Gender and Ethnic Inequities in Gout Burden and Management

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KEYWORDS

• Gout • Urate • Equity • Disparities • Gender • Ethnicity

KEY POINTS

- Women, African-Americans in the United States, Māori (Indigenous New Zealanders), and Pacific people living in Aotearoa/New Zealand experience inequitable gout care.
- Barriers to effective gout management occur at several levels, including health care practitioners, health organizations, and the health system.
- A focus on culturally safe health care that builds health literacy and removes barriers to continuous urate-lowering therapy is needed to eliminate inequity for people with gout.

INTRODUCTION

Gout is a chronic disease of monosodium urate crystal deposition that typically presents as intermittent flares of severe inflammatory arthritis.[1] Poorly controlled gout has an important impact on musculoskeletal function, health-related quality of life (HRQOL),[2] and productivity.[3] Gout is also associated with comorbid conditions

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including cardiovascular disease, chronic kidney disease, and diabetes, and a premature mortality gap.[4,5]

The central strategy for effective gout management is continuous urate-lowering therapy to achieve monosodium urate crystal dissolution, suppression of gout flares, and prevention of joint damage.[6] Although effective and low-cost urate-lowering therapy, such as allopurinol, has been available since the 1960s,[7] disparities in gout management exist. In this review, we summarize the evidence for gender and racial disparities in gout management, identify factors that may contribute to these disparities, and describe potential strategies to eliminate inequity in gout outcomes.

GENDER DISPARITIES

Gout is less common in women than in men. Recent estimates of gout prevalence for women living in the United States were 2.7%, compared with 5.2% of men,[8] and in Taiwan, gout affected 3.2% of women and 9.3% of men.[9] Compared with men, women with gout are generally older, have greater burden of comorbidities, and use more diuretics.[10] Women with gout have an excellent response to the urate-lowering therapies including allopurinol and febuxostat.[11]

Differences in the quality of care according to gender have been reported (**Table 1**). Women are less likely to receive allopurinol,[8,10,12] and more likely to receive glucocorticoids and nonsteroidal anti-inflammatory drugs (NSAIDs).[10] The reasons for different prescribing patterns between men and women has not been examined in detail. In general, long-term urate-lowering therapy is recommended for patients with frequent gout flares or tophi, and it is possible that some women with gout do not require or choose not to take long-term urate-lowering therapy because of infrequent flares or mild disease. However, women with gout report similar frequency of flares and greater

Table 1
Studies reporting quality of gout care for women

Study	Population	Outcome	Results
Harrold et al,[10] 2006	6133 patients in US health maintenance organizations	Receiving allopurinol	Women vs men: odds ratio, 0.78; 95% CI, 0.67–0.90
		Receiving glucocorticoids	Women vs men: odds ratio, 1.30; 95% CI, 1.12–1.50
		Receiving nonsteroidal anti-inflammatory drugs	Women vs men: odds ratio, 1.68; 95% CI, 1.29–2.18
		Serum urate monitoring within 6 mo after starting urate-lowering therapy	Women vs men: odds ratio, 1.36; 95% CI, 1.11–1.67
Harrold et al,[12] 2017	1273 US national cohort of gout patients cared for by rheumatologists	Receiving any urate-lowering therapy	77% women, 83% men
		Receiving allopurinol	51% women, 64% men
		Receiving febuxostat	26% women, 17% men
Chen-Xu et al,[8] 2019	5467 participants in the NHANES 2015–2016	Current urate-lowering therapy use	15.5% women, 43.0% men

Abbreviations: CI, confidence interval; NHANES, National Health and Nutrition Examination Survey.

activity limitation compared with men with gout, even after adjusting for comorbidities and duration of gout,[4] suggesting that less severe disease does not fully explain the observed prescribing differences between genders.

Qualitative research has shown that gout has a major impact on quality of life for men and women.[13] Women with gout are concerned about dependency, joint deformity, and difficulty with footwear.[13] Women with gout also describe difficulty finding relevant information for them, because information is targeted to men.[14] The diagnostic process can be uncertain and may be delayed because of lack of awareness of gout in women by health providers.[14] Gout has a major impact on women's identity and on their roles and relationships.[14] Perceptions about gout as a "man's disease" may contribute to stigmatization and embarrassment in women with gout, which can create barriers to seeking medical care for gout.[15]

