Centre[c]; Department of Clinical Genetics, Utrecht University Medical Center[d]; Department of Clinical Genetics, VU University Medical Center, Amsterdam[e]; Department of Clinical Genetics, University of Groningen, University Medical Center Groningen[f]; Department of Human Genetics, Radboud University Medical Center, Nijmegen[g]; Department of Clinical Genetics, Erasmus University Medical Centre, Rotterdam[h]; Department of Clinical Genetics, Academic Medical Center, Amsterdam[i]; Department of Clinical Genetics, Leiden University Medical Centre[j]; Department of Clinical Genetics, The Netherlands Cancer Institute, Amsterdam.[k]

Drs Cosgun and Reinders contributed equally to this article.

Funding sources: None.

Conflicts of interest: None disclosed.

Reprints not available from the authors.

Correspondence to: Marie G. H. C. Reinders, MD, PhD, Department of Dermatology, Maastricht University Medical Centre, P. Debyelaan 25, PO Box 5800, 6202 AZ Maastricht, The Netherlands

E-mail: marieke.reinders@mumc.nl

REFERENCES

1. John AM, Schwartz RA. Basal cell naevus syndrome: an update on genetics and treatment. *Br J Dermatol*. 2016;174(1):68-76.
2. Smith MJ, Beetz C, Williams SG, et al. Germline mutations in SUFU cause Gorlin syndrome-associated childhood medulloblastoma and redefine the risk associated with PTCH1 mutations. *J Clin Oncol*. 2014;32(36):4155-4161.
3. Bree AF, Shah MR, Group BC. Consensus statement from the first international colloquium on basal cell nevus syndrome (BCNS). *Am J Med Genet A*. 2011;155A(9):2091-2097.
4. Reinders M, van Hout A, Cosgun B, et al. New mutations and an updated database for the patched-1 (PTCH1) gene. *Mol Genet Genomic Med*. 2018;6(3):409-415.
5. Evans DG, Oudit D, Smith MJ, et al. First evidence of genotype-phenotype correlations in Gorlin syndrome. *J Med Genet*. 2017;54(8):530-536.

https://doi.org/10.1016/j.jaad.2019.07.072

Skin cancer and dermatoses in a majority-Hispanic population of solid organ transplant recipients

To the Editor: The number of solid organ transplant recipients (SOTRs) of racial or ethnic minorities is increasing in the United States, with more than 16,000 new nonwhite SOTRs in 2018.[1] Our knowledge that SOTRs have increased incidence of skin cancer and infections primarily derives from non-Hispanic white (NHW) patients, but there is little information published on Hispanic cohorts.[2,3] We sought to address this gap by describing the rates and characteristics of skin cancer and dermatoses in a Hispanic-majority SOTR population. We conducted an institutional review board–approved, single-center retrospective review of 2032 SOTRs (kidney, liver, heart, lung) between 1993 and 2016, including patients with outpatient/inpatient dermatology encounters at our institution, community dermatology visits per outside records, and biopsy-proven skin cancers (including by nondermatologists). Patients were stratified by race/ethnicity as NHW, Hispanic, Asian, or black. Hispanic origin was defined according to US Census Bureau guidelines.[4]

Among all SOTRs, 1058/2032 (52.1%) were Hispanic, and 555/2032 (27.3%) were NHW. Skin cancers or dermatoses were diagnosed in 314 of 2032 (15.5%) patients, of whom 161 (51.3%) were Hispanic (Table I). Among those with dermatologic complications, 41 of 103 (39.8%) NHW and 27 of 161 (16.8%) Hispanic patients had skin cancer. In these two groups, the most common type of skin cancer was squamous cell carcinoma (or in situ), representing 77 of 148 total skin cancers (52.0%). NHW patients had more than twice as many skin cancers as Hispanic patients (106 vs 42, respectively) and more often had multiple skin cancers (21/41 patients (51.2%) vs 7/27 patients (25.9%), respectively). Overall, most skin cancers were on the head/neck (81/148, 54.7%) and upper extremities (32/148, 21.6%) (Fig 1). In Hispanic patients, a greater proportion of skin cancers occurred on the head/neck than in NHW patients (25/37, 67.6% vs 49/97, 50.5%, respectively). There were no between-group differences in time from transplantation to first outpatient visit (median, 24.0 months; $P = .28$) or first skin cancer (median, 3 years; $P = .57$). Rates of inflammatory and infectious dermatoses were similar, except that fungal infections were more frequent in Hispanic patients 45/161 (28.0%) than other groups (NHW, 7/103, 6.8%; Asian, 6/42, 14.3%; black, 1/8, 12.5%; $P < .001$).

