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# Differences in accessing dermatology offices, primary care offices, and emergency departments between Hispanics and Non-Hispanic White Patients

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## Abstract

How Hispanic patients access dermatologic care for skin diseases is unknown. This study aims to determine if differences exist in accessing the emergency department (ED), primary care, and outpatient dermatologic offices for skin diseases between Hispanic and non-Hispanic White patients. This cross-sectional study used nationally representative data from the Medical Panel Expenditure Survey (MEPS) from 2016-2019. A total of 109,337,668 (weighted) patients with any skin disease diagnosed at an ED, primary care, or dermatology visit were identified. Hispanics comprised 13.0% and non-Hispanic Whites comprised 68.8% of this subpopulation. Overall, 94.1% of Hispanic patients attended a primary care visit for their skin complaint, 5.8% saw a dermatologist, and 0.1% attended an ED visit. Compared to non-Hispanic Whites, Hispanics were more likely to attend a primary care visit (aOR 1.865; 95%CI, 1.640-2.122) and less likely to attend an outpatient dermatology visit (aOR 0.536; 95%CI, 0.471-0.610), after adjusting for insurance status, education, income, sex, age, and comorbidities. Our study suggests that, compared to non-Hispanic Whites, Hispanic patients access primary care more frequently and outpatient dermatologic offices less frequently for their skin conditions. Language barriers, less familiarity with the healthcare system, and lack of adequate health insurance may play roles in this observation.

*Keywords: dermatologic care, dermatology visit, healthcare utilization, Hispanic health, MEPS, United States*

## Introduction

Skin diseases, such as acne and psoriasis, can significantly impact patients' quality of life [1-4]. Successful management of these conditions often requires consistent specialist care. However, not all patients can obtain timely access to dermatologists; lack of access is especially a problem among those with poor or no health insurance coverage [5]. Consequently, some patients may seek dermatologic care from settings other than dermatology offices, such as primary care offices or emergency departments (EDs). However, non-dermatologists are not specialty-trained to care for complex skin diseases [6]. Additionally, primary care clinics and EDs are often over-burdened, resulting in fewer opportunities for appropriate management of chronic skin diseases and potential resource strain [7]. Therefore, management of many skin diseases in the primary care or ED setting is likely suboptimal to outpatient specialist dermatologic care.

Additionally, several skin diseases in those with skin of color can be challenging to diagnose by non-dermatologist providers [8-10]. For example, erythema is often less easily visible on skin of color which may result in difficulty recognizing inflammatory etiologies. This could contribute to Hispanic patients with atopic dermatitis or psoriasis often presenting with more severe disease compared with non-Hispanics [10,11]. Furthermore, in skin cancer management, melanomas detected by dermatologists often present at an earlier stage than those detected by non-dermatologists [12]. Notably,

non-White patients often present with more advanced melanoma and have lower survival odds than Whites [13-15]. Despite the potential disadvantages, there has been greater than a 50% increase in ED utilization over the past two decades among patients with skin of color for dermatologic diseases [6].

As the Hispanic population is projected to increase substantially and account for over a quarter of the total U.S. population by 2060 [16], there is a critical need to characterize health care utilization, such as access to outpatient specialists. Data on healthcare utilization will inform us of gaps in care and guide health policies that can decrease differences in care [17]. There are few studies investigating differences in healthcare utilization for skin diseases overall between Hispanics and non-Hispanics. This study aims to determine whether differences exist in the usage of primary care, ED, and outpatient dermatologic offices between Hispanics and non-Hispanic White patients with skin diseases in the U.S.

## Methods

### Data source and study population

This cross-sectional study uses data from Medical Panel Expenditure Survey (MEPS), which is an annual effort of the Agency for Healthcare Research and Quality (AHRQ) to collect nationally representative, longitudinal data from families and healthcare providers in the United States [18]. Institutional Review Board approval was not necessary for this public, de-identified database.

This study includes three years of pooled data (2016-2019) from the full-year consolidated, medical conditions, and office-based visits household component files. These files provide information on topics including demographics, insurance, expenditures, diseases codes, and medical visits. Skin-specific disease codes were ascertained from the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD10-CM) code. Upon switching from ICD9-CM to ICD10-CM codes in 2016, MEPS began coding all conditions with an abbreviated 3-digit diagnosis code to preserve confidentiality of the responders. The codes used to

identify skin diseases in this study are represented in **Table 1** and include codes such as dermatophytosis (B35), malignant melanoma of the skin (C43), rash and other nonspecific skin eruption (R21), allergic contact dermatitis (L23), other and unspecified dermatitis (L30), psoriasis (L40), urticaria (L50), acne (L70), and rosacea (L71). Atopic dermatitis and