RACIAL/ETHNIC DISPARITIES: UNITED STATES

In the United States, contemporary prevalence estimates of gout are 4.8% in non-Hispanic African-Americans, 4.0% in non-Hispanic Whites, and 2.0% in Hispanics.[8] African-Americans with gout have greater impact of gout and a lower HRQOL compared with White patients with gout.[16] In clinical trial settings, African-Americans with gout have similar urate-lowering responses to allopurinol and febuxostat compared with White patients with gout.[17]

Despite the higher impact of disease and documented efficacy of urate-lowering treatment, studies over the last two decades have shown that African-Americans with gout are less likely to be prescribed allopurinol and are more likely to have interruptions in allopurinol prescribing compared with White Americans with gout (**Table 2**).[8,18,19] Most recent estimates show that urate-lowering therapy is prescribed in 26.5% non-Hispanic Black adults, 35.0% in non-Hispanic White adults, and 57.7% in Hispanic adults in the United States.[8] Compared with White Americans on allopurinol, African-American veterans on allopurinol had significantly lower adjusted odds of achieving target serum urate.[20]

In qualitative studies, African-Americans with gout reported severe pain during gout flares and significantly associated emotional burden and dietary restriction

Table 2
Studies reporting quality of gout care for African-Americans in the United States

Study	Population	Outcome	Results
Krishnan et al,[18] 2008	3.9 million ambulatory care visits	Allopurinol prescription	African-American vs White: odds ratio, 0.18; 95% CI, 0.04–0.78
Solomon et al,[19] 2008	9823 older adults enrolled in a pharmacy benefit program	Inconsistent prescribing of urate-lowering therapy	African-American vs White: odds ratio, 1.86; 95% CI, 1.52–2.27
Singh et al,[20] 2019	41,153 patients on allopurinol in the Veterans Affairs health care system	Achieving target serum urate (<6 mg/dL)	African-American vs White: odds ratio, 0.84 (0.80–0.88)
Chen-Xu et al,[8] 2019	5467 participants in the NHANES 2015–2016	Urate-lowering therapy prescription	26.5% non-Hispanic Black adults, 35.0% non-Hispanic White adults, 57.7% Hispanic adults

caused by gout.[13] Doubts about the effectiveness of urate-lowering therapy, concerns about the cost and side effects of therapy, impact of concomitant medications, and pill size were noted to be barriers to medication adherence.[21] African-Americans reporting low adherence to urate-lowering therapy describe the lack of communication from physicians about the usefulness of therapy, whereas patients with high adherence report greater understanding of the disease and its treatment.[21]

ETHNIC DISPARITIES: AOTEAROA/NEW ZEALAND

It has been documented for decades that hyperuricemia and gout is common throughout Polynesia.[22,23] In contemporary Aotearoa/New Zealand, gout is estimated to affect 8.5% Māori (Indigenous New Zealanders), 13.9% Pacific peoples (eg, Tongan, Sāmoan, Cook Island Māori, Niuean), and 4.2% other New Zealanders (eg, New Zealand European, Asian, Indian).[24] Compared with other New Zealanders with gout, Māori and Pacific peoples have earlier age of onset, higher flare frequency, and more features of joint inflammation.[25] This may be caused by population-specific genetic variants contributing to hyperuricemia and gout[26,27]; higher prevalence of comorbid conditions that contribute to hyperuricemia, such as kidney disease; or undertreatment with urate-lowering therapy throughout the disease course. Early in the course of disease, Māori and Pacific peoples experience greater pain and activity limitation and lower HRQOL.[25] Māori and Pacific peoples are also disproportionately prescribed NSAIDs for gout management and have high rates of hospital admission for management of severe gout.[24,28,29]

Despite the high prevalence and severity of disease in Māori and in Pacific peoples living in Aotearoa/New Zealand, these groups are less likely to receive effective preventive therapy in the form of continuous urate-lowering therapy than other New Zealanders (**Table 3**).[24,28] In 2016, continuous urate-lowering therapy for three-quarters or four-quarters in a year was dispensed to 34.9% Pacific peoples, 40.4% Māori, and 44.4% other New Zealanders with gout.[24]

Qualitative studies have also demonstrated the severe impact of gout in Aotearoa/New Zealand. Māori and Pacific men with gout describe extreme pain, dependency on whānau (family) members during flares, isolation, and work disability.[30] For Māori, gout has a huge, negative impact, causing overwhelming suffering.[31] The burden of disease of gout can ripple through to whānau, having negative consequences on relationships and employment. Māori with gout experience receiving little information about the cause or appropriate management of gout from health care practitioners.[31]