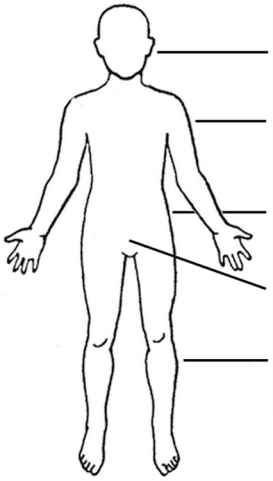
In this retrospective study, Hispanics were the majority of all SOTRs and of those with posttransplantation dermatologic complications. Skin cancer was diagnosed in 27/161 (16.8%) of Hispanic versus 41/103 (39.8%) of NHW patients. Superficial mycoses were significantly more common in Hispanic patients than other groups. In a Philadelphia study of majority-nonwhite SOTRs, skin cancer was found in 42% of NHW and 12% of Hispanic SOTRs,[2] comparable to our findings (although only 8% of patients were Hispanic); however, in that study, black and Asian patients had more infections than

Table I. Patient demographics and characteristics*

Characteristics	Racial/ethnic group					
	All (N = 314)	Non-Hispanic white (n = 103)	Hispanic (n = 161)	Asian (n = 42)	Black (n = 8)	*P* value
Age in years, median (IQR)	61.5 (54.0-68.0)	61.0 (53.0-67.0)	61.0 (54.0-67.0)	65.0 (56.0-71.0)	60.5 (45.5-62.5)	.24
Sex, n (%)						.28
Male	214 (68.2)	77 (74.8)	102 (63.4)	29 (69.0)	6 (75.0)	
Female	100 (31.8)	26 (25.2)	59 (36.6)	13 (31.0)	2 (25.0)	
Organ(s) transplanted, n (%)						.005
Liver	153 (48.7)	53 (51.5)	80 (49.7)	19 (45.2)	1 (12.5)	
Kidney	86 (27.4)	21 (20.4)	47 (29.2)	14 (33.3)	4 (50.0)	
Heart	26 (8.3)	16 (15.5)	7 (4.3)	3 (7.1)	0	
Lung	11 (3.5)	3 (2.9)	5 (3.1)	1 (2.4)	2 (25.0)	
Multiple†	38 (12.1)	10 (9.7)	22 (13.7)	5 (11.9)	1 (12.5)	
USC outpatient visit, n (%)	243 (77.4)	60 (58.3)	140 (87.0)	36 (85.7)	7 (87.5)	<.001
Time to visit in months, median (IQR)	24.0 (9.0-50.0)	22.0 (9.5-49.5)	26.0 (12.0-53.5)	17.0 (7.5-44.5)	14.0 (5.0-34.0)	.28
USC inpatient consult, n (%)	46 (14.6)	19 (18.4)	21 (13.0)	6 (14.3)	0	.48
Patients with skin cancer, n (%)	74 (23.6)	41 (39.8)	27 (16.8)	4 (9.5)	2 (25.0)	<.001
Number of skin cancers, n (%)	163	106	42	5	10	—
SCC	67 (41.1)	42 (39.6)	14 (33.3)	2 (40.0)	9 (90.0)	
SCC in situ	23 (14.1)	13 (12.3)	8 (19.0)	2 (40.0)	0	
BCC	61 (37.4)	46 (43.4)	14 (33.3)	1 (20.0)	0	
Melanoma	6 (3.7)	3 (2.8)	3 (7.1)	0	0	
Other	6 (3.7)	2 (1.9)	3 (7.1)	0	1 (10.0)	
Multiple skin cancers, n (%)	30/74 (40.5)	21/41 (51.2)	7/27 (25.9)	1/4 (25.0)	1/2 (50.0)	.11
SCC:BCC ratio	1.5	1.2	1.6	4	NA	—
Time to first skin cancer diagnosis in years, median (IQR)‡	3 (2-5.5)	4 (2-8)	3 (2-5)	2.5 (1-4)	3 (2-4)	.57
Actinic keratoses, n (%)	50 (15.9)	22 (21.4)	23 (14.3)	3 (7.1)	2 (25.0)	.11
Dermatoses, n (%)						
Inflammatory, n (%)	110 (35.0)	32 (31.1)	55 (34.2)	20 (47.6)	3 (37.5)	.28
Infectious						
Fungal§	59 (18.8)	7 (6.8)	45 (28.0)	6 (14.3)	1 (12.5)	<.001
Viral	56 (17.8)	18 (17.5)	26 (16.1)	10 (23.8)	2 (25.0)	.57
Bacterial	17 (5.4)	7 (6.8)	7 (4.3)	2 (4.8)	1 (12.5)	.47

