychosocial confounding variables. In our study, based on single global questions, there was no difference in treatment satisfaction or the degree to which psoriasis was a problem in everyday life based on racial demographics. Interestingly, African Americans appeared to have more extensive psoriasis (eg, reporting 3-10 vs 1-2 palms of involvement). This observation may be because of differences in psoriasis severity or treatment use. Additional studies are needed to confirm this observation and to further investigate its determinants.

As with any study, there are limitations to consider. First, people identified by random-digit dialing who complete telephone surveys may differ from nonresponders (eg, those who could not be reached by telephone or who refused to participate) on sociodemographic characteristics.<sup>11</sup> Response rates to studies using random-digit dialing methods have declined over the years, in part because of widespread frustration with telemarketing, and the increased use of caller identification and answering machines to screen calls.<sup>12</sup> If the probability of responding to this omnibus study was somehow related to the probability of having psoriasis then the generalizability of the results to the broader population may be limited. Second, similar to most investigations of the epidemiology of psoriasis, we did not confirm the patients' diagnosis clinically with

an examination by a dermatologist. Self-report of chronic conditions such as hypertension has been shown to be reasonably accurate<sup>13</sup>; however, the validity of patient self-report of a physician diagnosis of psoriasis has not been well documented. If the ability to accurately self-report a physician diagnosis of psoriasis varies by race then our estimates of the differences in psoriasis prevalence in African Americans compared with Caucasians would be subject to systematic error (bias). Additional studies are, therefore, necessary to confirm the prevalence of psoriasis in the United States using the gold standard of physician confirmation of the diagnosis. Finally, detailed studies using comprehensive measures of quality of life in a larger population of patients with psoriasis are necessary to determine if there are meaningful differences in the impairment psoriasis creates in quality of life between African Americans and Caucasians.

#### REFERENCES

1. Naldi L. Inflammatory skin diseases IV: psoriasis. In: Strachan DP, editor. *The challenge of dermato-epidemiology*. Boca Raton (FL): CRC Press; 1997. p. 175-87.
2. Stern RS, Nijsten T, Feldman SR, Margolis DJ, Rolstad T. Psoriasis is common, carries a substantial burden even when not extensive, and is associated with widespread treatment dissatisfaction. *J Invest Dermatol Symp Proc* 2004;9:136-9 (in process).
3. Koo J. Population-based epidemiologic study of psoriasis with emphasis on quality of life assessment. *Dermatol Clin* 1996;14:485-96.
4. Farber EM, Nall L. *Epidemiology: natural history and genetics*. In: Maibach HI, editors. *Psoriasis*. 2nd ed. New York: Marcel Dekker Inc.; 1991. p. 209.
5. Kenney JA Jr. Management of dermatoses peculiar to Negroes. *Arch Dermatol* 1965;91:126-9.
6. Feldman SR, Fleischer AB Jr, Reboussin DM, Rapp SR, Exum ML, Clark AR, et al. The self-administered psoriasis area and severity index is valid and reliable. *J Invest Dermatol* 1996;106:183-6.
7. Bureau USC. United States Census 2000. <http://www.census.gov/> accessed March 24, 2000.
8. Verhagen AR, Kolen JW. Psoriasis in Kenya. *Arch Dermatol* 1967;96:39-41.
9. Obasi OE. Psoriasis vulgaris in the Guinea Savanah region of Nigeria. *Int J Dermatol* 1986;25:181-3.
10. Ibrahim SA, Burant CJ, Siminoff LA, Stoller EP, Kwok CK. Self-assessed global quality of life: a comparison between African-American and white older patients with arthritis. *J Clin Epidemiol* 2002;55:512-7.
11. Voigt LF, Koepsell TD, Daling JR. Characteristics of telephone survey respondents according to willingness to participate. *Am J Epidemiol* 2003;157:66-73.
12. Marchbanks PA, McDonald JA, Wilson HG, Burnett NM, Daling JR, Bernstein L, et al. The NICHD women's contraceptive and reproductive experiences study: methods and operational results. *Ann Epidemiol* 2002;12:213-21.
13. Martin LM, Leff M, Calonge N, Garrett C, Nelson DE. Validation of self-reported chronic conditions and health services in a managed care population. *Am J Prev Med* 2000;18:215-8.