**Table 1.** Medical Expenditure Panel survey International Classification of Diseases, Tenth Revision, Clinical Modification (ICD10-CM) codes for with associated diagnosis labels used to identify patients with any skin disease

ICD10CDX value	Diagnosis label
B08	Other viral infection of the skin and mucous membranes, not elsewhere classified
B35	Dermatophytosis
B36	Other superficial mycoses
C43	Malignant melanoma of the skin
C44	Other malignant neoplasm of skin
D04	Carcinoma in situ of the skin
D22	Melanocytic nevi
L02	Cutaneous abscess, furuncle, and carbuncle
L03	Cellulitis and acute lymphangitis
L08	Other local infections of skin and subcutaneous issues
L21	Seborrheic dermatitis
L23	Allergic contact dermatitis
L25	Unspecified contact dermatitis
L27	Dermatitis due to internally taken substances
L29	Pruritis
L30	Other and unspecified dermatitis
L40	Psoriasis
L50	Urticaria
L57	Skin changes from chronic exposure to non-ionizing radiation
L60	Nail disorders
L65	Other non-scarring hair loss
L70	Acne
L71	Rosacea
L72	Follicular cysts of the skin and subcutaneous tissues
L73	Other follicular disorders
L81	Other disorders of pigmentation
L84	Corns and callosities
L90	Atrophic disorders of the skin
L91	Hypertrophic disorders of skin
L98	Other disorders of skin and subcutaneous tissue, not elsewhere classified
R20	Disturbances of skin sensation
R21	Rash and other non-specific skin
R22	Localized swelling, mass and lump of the skin and/or subcutaneous tissue

hidradenitis suppurativa are not available ICD10-CM codes in MEPS to date and therefore were not included in this subpopulation.

### Variables

Visit types were identified as primary care visits, ED visits, and outpatient visits with a dermatologist provider for any of the defined skin conditions in a year. Demographic factors included race/ethnicity, age, sex, insurance status, education level, and income group. The MEPS code RACETHX summarizes race and ethnicity in a variable and was used to identify patients as Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, or non-Hispanic other/Multi-race. Although we recognize different uses of the terms Hispanic and Latino, MEPS does not make a distinction between them. We only use the term Hispanic in this study when discussing the ethnicity of patients whose origins are in Latin American countries. Age was categorized as under 18, 18-65, and over 65 years old. Insurance status was defined as insured with any insurance versus uninsured over the course of the year. Education level was categorized into high school (having received a high school education or below), college (some college or a college degree), and graduate (graduate level education and above). Income was calculated as a percentage of the poverty line based on statistics for the Current Population Survey for each family and, was grouped into the categories of low income (<200% of the poverty line), middle income (200-399%), and high income (>399%). The Charlson Comorbidity Index (CCI) variable was used to account for confounding comorbidities within the sample [20].

### Statistical analysis

The data was analyzed in STATA 15.1 (StataCorp LP, College Station, TX). All analyses were performed using weighting procedures to account for the complex survey data based on the recommended methodology. Person-level weights and a variable estimation stratum were applied to the data to account for unequal sampling. All data reported in this study reflect the weighted sample estimates.

Two-way tabulations were used to determine baseline characteristics between racial/ethnic groups in the sample. chi-square tests were used to

evaluate differences in categorical demographic data. Multivariate logistic regressions were used to model odds of attending ED, primary care, and dermatology visits. The dependent variable was visit type. The independent variable was race/ethnicity, with non-Hispanic White as the reference. We controlled for the following covariates: age, sex, insurance status, education level, income group, and CCI. Statistical significance was determined as P value  $\leq 0.05$ .

### Results

A total of 109,337,668 patients (weighted estimate) were identified in the MEPS database between 2016-2019 with an ICD10-CM code representing any skin disease. Non-Hispanic White patients comprised the majority of this population (68.8%). The remainder of this group was composed of Hispanics (13.0%) non-Hispanic Blacks (10.0%), non-Hispanic Asians (5.1%), and non-Hispanic other/Multi-race (3.1%). Hispanics had the highest proportion of uninsured patients at 8.7%. Hispanics also had lower levels of education (60.3% at a high school level of education or lower) than any other group and lower income than non-Hispanic Whites, Asians, and Multi-race/Other (38.3% low income or below), (**Table 2**).

