Association Between Psoriasis and Food Insecurity Among United States Adults

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Patients with psoriasis have increased healthcare costs and comorbidities, leading to an increased socioeconomic burden in this population.[1] Thus, we explored the association between psoriasis and food insecurity using National Health and Nutrition Examination Survey (NHANES) data from 2003 to 2006 and 2009 to 2014.

NHANES data was analyzed for years that included diagnosis of psoriasis and food security in its questionnaires. Statistical analyses were performed with SPSS 27. Participants who did not respond "yes" or "no" to diagnosis of psoriasis were excluded. If the participant did not know or refused to answer, the responses were considered missing. Missing values were imputed using linear interpolation and rounded to the nearest integer. A multinomial logistic regression was conducted with the diagnosis of psoriasis as the dependent variable, measures of food security in the last 12 months, such as meals cut or skipped by the respondent or child in the household, not eating for a day, consuming less than the participant should, hunger, and emergency food received, as the independent variables, and age as a covariate.

Participant demographics prior to missing value imputation are shown in Table 1. Those with psoriasis were significantly more likely to have received emergency food from a church, food pantry, food bank, or soup kitchen in the last 12 months (adjusted odds ratio, 1.4; 95% confidence interval, 1.04 to1.87; P=0.026) and a child in the household that had skipped meals in the last 12 months (adjusted odds ratio, 1.59; 95% confidence interval, 1.06 to 2.36; P=.024) compared to those without psoriasis (Table 2). Other measures of food security such as skipped or cut meals, lack of nutrition for a day, and hunger were not significant. Since emergency food requires that one seeks outside resources, it better gauges the gravity of food insecurity. Similarly, skipped meals in a child more accurately shows food security compared to adult measures because it better demonstrates the seriousness of food insecurity. Adults can skip meals for other reasons, such as increased demands at work or dieting. Additionally, skipped meals are less biased than judging a child's hunger. It is also more serious than cutting a child's meal, but less extreme than not eating for a whole day. Therefore, it seems that food insecurity is positively associated with psoriasis.

Limitations of this study include use of a questionnaire subject to nonresponse and recall bias. Missing data imputation treats the imputed values as equal to those that were observed, possibly influencing the final statistical analysis. Comorbidities, severity of psoriasis, and disease duration were not assessed, which could have modified the effect of food security. Patients with lower socioeconomic status have decreased access to dermatologic care, so it is important to recognize the link between food insecurity, an indicator of financial hardship, and psoriasis.[2] Studies have shown links between food insecurity and cardiovascular risk and immune activation and chronic disease in patients with HIV.[3,4] This population deserves more attention because these patients are susceptible to adverse healthcare outcomes due to the lack of resources.

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TABLE 1. Demographic characteristics of selected participants before missing value imputation

VARIABLE	PARTICIPANTS WITH PSORIASIS (N=682)	PARTICIPANTS WITHOUT PSORIASIS (N=25,361)
Age (y), mean ± SD	48.5 ± 17.1	43.8 ± 18.1
Gender, n (%)		
Male	325 (47.7)	12,252 (48.3)
Female	357 (52.3)	13,109 (51.7)
Ethnicity, n (%)		
Non-Hispanic white	413 (60.6)	10,675 (42.1)
Non-Hispanic black	90 (13.2)	5,701 (22.5)
Mexican American	56 (8.2)	4,210 (16.6)
Other Hispanic	54 (7.9)	2,112 (8.3)
Other	69 (10.1)	2,663 (10.5)
Citizenship status, n (%)		
United States citizen	627 (91.9)	21,487 (84.7)[1]
Not a United States citizen	55 (8.1)	3808 (15)[1]
Marital status, n (%)[1]		
Married	344 (50.4)	11,956 (47.1)
Widowed	47 (6.9)	1,503 (5.9)
Divorced	85 (12.5)	2,413 (9.5)
Separated	28 (4.1)	775 (3.1)
Never married	106 (15.5)	4,801 (18.9)
Living with partner	54 (7.9)	1,933 (7.6)
Household size, n (%)[1]		
1	109 (16)	3,032 (12)
2	215 (31.5)	6,702 (26.4)
3	126 (18.5)	4,694 (18.5)
4	113 (16.6)	4,635 (18.3)
5	70 (10.3)	3,093 (12.2)
6	27 (4)	1,552 (6.1)
7 or more	22 (3.2)	1,653 (6.5)
Poverty income ratio, n (%)		
<1	138 (20.2)	5,506 (21.7)
1 to 1.4	107 (15.7)	3,602 (14.2)
1.5 to 1.9	56 (8.2)	2,343 (9.2)
2 to 2.9	77 (11.3)	3,297 (13)
≥3	258 (37.8)	8,572 (33.8)

y, years; SD, standard deviation.
[1]Values do not add up to the total number of participants due to missing data.

TABLE 2. Adjusted odds ratios for measures of food security in participants with and without psoriasis in the United States

VARIABLE	AMONG PSORIASIS, N (%)[1]	AMONG NON-PSORIASIS, N (%)[1]	ADJUSTED ODDS RATIO (95% CI)	*P*-VALUE
Child skipped meals	61 (8.9)	1,763 (7)	1.59 (1.06 to 2.36)	0.024
Cut size of child meals	109 (16)	4,411 (17.4)	0.9 (0.69 to 1.18)	0.449
Child hungry	64 (9.4)	2,566 (10.1)	0.72 (0.5 to 1.04)	0.083
Child not eat the whole day	7 (1)	293 (1.2)	1.09 (0.47 to 2.49)	0.846
Adult cut size or skipped meals	245 (35.9)	8,628 (34)	1.05 (0.82 to 1.34)	0.699
Adult not eat the whole day	124 (18.2)	4,919 (19.4)	0.93 (0.73 to 1.18)	0.552
Emergency food received	85 (12.5)	2,534 (10)	1.4 (1.04 to 1.87)	0.026
Eat less than should	229 (33.6)	8,487 (33.5)	0.93 (0.72 to 1.21)	0.597
Hungry, but didn't eat	127 (18.6)	4,827 (19)	0.91 (0.67 to 1.23)	0.535
Age	—	—	1.02 (1.01 to 1.02)	0

[1]Frequencies of selected participants who answered yes to these questions after linear interpolation.