

Supplementary Material

Title:

Unmet need in people with psoriasis and skin of color in Canada and the United States

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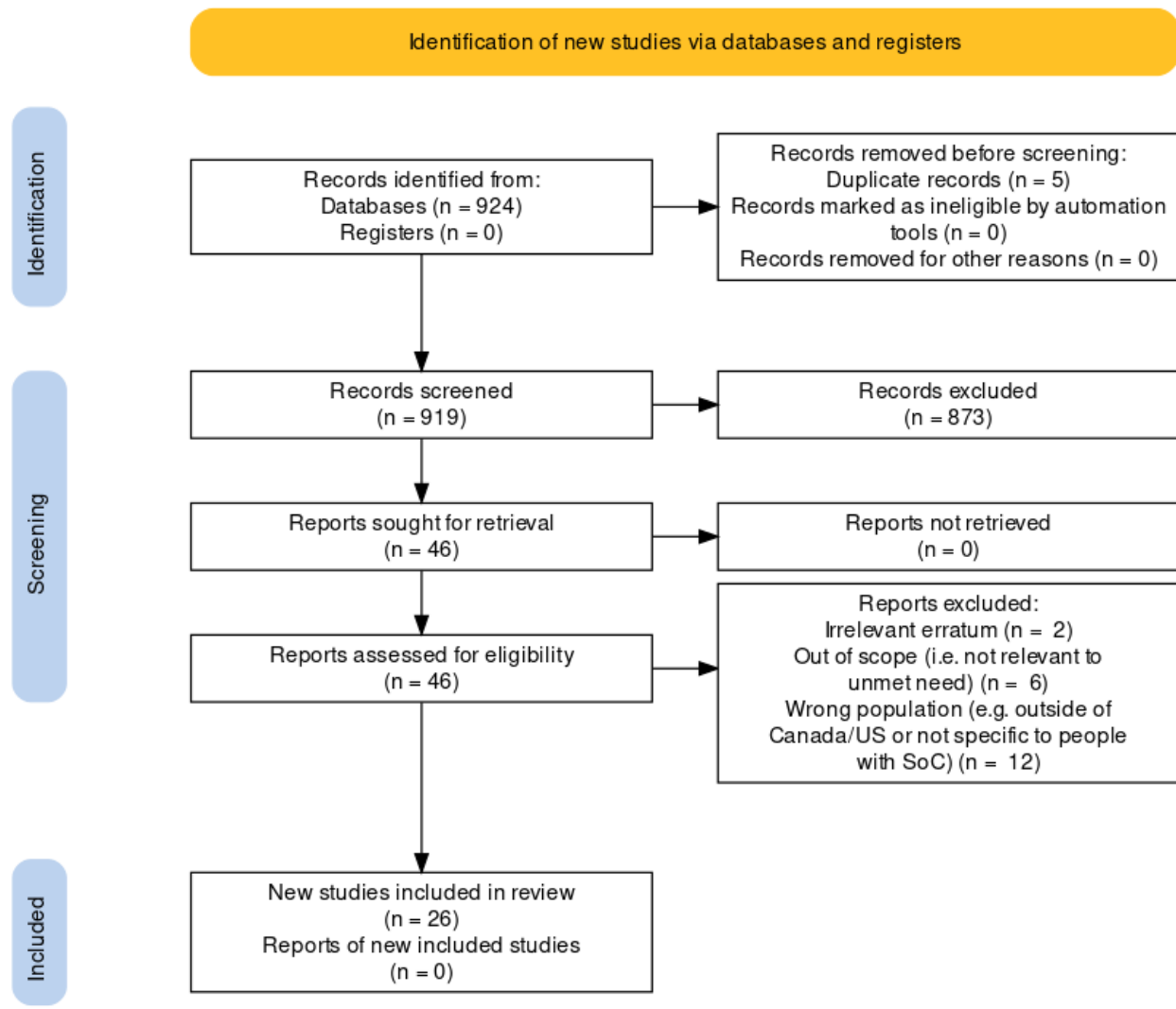