Of the Hispanic patients presenting for a skin complaint, 5.8% saw a dermatologist, 94.1% saw a primary care provider, and 0.1% went to the ED. This pattern was reflected similarly in non-Hispanic black patients (3.7% dermatology, 96.1% primary care), non-Hispanic Asians (6.1% dermatology, 93.7% primary care), and non-Hispanic Multi-race/Other patients (6.0% dermatology, 93.8% primary care). In contrast, 11.5% of non-Hispanic White patients attended an outpatient dermatology visit and 88.3% saw primary care. Few patients overall attended the ED for their skin complaints at <0.2%.

Compared to non-Hispanic White patients, Hispanics were more likely to present to primary care for their skin complaint (aOR 1.865; 95%CI, 1.640-2.122), after adjusting for insurance status, education level, income, sex, age, and comorbidities. Hispanics were also approximately half as likely to attend an outpatient dermatology visit than White patients for

**Table 2.** Sociodemographic characteristics of patients with any skin disease attending at least one outpatient dermatology office visit, primary care visit, or emergency department visit during a year from 2016-2019 by race/ethnicity. Medical Expenditure Panel Surveys, 2016-2019, unweighted N=39,829; weighted N=109,337,668.

Characteristic	Hispanic (any race) 13.0% weighted % (95% CI)	Non-Hispanic white 68.8% weighted % (95% CI)	Non-Hispanic black 10.0% weighted % (95% CI)	Non-Hispanic Asian 5.1% weighted % (95% CI)	Non-Hispanic Multi-race/other 3.1% weighted % (95% CI)
Age, years (P<0.0001)					
<18	12.2 (11.1-13.4)	6.9 (6.4-7.5)	6.9 (6.0-7.9)	5.7 (4.5-7.1)	14.5 (12.2-17.2)
18-65	70.0 (68.4-71.6)	61.0 (59.9-62.0)	69.3 (67.5-71.1)	68.9 (65.9-71.7)	65.7 (62.2-69.1)
>65	17.8 (16.3-19.4)	32.1 (31.0-33.2)	23.7 (22.0-25.6)	25.5 (22.7-28.5)	19.8 (17.0-22.9)
Sex (P<0.0001)					
Male	43.3 (42.0-44.6)	45.1 (44.4-45.8)	39.4 (37.8-41.0)	43.5 (41.4-45.7)	43.6 (40.3-47.1)
Female	56.7 (55.4-58.0)	54.9 (54.2-55.6)	60.6 (59.0-62.2)	56.5 (54.3-58.6)	56.4 (52.9-59.7)
Insurance status (P<0.0001)					
Insured	91.3 (90.1-92.3)	98.3 (98.0-98.5)	97.0 (96.4-97.5)	98.1 (97.0-98.8)	97.0 (94.8-98.3)
Not insured	8.7 (7.7-9.9)	1.7 (1.5-2.0)	3.0 (2.5-3.6)	1.9 (1.2-3.0)	3.0 (1.7-5.2)
Education level <sup>a</sup> (P<0.0001)					
High school	60.3 (58.1-62.4)	39.1 (37.9-40.3)	50.4 (48.3-52.5)	32.5 (29.6-35.6)	51.3 (47.6-55.0)
College	33.7 (31.8-35.5)	45.4 (44.4-46.5)	40.3 (38.3-42.4)	44.1 (40.5-47.9)	38.5 (34.8-42.3)
Graduate	6.0 (5.2-6.9)	15.5 (14.6-16.3)	9.3 (8.2-10.5)	23.3 (20.0-27.0)	10.2 (7.9-13.1)
Income group <sup>a</sup> (P<0.0001)					
Low Income	38.3 (35.8-40.8)	21.1 (20.0-22.1)	39.8 (37.5-42.2)	23.4 (20.6-26.4)	33.5 (30.2-37.0)
Middle Income	31.9 (30.3-33.6)	26.4 (25.4-27.4)	28.9 (27.0-31.0)	21.0 (18.5-23.8)	30.6 (27.1-34.3)
High Income	29.8 (27.2-32.5)	52.6 (51.2-54.0)	31.2 (28.9-33.7)	55.6 (51.9-59.2)	35.9 (32.4-39.6)
CCI (P<0.0001)					
0	75.4 (74.1-76.7)	69.8 (69.0-70.6)	64.3 (62.7-65.9)	75.9 (73.4-78.3)	70.9 (67.5-74.1)
1	19.9 (18.7-21.0)	24.3 (23.6-25.1)	30.6 (29.0-32.2)	20.3 (18.1-22.6)	23.2 (20.7-25.8)
>1	4.7 (4.2-5.3)	5.9 (5.5-6.3)	5.1 (4.5-5.8)	3.8 (3.0-4.9)	5.9 (4.1-8.5)

ED, Emergency department; CI, confidence interval; CCI, Charlson Comorbidity Index; MEPS, Medical Expenditure Panel survey.