BCC, Basal cell carcinoma; *IQR,* interquartile range; *NA,* not applicable; *SCC,* squamous cell carcinoma; *USC,* University of Southern California.
*Continuous variables are expressed as median (IQR) and were analyzed by Wilcoxon rank-sum test by the Dwass, Steel, Critchlow-Fligner multiple comparisons method. Categorical variables are expressed as proportions, and differences by racial/ethnic group were analyzed by chi-square test or Fisher exact test. All statistical analyses were performed using SAS, version 9.4 (SAS, Cary, NC).
†Thirty-six of 38 patients with multiple organ transplants had liver combined with kidney transplants.
‡Available for 65/74 patients.
§All were superficial mycoses, other than 1 case of likely disseminated coccidioidomycosis.

Hispanic patients. A major strength of our study is its Hispanic-predominant SOTR population. Consistent with US Census Bureau guidelines,[4] patients could self-identify as Hispanic regardless of race. Given the racial/ethnic diversity of US Hispanics, our findings may not be generalizable nationwide. One limitation was lack of access to Fitzpatrick phototype, which may be more closely associated with posttransplantation squamous cell carcinoma risk than race.[5] Another limitation was our single-center retrospective design. Cutaneous complications were likely underdiagnosed because at our institution, not all SOTRs are referred to the dermatology department. To our knowledge, to date, we present the largest study of posttransplantation skin disease among US Hispanic SOTRs, suggesting that Hispanic SOTRs are at elevated risk for skin cancer and other dermatoses. Larger prospective studies of racial/ethnic differences in SOTRs are needed, particularly regarding Hispanics,



	All (n=148)	Non-Hispanic White (n=97)	Hispanic (n=37)	Asian (n=5)	Black (n=9)
Head/Neck	55%	51%	68%	60%	44%
Upper extremities	22%	22%	19%	0	44%
Trunk	12%	14%	8%	0	11%
Genitals	2%	0	3%	40%	0
Lower extremities	10%	13%	3%	0	0

Fig 1. Anatomic distribution of skin cancer by racial/ethnic group. Locations and distributions (expressed as percentage of total cases) of skin cancers are shown for all patients and each racial/ethnic group. Data were available for 148/163 lesions.

considering their growing representation in the United States and unique posttransplantation cutaneous risk profile.

Brandon L. Adler, MD,[a] Jan Smogorzewski, MD,[a] Tiffany Sierro, BS,[b] Orr Shauly, BS,[b] Daria Osipchuk, BS,[b] Melanie Miller, MD,[a] Melissa Mert, MS,[c] Michael W. Fong, MD,[d] Sivagini Ganesh, MD,[e] Hyosun Han, MD,[f] Gino K. In, MD, MPH,[g] Thin Thin Maw, MD, MS,[b] Miroslaw Smogorzewski, MD, PhD,[b] Jenny Hu, MD,[a] Binh Ngo, MD,[a] David Lee, MD,[i] and Iris Ahronowitz, MD[a]

From the Department of Dermatology, Keck School of Medicine, University of Southern California[a]; Keck School of Medicine, University of Southern California[b]; Department of Preventive Medicine, Keck School of Medicine, University of Southern California[c]; Division of Cardiology, Keck School of Medicine, University of Southern California[d]; Division of Pulmonary, Critical Care, and Sleep Medicine, Keck School of Medicine, University of Southern California[e]; Division of Gastrointestinal and Liver Diseases, Keck School of Medicine, University of Southern California[f]; Division of Medical Oncology, Norris Comprehensive Cancer Center, Keck School of Medicine, University of Southern California[g]; Division of Nephrology, Keck School of Medicine, University of Southern California, Los Angeles[h]; and Department of Dermatology, The Permanente Medical Group, Walnut Creek, California.[i]

Drs Adler and Smogorzewski contributed equally to this article.

Funding sources: Supported by a Team Building Grant from the Southern California Clinical and Translational Science Institute, a Quality Improvement Grant from the Committee of Interns and Residents/Service Employee International Union (Los Angeles County and University of Southern California Medical Center), and grants UL1TR001855 and UL1TR000130 from the National Center for Advancing Translational Science of the US National Institutes of Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Disclosure: Dr In has served as advisor and/or speaker to Bristol-Myers Squibb and Merck. Drs Adler, J. Smogorzewski, Sierro, Shauly, Osipchuk, Miller, Mert, Fong, Ganesh, Han, In, Maw, M. Smogorzewski, Hu, Ngo, Lee, and Ahronowitz have no conflicts of interest to declare.

Reprints not available from the authors.