Fig. S1 PRISMA flow diagram

SoC skin of color, *US* United States

Table S1 Full search strategy for targeted literature review

Final Strategy 2021 Oct 19
Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily <1946 to October 15, 2021>
Search Strategy: -----
<ol style="list-style-type: none"> 1 Psoriasis/ (38083) 2 (psoriasis or psoriatic).tw,kf. (52541) 3 (psoriasiform or psoriasi-form).tw,kf. (1281) 4 or/1-3 [PSORIASIS] (58599) 5 ("people? of colo?r" or BIPOC or BIPOCs or IBPO or IBPOs).tw,kf. (888) 6 "patient? of colo?r".tw,kf. (673) 7 Ethnic Groups/ (66124) 8 African Continental Ancestry Group/ (38759) 9 African Americans/ (58370) 10 (Afro-American? or AfroAmerican? or African?).tw,kf. (159016) 11 (Afro-Caribbean? or AfroCaribbean?).tw,kf. (1387) 12 (black or blacks or negro* or nonwhite? or non-white?).tw,kf. (165794) 13 exp Hispanic Americans/ (34786) 14 (hispanic* or latina? or latino? or cuban? or mexican american? or spanish american? or puerto rican? or chicana? or chicano?).tw,kf. (73756) 15 exp American Native Continental Ancestry Group/ (22288) 16 exp Indigenous Peoples/ (5128) 17 (Athapaskan or Saulteaux or Wakashan or Cree or Dene or Eskimo or Inuit or Inuk or Inuvialuit* or Haida or Ktunaxa or Tsimshian or Gitsxan or Nisga'a or Haisla or Heiltsuk or Oweenkeno or Kwakwaka'wakw or Nuu chah nulth or Tsilhqot'in or Dakelh or Wet'suwet'en or Sekani or Dunne-za or Dene or Tahltan or Kaska or Tagish or Tutchone or Nuxalk or Salish or Stl'atlinc or Nlaka'pamux or Okanagan or Sec wepmc or Tlingit or Anishinaabe or Blackfoot or Nakoda or Tasttine or Tsuu T'inia or Gwich'in or Han or Tagish or Tutchone or Algonquin or Nipissing or Ojibwa or Potawatomi or Innu or Maliseet or Mi'kmaq or Micmac or Passamaquoddy or Haudenosaunee or Cayuga or Mohawk or Oneida or Onodaga or Seneca or Tuscarora or Wyandot or Aboriginal* or Indigenous* or Metis or (native? adj3 America*) or (native? adj3 Canad*) or red road or "on reserve" or off-reserve or First Nation or First Nations or Amerindian or (urban adj3 (Indian* or Native* or Aboriginal*))).tw,kf. (81505) 18 ("A' ani" or Absaroka or Haaninin or Atsina or "Gros Ventre" or Acopsel or Tlacopsel or Lacopsel or Ahtna or Ahtena or Akenitsi or Occaneechi or Akokisa or Horcoquisa or Orcoquizas or Aleut or Unangax or Unangan or Alibamu or "Alabama Alsea" or Alutiiq or Sugpiag or "Pacific Yupik" or Amahami or Awaxawi or Androscoggin or Arosaguntacook or Ameriscoggin or Anishinaabeg or Chippewa or Anihsinape or Saulteaux or Apalachee or Aranama or "Texan Coahuilteca" or Tamique or Arikara or Sahnish or Arickaree or Adakadaho or Assiniboine or Hohe or Nakota or Nakoda or Nakona or "Atsa' Kudok-wa" or Awatixa or Bannock or "Snake Indian*" or Bidai or Quasmigdo or Biloxi or Blackfoot or Niitsitapi or Sikasikaitstapi or Cahto or Kaipomo or Cahuilla or Ivilyuqaletem or Ivilyuat or Catawba or Inna or Iswa or Chemehuevi or Chickasaw or "Chilula Chimakum" or Aqokulo or Chimariko or Chirichua or Tsokanende or Chitimacha or Chetimachan or Sitimacha or Chowanoke or Roanoke or Chumash or Ciboney or "Taino Ciwat" or Clatsop or Coos or Coosa or Uchis or Chiaha or Coste or Talisi or Coquille or Kokwell or Coso or Cowlitz or Taitnapam or "Crow Nation" or "Cui Ui Ticutta" or Cupeno or Kuupangaxwichem or Cupa or "Cup' ig" or Nunivak or "Dakota Oyate" or Lakota or Nakota or Santee or Teton or Sioux or Deadose or "Deg Xina" or "Deg Xit' an" or Kaiyukhotana or "Deg