Percentages are rounded.

<sup>a</sup>Education level is stratified into three groups for participants who received a high school education or below (high school), some college or a college degree (college), and a graduate level education and above (graduate).

<sup>b</sup>Income calculated as a percentage of the poverty line, grouped into the categories of low income (<200% of the poverty line), middle income (200-399%), and high income (>399%).

their skin diseases after adjusting for the aforementioned confounders (aOR 0.536; 95%CI 0.471-0.610). There was no statistically significant difference for any of the racial/ethnic groups presenting to the ED (**Table 3**). In addition, compared to non-Hispanic Whites, non-Hispanic black (0.316; 0.252-0.398) and Asian (aOR 0.458; 95%CI 0.370-0.568) participants had lower odds of attending a dermatology visit and higher odds of

attending a primary care visit for their skin diseases (**Table 3**).

Overall, for all respondents with a skin disease, we found that those without any insurance were less likely to present to an outpatient dermatology office (aOR 0.415; 95%CI 0.277-0.624) and more likely to present to a primary care visit (aOR 2.407; 95%CI 1.603-3.614) than those with any insurance. Similarly, respondents with lower incomes and education

levels had lower odds of presenting to outpatient dermatology offices and higher odds of presenting to primary care offices for their skin diseases compared to the high income and graduate education level reference groups, respectively. Adults under 65 years old were more likely to attend primary care visits and less likely to attend dermatology visits; children were less likely to attend ED visits compared to adults over 65. Females were more likely to present to dermatology for their skin diseases and less likely to visit primary care compared to males. Patients with comorbidity scores over one had lower odds of presenting to the ED and to primary care, and higher odds of presenting to outpatient dermatology offices compared to those with a CCI of zero (**Table 3**).

## Discussion

This study sought to investigate whether differences exist in the use of outpatient dermatologic offices, primary care offices, and EDs for skin diseases between Hispanics and non-Hispanic Whites. It showed that Hispanics were more likely to visit primary care and less likely to receive outpatient dermatologic care than non-Hispanic Whites for the management of their skin diseases, controlling for covariates such as income and education level. These findings reveal a new insight into the role that ethnicity may play in the utilization of dermatologic care.

There are several possible reasons for these observed differences in healthcare utilization. First, it is possible that Hispanics face challenges in accessing dermatologists due to insurance status. This study found that uninsured patients presented to outpatient dermatology offices significantly less often and to primary care offices more often than those with insurance, supporting previous findings suggesting that insurance status plays a prominent role in accessing dermatologists [21,22]. For the uninsured participants in this study, it is possible that dermatologic providers did not have as robust systems of financial support for uninsured patients as primary care providers, making dermatology visits prohibitively expensive.

Insured Hispanics may have also encountered difficulty in accessing dermatologists. For one, there are higher numbers of Medicaid-insured patients among racial and ethnic minorities and low Medicaid acceptance rates amongst dermatologists [5,21]. Furthermore, many private insurance plans require referrals from primary care providers before patients can see specialists. Additionally, less familiarity with the complex healthcare system may discourage some Hispanic patients from utilizing health services effectively [23,24]. Thus, it is possible that, even with insurance, some Hispanic patients may not have accessed outpatient dermatologists as frequently and instead, presented to primary care for acute dermatologic issues requiring urgent attention.

Hispanic patients may also utilize dermatology clinics less than non-Hispanic White patients due to language barriers. For example, prior work by our team found that language barriers are strongly associated with decreased access to care, including access to biologic medications for psoriasis [25]. Therefore, for Spanish-only-speaking patients, having a Spanish-speaking healthcare provider may substantially augment the visit experience and possibly lead to better patient outcomes. Few studies exist comparing the rates of Spanish-speaking providers between fields of medicine. However, due to the low rates of provider diversity in dermatology it is likely that primary care and emergency medicine boast more Spanish-speaking providers. Linguistic and cultural competency are likely important factors for patient compliance and continuity.

Regardless of patient-provider language concordance, researchers have examined Hispanic patients' satisfaction with healthcare providers with mixed findings [26,27]. Although some studies suggest that Hispanic patients have greater dissatisfaction with their provider's communication than White patients [26], others found the opposite [27]. Thus, further investigation is needed to fully understand Hispanic patients' experiences with communicating with their dermatologist providers. Regardless of which factors contribute to higher primary care usage for skin diseases by Hispanics, their skin diseases are likely less optimally managed.