The experience of gout for Māori, the Indigenous people of Aotearoa/New Zealand, has particular importance. Under Article 3 of Te Tiriti o Waitangi (The Treaty of Waitangi[a]), the founding document of Aotearoa/New Zealand, Māori are guaranteed the same rights and privileges as non-Māori, which includes "at least the same level of health as non-Māori."[32] In addition, Aotearoa/New Zealand became a signatory to the United Nations Declaration on the Rights of Indigenous Peoples in 2010; under Article 24 of the United Nations Declaration, Māori, as the Indigenous people of Aotearoa/New Zealand, "have an equal right to the enjoyment of the highest attainable standard of physical and mental health." The inequity in gout care for Māori, who are disproportionately affected by this disease, indicates failing of obligations under Te Tiriti o Waitangi and the United Nations Declaration.[24]

[a] This is a translation of the title of the document. There are important differences in meaning between the Māori language and English language texts.

Table 3
Studies reporting quality of gout care for Māori and Pacific Peoples in Aotearoa/New Zealand

Study	Population	Outcome	Results
Jackson et al,[29] 2014	114,703 New Zealanders with gout (national administrative data 2011)	Dispensed any urate-lowering therapy	67% Māori, 63% Pacific peoples, 71% other New Zealanders
		Hospital admissions for gout	1.7% Māori, 1.6% Pacific peoples, 0.6% other New Zealanders
		Laboratory testing for serum urate in the 6 mo following dispensing	33% Māori, 37% Pacific peoples, 34% other New Zealanders
Dalbeth et al,[28] 2016	164,169 New Zealanders with gout (national administrative data 2014)	Regularly dispensed urate-lowering therapy	39% Māori, 33% Pacific peoples, 43% other New Zealanders
Dalbeth et al,[24] 2018	182,013 New Zealanders with gout (national administrative data 2016)	Dispensed nonsteroidal anti-inflammatory drugs	40.8% Māori, 46.7% Pacific peoples, 33.9% other New Zealanders
		Regularly dispensed urate-lowering therapy	40.3% Māori, 34.9% Pacific peoples, 44.3% other New Zealanders
		Hospital admissions because of gout (rate per 100.000 population)	114.5 Māori, 202.2 Pacific peoples, 24.5 other New Zealanders

WHAT IS DRIVING INEQUITY IN GOUT MANAGEMENT?

Many of the factors that contribute to health inequity, including social determinants of health, institutional racism, sexism, and the pervasive negative impact of colonization, likely contribute to the disparities in gout management described previously. For example, financial barriers to and through the health care system may contribute to the observed ethnic disparities in gout management in Aotearoa/New Zealand. Data from a recent Primary Care Patient Experience Survey in Aotearoa/New Zealand showed that 29% Māori participants and 29% Pacific peoples participants did not visit a general practitioner or nurse because of cost, compared with 19% New Zealand European participants.[24] Furthermore, 24% of Māori participants and 22% of Pacific participants identified cost as a barrier to pick up prescriptions, compared with 7% New Zealand European participants.[24] In addition, there are specific challenges to gout management that may contribute to poor quality of care.

In western cultures, historical depictions of gout over many centuries have focused on gout as a self-inflicted and humorous disease of lifestyle excess.[33] These beliefs about gout are commonly held by health care professionals and the wider community,[31,33,34] despite contemporary scientific understanding about the biologic causes for gout (including aging, chronic kidney disease, medications, and genetic contributors). Prevailing beliefs about the cause of gout can contribute to stigmatization and embarrassment that is experienced by people with gout,[35] particularly women with gout,[14] and Māori and Pacific peoples.[30,35] In a qualitative study of Māori with gout, all participants believed or had been informed that gout is caused by dietary factors,

leading to feelings of self-blame and blame from partners and employers.[31] For people with gout, stigmatization negatively interferes with seeking health care and treatment adherence.[35] Historical western views about gout as a disease that is primarily caused by diet can also contribute to excessive focus on unproven strategies for gout,[36] rather than effective long-term medications.