Hit' an" or "Dena' ina" or Tanaina or "Dichinane'k' Hwt' ana" or "Upper Kuskokwim Athabascan*" or Kolchan or Goltsan or "Tundra Kolosh" or "Do Ikabya" or Duwamish or Esselen or Eyak or "Gidi' tikadi" or Guwevkabaya or "Gwich' in" or Kutchin or Haida or Xaadas or Xaat or Halchidhoma or Havasupai or "Green Water People" or Hiratsa or Hiraaca or "Ho-chaaqa" or Winnebago or Holikachuk or Innoko or "Tlegon-khotana" or Hopi or "Houma-Louisiana" or Huaco or Waco or Hualapai or Hupa or Natinixwe or "Natinook-wa" or "Hwech' in" or Hankutchin or "Iroquois Confederacy" or "Hodinoso ni" or "Illinois Confedera*" or Ilinoweg or Illini or Inupiat or Inuit or Ioway or Baxoje or Jicarilla or Juaneno or Acjachemen or Jumano or Kalapuya or Clackama or Kalispel or "Pend d' Oeilles" or Qlispe or Karuk or Karok or "Chum-ne" or Katkoc or Kansa or Kanza or Kawaiisu or Nuwa or Kennebec or "Kinipekw Kittitas" or Klickitat or "Qwu' lh-hwai-pum" or "Awi-adshi" or Mahane or Wahnookt or "Koa' aga' itoka" or Keresan or Kichai or Kitsai or Keechi or "K' itaish" or Kiowa or Gaigwu or Cauigu or Kutjau or "Kwu-da" or "Tep-da" or Kitanemuk or Kittitas or Klickitat or "Qwu' lh-hwai-pum" or "Awi-adshi" or Mahane or Wahnookt or "Koa' aga' itoka" or Konkow or "Koop Ticutta" or Koyukon or Ktunaxa or Kootenai or Flathead or Kucadikadi or "Kotsa' va" or Kumeyaay or "Tipai-Ipai" or Kamia or Diegueno or Kwapa or Cocopah or Cucapa or "Xawitt kwinchawaay" or Lassik or Lenape or "Leni-Lenape" or Lipan or Luiseno or Payomkawichum or Madqwadabaya or "Desert Yavapai" or Mahican or Mohicans or Makah or Makuhadokado or Maliseet or Wolistoqiag or Manahoac or Mahock or Meipontsky or Mandan or Mattole or "Bear River" or "Tul' bush" or "Ni' ekeni" or Meherrin or Menominee or Mackinac or Mescalero or Myaamiaki or Kickapoo or Twigtwee or Missouriia or Miwok or Miwuk or Moadokado or Modoc or Mohave or "Aha Makhav" or Mohawk or "Kaneng' hega" or Molala or Molale or Molele or Nyyhmy or Moosonee or "Moose Cree" or Monsonis or Multnomah or Chinook or Nabedache or Nabaydacu or Wawadishe or Nabilitse or Dakubetede or "Nacho Nyak Dun" or Tutchone or Nacono or "Na' isha" or Nanticoke or Navajo or Ndee or Nial or Niimiipu or "Nez Perce" or Watapala or Watapahlute or Nisenan or Nisqually or Nomlaki or Noamlakee or "Central Wintun" or Nongatl or Nottoway or Cheroenhaka or "Northern Cheyenne" or Ohlone or Costanoan or Omaha or "O' odham" or Pima or Papago or Osage or Otoe or Otse or "Ozav Dika" or Palus or Passamaquoddy or Pestomuhkati or Patiri or Petaros or Pastia or Patwin or "Southern Wintun" or Panis or Skidi or Pedee or Penobscot or "Petun Piipaash" or "Kokmalik' op" or Piscatawa or Doeg or Conoy or "Pit River" or Pomo or Kashaya or Ponca or Ponka or Pottawatomie or Bodewadmik or Powhatan or Puyallup or Spuyalepabs or Quapaw or Ugahxpa or Quechan or Yuma or Kwtsaan or Quileute or Salinan or Saponi or Monacan or Sapon or "Eastern Blackfoot" or Christanna or Sawawatodo or Serrano or Taaqtam or "Maarenga' yam" or Yuhaviatam or Shasta or Chasta or Sasti or Shoshone or Siletz or Sinkine or Sinkyone or "Siuslaw Umpqua" or Skitswish or "Schitsu' umash" or Snohomish or Snuqualmi or Sokoki or Missiquoi or Stillaguamish or Stoluckwamish or Suquamish or Sutaio or Swinomish or Skagit or Syilx or Okanagan or Sotaae or "Taga Ticutta" or Takelma or Dagelma or Taltushtuntede or Galice or "Tanan Gwich' in" or Taos or Taovaya or Tataviam or Alliklik or Tawakoni or Tahuacano or Tenino or Thawikila or Hathawekela or "Fort Ancient" or Tigua or Tillamook or Nehalem or Timbisha or Panamint or Timpanogos or Tlingit or "Toi Ticutta" or Tolowa or "Talawa Dini' " or Tongva or Gabrieleno or Fernandeno or Tobikhar or Tonkawa or Ticanwatic or Tsikip or Appalousa or Opelousa or Tsitsistas or Tubatulabal or Tukabatchee or Tuscarora or Tomahittan or Kuskarawock or Tutelo or Tuteru or Totteroy or Tuteru or Yusan or Tututni or Umatilla or Umpqua or Waccamaw or Waxmaw or Wadatika or "Harney Valley Paiute" or Wailiki or Waluulapam or "Walla Walla" or Walpapi or Huipui or Wampanoag or Massasoit or Wanapum or Wappo or Washoe or Wichita or Willapa or Kwalhioqua or "Wi pukba" or "Verde Valley Yavapai" or Wintu or "Northern Wintun" or Wiyot or "Wee' at" or Weyet or Yakama or "Yamosopo Tuviwarai" or Yaqui or Yoeme or Yatasi or Yattasih or "Yavbe' " or "Yavapai" or "Ysleta del Sur" or Yojuane or Yokuts or Mariposa or Yuki or Yupighyt or Yup'ik or Yupik or Yurok or "Olekwo'l" or Zuni).tw,kf. (13090)