**Table 3.** Multivariate logistic regression analysis of the association between race/ethnicity of patients with any skin disease presenting to outpatient dermatology visits, primary care visits, and ED visits, adjusted for age, sex, insurance status, education level, income group, and comorbidities.

Independent variables	Dependent variables		
	Dermatology visits aOR (95% CI)	Primary care visits aOR (95% CI)	ED visits aOR (95% CI)
<b>Age, years</b>			
<18	1.153 (0.956-1.391)	0.867 (0.719-1.046)	0.445 (0.209-0.950)
18-65	0.535 (0.494-0.581)	1.868 (1.721-2.026)	1.143 (0.908-1.439)
>65	Reference	Reference	Reference
<b>Sex</b>			
Female	1.132 (1.053-1.217)	0.883 (0.822-0.949)	0.891 (0.712-1.116)
Male	Reference	Reference	Reference
<b>Race/ethnicity</b>			
Hispanic (any race)	0.536 (0.471-0.610)	1.865 (1.640-2.122)	0.825 (0.570-1.193)
Non-Hispanic White	Reference	Reference	Reference
Non-Hispanic Black	0.316 (0.252-0.398)	3.161 (2.514-2.974)	0.908 (0.692-1.192)
Non-Hispanic Asian	0.458 (0.370-0.568)	2.183 (1.762-2.706)	0.769 (0.470-1.259)
Non-Hispanic Multi-race/Other	0.706 (0.471-1.056)	1.418 (0.947-2.121)	0.908 (0.846-2.354)
<b>Insurance status</b>			
Insured	Reference	Reference	Reference
Not insured	0.415 (0.277-0.624)	2.407 (1.603-3.614)	1.075 (0.360-3.215)
<b>Education level<sup>a</sup></b>			
High school	0.510 (0.461-0.564)	1.961 (1.773-2.169)	1.256 (0.896-1.760)
College	0.769 (0.704-0.840)	1.300 (1.190-1.421)	1.084 (0.776-1.513)
Graduate	Reference	Reference	Reference
<b>Income group<sup>a</sup></b>			
Low income	0.535 (0.480-0.597)	1.868 (1.676-2.081)	1.086 (0.815-1.445)
Middle income	0.692 (0.635-0.755)	1.445 (1.325-1.576)	0.819 (0.618-1.084)
High income	Reference	Reference	Reference
<b>CCI</b>			
0	Reference	Reference	Reference
1	0.881 (0.840-0.924)	1.135 (1.082-1.191)	1.287 (0.930-1.782)
>1	1.513 (1.431-1.600)	0.661 (0.625-0.699)	0.319 (0.129-0.790)

ED, Emergency department; aOR, Adjusted Odds Ratio; CI, Confidence Interval; CCI, Charlson Comorbidity Index; MEPS, Medical Expenditure Panel survey. Percentages are rounded.

<sup>a</sup>Education level is stratified into three groups for participants who received a high school education or below (high school), some college or a college degree (college), and a graduate level education and above (graduate).

<sup>b</sup>Income calculated as a percentage of the poverty line, grouped into the categories of low income (<200% of the poverty line), middle income (200-399%), and high income (>399%).

Several limitations exist for this study. MEPS is limited in the range of dermatologic diagnoses reported. For example, MEPS does not collect specific data on every dermatology code, including hidradenitis suppurativa. Additionally, participants attended few ED visits for their dermatologic complaints which may affect the analysis. Future studies may be able to collect a larger ED sample size to further investigate possible differences. Finally, although the MEPS survey can be conducted in Spanish for Spanish-only speaking patients, these respondents may comprise

a small proportion of those with dermatologic conditions in MEPS.

## Conclusion

This study found that, compared to non-Hispanic White patients, Hispanic patients access primary care more frequently and outpatient dermatologic offices less frequently for their skin diseases. Contributing factors to this observation may include language barriers, less familiarity with the healthcare system, and lack of adequate health insurance. Efforts aimed

at addressing these factors and uncovering other barriers to access to care are important to improve skin health among Hispanic patients.

## Potential conflicts of interest

April W Armstrong has served as a research investigator and/or scientific advisor to AbbVie,

Almirall, Arcutis, ASLAN, Beiersdorf, BI, BMS, EPI, Incyte, Leo, UCB, Janssen, Lilly, Nimbus, Novartis, Ortho Dermatologics, Sun, Dermavant, Dermira, Sanofi, Regeneron, Pfizer, and Modmed. Caterina Zagona-Prizio, Sabrina Khan, Danielle K Yee, Nicole Maynard, Samiya Khan, Kevin Wu, Rasika Reddy, and Manan D Mehta report no conflicts of interest.

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