Correspondence to: Iris Ahronowitz, MD, 1441 Eastlake Ave, Ezralow Tower, Ste 5301, Los Angeles, CA 90033

E-mail: iris.ahronowitz@med.usc.edu

REFERENCES

1. Organ Procurement and Transplantation Network. Available at: https://optn.transplant.hrsa.gov/data/view-data-reports/national-data. Accessed January 13, 2019.
2. Chung CL, Nadhan KS, Shaver CM, et al. Comparison of posttransplant dermatologic diseases by race. *JAMA Dermatol*. 2017;153(6):552-558.
3. Pritchett EN, Doyle A, Shaver CM, et al. Nonmelanoma skin cancer in nonwhite organ transplant recipients. *JAMA Dermatol*. 2016;152(12):1348-1353.
4. US Census Bureau. Hispanic origin. Available at: https://www.census.gov/topics/population/hispanic-origin/about.html. Accessed June 25, 2019.
5. Gogia R, Binstock M, Hirose R, et al. Fitzpatrick skin phototype is an independent predictor of squamous cell carcinoma risk after solid organ transplantation. *J Am Acad Dermatol*. 2013;68(4):585-591.

https://doi.org/10.1016/j.jaad.2019.07.099

Engaging but inaccurate: A cross-sectional analysis of acne videos on social media from non–health care sources

To the Editor: Acne affects an estimated 85% of adolescents and young adults aged 12 to 24 years in the United States.[1] This population is highly adept at accessing online acne information through social media platforms, with YouTube being the most frequently used of these platforms.[2] Despite its popularity, the validity of health care information on YouTube has not been studied extensively in dermatology. We aimed to determine the accuracy, quality, viewer engagement, and viewer experience of acne videos on social media.

We conducted a cross-sectional study by collecting videos using the search terms *acne* and *acne treatment* on YouTube. For each term, we examined results from the first 3 pages (60 videos per term). Videos were categorized by source into 5 groups and into 2 large categories: (1) health care source, and (2) non–health care source (Table I). Three independent raters used 4 instruments to evaluate each video. Accuracy was assessed using the validated Accuracy in Digital Health Instrument[3] and the Dy et al. Accuracy Scale[4] (Fig 1). Quality was assessed using the Global Quality Scale.[5] Viewer engagement was assessed by an engagement ratio, defined as (numbers of likes + dislikes + comments)/total views. Overall viewer experience was assessed with the validated Armstrong Viewer Assessment[3] (Fig 1). Two-tailed *t* tests were used to determine significant differences between videos from health care and non–health care sources.

A total of 120 videos were screened for inclusion. After applying inclusion and exclusion criteria, 69 videos were available for assessment of outcomes: 6 were non-English, and 45 were irrelevant to the topic (procedures showing comedone extraction or expression of cyst contents). Compared with health care sources, non–health care sources had higher mean numbers of views (609 493 vs 450 765), were less accurate (Accuracy in Digital Health Instrument: 2.40 ± 0.14 vs 2.97 ± 0.28, $P = .041$), of lower quality (Global Quality Scale: 2.73 ± 0.11 vs 3.39 ± 0.27, $P = .020$), and provided an inferior viewer experience (Armstrong Viewer Assessment: 2.13 ± 0.14 vs 2.74 ± 0.19, $P = .007$) (Fig 1). Specifically, videos from the lay media and lay individuals were of the lowest accuracy, quality, and viewer experience, whereas videos from universities/professional organizations were most accurate and had the highest quality and viewer experience. Additionally, non–health care sources were more engaging than health care sources (viewer engagement ratio: 0.030 ± 0.004 vs 0.015 ± 0.003, $P = .002$).

Our findings suggest that viewers seeking video-based educational content on acne are exposed to significantly inaccurate and low-quality information. For example, some recommended methods of acne treatment on YouTube included highly restrictive diets or the addition of high-dose supplements, which currently lack scientific basis. These findings are particularly important to adolescents because acne is highly prevalent in this population, and this group is most likely to view information on YouTube.[2] Unless we actively address the problem of widely available inaccurate information, clinicians will spend much time dispelling inaccuracies that patients learn from these platforms, and patients will waste time experimenting with ineffective therapies that may be associated with harm. Educational efforts are needed to create accurate, engaging, and accessible content for the public on acne and other dermatologic diseases.

Andrea J. Borba, MS,[a] Paulina M. Young, BS,[b] Charlotte Read, MBBS, BSc,[c,d] and April W. Armstrong, MD, MPH[d]

From the Geisinger Commonwealth School of Medicine, Scranton, Pennsylvania[a]; University of Southern California Keck School of Medicine, Los Angeles, California[b]; Imperial College London, London, United Kingdom[c]; and Department of Dermatology, University of Southern