19 ((Applegate or Delaware or Iowa or Ishak or Kaw or Kato or Spokane or Miami or Arkansas or Tali or Tunica or Han or Pawnee or "Coeur D' Alene" or Piscataway or Ree or Tula) adj3 (reservation* or nation or people or peoples or population or man or men or woman or women or child* or youth* or elder or elders or communit* or tribe or tribes or tribal or Indian*)).tw,kf. (10664)

20 exp Asian Continental Ancestry Group/ (78021)

21 (asian? or burmese or cambodian? or chinese or filipino? or hmong? or indonesian? or japanese or korean? or malay? or malaysian? or mongolian? or taiwanese or thai or thais or tibetan? or vietnamese).tw,kf. (592447)

22 Oceanic Ancestry Group/ (11190)

23 ((australoid or australian) adj (aborigin* or race?)).tw,kf. (1820)

24 (hawaiian? or hawai'ian?).tw,kf. (4230)

25 maori?.tw,kf. (3787)

26 pacific islander?.tw,kf. (4155)

27 pacific island american?.tw,kf. (9)

28 oceanic ancestr*.tw,kf. (34)

29 Arabs/ (4937)

30 (arab* or bahraini* or jordani* or kuwaiti? or omani* or qatari? or saudi? or yemeni?).tw,kf. (155537)

31 (lebanese or palestinian? or israeli?).tw,kf. (16499)

32 (afghan* or bangladeshi* or indian or indians or east indian* or south indian* or west indian* or islam* or muslim* or pakistani* or sri lankan*).tw,kf. (107416)

33 ((people? or person? or population? or skin?) adj "of colo?r").tw,kf. (4358)

34 ((brown* or dark*) adj3 (pigment* or skin?)).tw,kf. (5802)

35 ((brown* or dark*) adj3 (people? or person? or population?)).tw,kf. (1112)

36 ((racial* or ethnic* or ethnoracial* or ethno-racial) adj3 divers*).tw,kf. (11610)

37 or/5-36 [DARK SKIN/BIPOC] (1324201)

38 4 and 37 [PSORIASIS/PLAQUE PSORIASIS - BIPOC] (2156)

39 exp Animals/ not Humans/ (4898472)

40 38 not 39 [ANIMAL-ONLY REMOVED] (2116)

41 limit 40 to yr="2016-current" (954)

42 limit 41 to english (924)

43 remove duplicates from 42 (919)

Table S2 List of included studies (n = 26)

Study Reference
Abrouk M, Lee K, Brodsky M, Nakamura M, Singh R, Zhu TH, Farahnik B, Liao W. Ethnicity affects the presenting severity of psoriasis. <i>Journal of the American Academy of Dermatology</i> . 2017;77(1):180-182.
Adsit S, Zaldivar ER, Sofen H, Dei-Cas I, Maldonado-García C, Peñaranda EO, Puig L, Meng X, Fox T, Guana A. Secukinumab is efficacious and safe in hispanic patients with moderate-to-severe plaque psoriasis: pooled analysis of four phase 3 trials. <i>Advances in Therapy</i> . 2017;34(6):1327-1339.
Alexis AF, Desai SR, Han G, Jacobson A. Fixed-combination halobetasol propionate and tazarotene lotion for psoriasis in patients with skin of color. <i>Journal of Drugs in Dermatology</i> . 2021;20(7):744.
Armstrong AW, Mehta MD, Schupp CW, Gondo GC, Bell SJ, Griffiths CE. Psoriasis prevalence in adults in the United States. <i>JAMA Dermatology</i> . 2021;157(8):940-946.
Ashbaugh AG, Ekelem C, Landaverde Y, Mesinkovska NA. Psoriatic disease in the US Latino population: a comprehensive review. <i>American Journal of Clinical Dermatology</i> . 2020;21(2):265-274.
Ashbaugh AG, Brody G, Landaverde Y, Ekelem C, Mesinkovska NA. A cross-sectional study of Latino patients screened for psoriasis clinical trials at the University of California–Irvine. <i>Journal of the American Academy of Dermatology</i> . 2021;85(4):1021-1023.
Barnabe C, Jones CA, Bernatsky S, Peschken CA, Voaklander D, Homik J, Crowshoe LF, Esdaile JM, El-Gabalawy H, Hemmelgarn B. Inflammatory arthritis prevalence and health services use in the First Nations and non-First Nations populations of Alberta, Canada. <i>Arthritis Care & Research</i> . 2017;69(4):467-474.
Bell MA, Whang KA, Thomas J, Aguh C, Kwatra SG. Racial and ethnic disparities in access to emerging and frontline therapies in common dermatological conditions: a cross-sectional study. <i>Journal of the National Medical Association</i> . 2020;112(6):650-653.
Bolge SC, Eldridge HM, Lofland JH, Ravin C, Hart PJ, Ingham MP. Patient experience with intravenous biologic therapies for ankylosing spondylitis, Crohn's disease, psoriatic arthritis, psoriasis, rheumatoid arthritis, and ulcerative colitis. <i>Patient Preference and Adherence</i> . 2017;11:661-669.
Bonomo L, Abittan BJ, Hashim PW, Karki C, Mason M, Lebwohl M. Combination use of systemic therapies in psoriasis: baseline characteristics from the Corrona Psoriasis Registry. <i>Journal of Drugs in Dermatology</i> . 2019;18(8):731-740.
Bray JK, Cline A, McMichael AJ, Feldman SR. Differences in healthcare barriers based on racial and/or ethnic background for patients with psoriasis. <i>Journal of Dermatological Treatment</i> . 2021;32(6):590-594.
Burshtein J, Strunk A, Garg A. Incidence of psoriasis among adults in the United States: a sex-and age-adjusted population analysis. <i>Journal of the American Academy of Dermatology</i> . 2021;84(4):1023-1029.
Charrow A, Di Xia F, Joyce C, Mostaghimi A. Diversity in dermatology clinical trials: a systematic review. <i>JAMA Dermatology</i> . 2017;153(2):193-198.
Gonzalez T, Fleischer Jr AB. Increased biologic utilization in Latino patients with psoriasis. <i>Journal of Dermatological Treatment</i> . 2020. DOI: 10.1080/09546634.2020.1793889.
Ha MV, Wong C. Racial representation in clinical trials for dermatological new molecular entities. <i>Clinical and Experimental Dermatology</i> . 2022;47(2):386-388.
Heath CR, Usatine RP. Dx across the skin color spectrum: psoriasis. <i>Journal of Family Practice</i> . 2021;70(6):303.

Hodges WT, Bhat T, Raval NS, Herbosa C, Ugwu-Dike P, Kwatra SG, Musiek A, Mann C, Semenov YR. Biologics utilization for psoriasis is lower in Black compared to Caucasian patients. <i>British Journal of Dermatology</i> . 2021;185(1):207-209.
Hsu DY, Gordon K, Silverberg JI. The inpatient burden of psoriasis in the United States. <i>Journal of the American Academy of Dermatology</i> . 2016;75(1):33-41.
Kaufman BP, Alexis AF. Psoriasis in skin of color: insights into the epidemiology, clinical presentation, genetics, quality-of-life impact, and treatment of psoriasis in non-white racial/ethnic groups. <i>American Journal of Clinical Dermatology</i> . 2018;19(3):405-423.
Liu J, Thatiparthi A, Martin A, Egeberg A, Wu JJ. Prevalence of psoriasis among adults in the US 2009-2010 and 2013-2014 National Health and Nutrition Examination Surveys. <i>Journal of the American Academy of Dermatology</i> . 2021;84(3):767-769.
McMichael A, Desai SR, Qureshi A, Rastogi S, Alexis AF. Efficacy and safety of brodalumab in patients with moderate-to-severe plaque psoriasis and skin of color: results from the pooled AMAGINE-2/-3 randomized trials. <i>American Journal of Clinical Dermatology</i> . 2019;20(2):267-276.
Nicholas MN, Chan AR, Hessami-Booshehri M. Psoriasis in patients of color: differences in morphology, clinical presentation, and treatment. <i>Cutis</i> . 2020;106(2S):7-10.
Puig L, Wu JJ, Gooderham MJ, You Y, Shen YK, Randazzo B, Kerdel F. Consistent response to guselkumab treatment between Hispanic and non-Hispanic patients with psoriasis: an analysis from VOYAGE 1 and VOYAGE 2. <i>Journal of Dermatological Treatment</i> . 2021;32(5):484-491.
Reddy VD, Myers BA, Chan SY, Thibodeaux QG, Brownstone ND, Bhutani T, Liao W, Lester JC, Koo JY. A review of current phase III clinical trials of plaque psoriasis: under-representation of nonwhite participants and need for reform. <i>British Journal of Dermatology</i> . 2021;184(2):348-350.
Takeshita J, Eriksen WT, Raziano VT, Bocage C, Hur L, Shah RV, Gelfand JM, Barg FK. Racial differences in perceptions of psoriasis therapies: implications for racial disparities in psoriasis treatment. <i>Journal of Investigative Dermatology</i> . 2019;139(8):1672-1679.
Yan D, Afifi L, Jeon C, Cordoro KM, Liao W. A cross-sectional study of psoriasis triggers among different ethnorracial groups. <i>Journal of the American Academy of Dermatology</i> . 2017;77(4):756-758.