The presentation of gout as an acute flaring condition with asymptomatic intercritical periods can also reinforce the belief of health care professionals, patients, and families that gout is an acute illness that is present only during the flare, rather than a chronic disease of urate crystal deposition that requires long-term continuous urate-lowering therapy.[34] Qualitative studies of Māori and Pacific men with gout highlight the importance of ongoing relationships with health care professionals who can effectively communicate about the underlying basis of gout, providing the rationale for continuous urate-lowering therapy.[30,31] The requirements of health care systems to access medical appointments, laboratory tests, and pharmacy care exert substantial health literacy demands and contribute to a fragmented and burdensome patient experience.[37]

Recruitment approaches in clinical trials of new therapeutic agents for gout may further exacerbate inequities in gout management. In large phase 3 clinical trials that have contributed to Food and Drug Administration approvals of medications for gout in the last 20 years, most study participants have been white men (**Table 4**). The underrepresentation of women and non-White trial participants limits the understanding of treatment responses (efficacy and safety) in these groups.

STRATEGIES TO ACHIEVE HEALTH EQUITY IN GOUT

Strategies to improve the quality of gout care have been described within primary care, the setting in which most gout is managed. These approaches have included practice management improvement interventions[38–40] and packages of care led by nurses and pharmacists.[41–45] The most successful strategies take a health literacy approach, exploring the individual patient's beliefs about gout, supporting understanding that gout is a chronic disease of crystal deposition, and focusing on behavior change to take continuous urate-lowering therapy.[37] Health literacy approaches that reduce barriers to chronic care management, with point-of-care serum urate testing,

Table 4
Characteristics of participants in phase 3 clinical trials contributing to regulatory approvals for gout in the United States since 2009

Study, Year	Total Participants (n)	Male, n (%)	White, n (%)
Becker et al,[51] 2005	762	729 (95.6)	587 (77.0)
Schumacher Jr et al,[52] 2008	1072	1002 (93.5)	835 (77.9)
Becker et al,[53] 2010	2269	2141 (94.4)	1863 (82.1)
Terkeltaub et al,[54] 2010	185	176 (95.1)	153 (82.7)
Sundy et al,[55] 2011	225	173 (81.6)	143 (67.5)
Saag et al,[56] 2017	603	567 (94.0)	460 (76.3)
Bardin et al,[57] 2017	610	587 (96.2)	482 (79.0)
Dalbeth et al,[58] 2017	324	309 (95.4)	259 (79.9)
Tausche et al,[59] 2017	214	195 (91.1)	175 (81.8)

prescription reminders, and regular follow-up, can lead to major improvements in persistence with urate-lowering therapy, improved serum urate lowering, fewer gout flares, and improved HRQOL.

Although these programs have been reported for the general population, most studies examining gout quality improvement interventions have underrepresentation of women and non-White participants. For women, existing educational resources are not tailored to their needs.[14] Furthermore, preferences in how information about gout is communicated may vary in different ethnic groups. For example, Māori prefer information about gout to be kanohi-ki-te-kanohi (face-to-face) in the presence of whānau.[46] Māori also report having lower preference for communicating about gout from a general practitioner/specialist and in written form.[47] Differences in health care delivery needs and preferences are important when developing culturally safe strategies that focus on health equity for people with gout.

One example of a successful project is the Gout Stop program, an interprovider collaborative project developed for primary care in Northland, Aotearoa/New Zealand.[48] This program includes a prescription pack protocol for starting urate-lowering therapy, serum urate point-of-care testing by community pharmacists, gout educators, and an Indigenous community support worker (Kaiāwhina) who provides education and support to patients and whānau. A target of greater than 70% Māori and Pacific patient participation in the program was prespecified to address the goal of reducing health inequities. From 2015 to 2017, 887 patients enrolled in the program, of whom 67% were Māori and 4% were Pacific peoples. Following program completion, 68% of Māori and Pacific patients and 65% of non-Māori/non-Pacific patients continued to take allopurinol. Moreover, data from the Health Quality & Safety Commission New Zealand Atlas of Healthcare Variation showed than within 1 year of commencing the program, allopurinol use in Northland was higher and NSAIDs use lower than the national average, particularly for Māori patients.[48] This program highpoints the potential benefits of a culturally safe, multidisciplinary team approach centered within primary care to facilitate equitable gout outcomes.

SUMMARY

Although individual health practitioner and organization-led approaches play an important role in eliminating health inequity for people with gout, broader contributors to inequitable outcomes for people with gout should be recognized. Integrated action across sectors is required to address the unfair distribution of the social determinants of health.[49] Health systems should focus on equity as an integral component of quality,[32] including building and maintaining a workforce that is culturally safe.[50] Prioritizing equity throughout the health system is likely to lead to major improvements in outcome for people with gout.

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serves on the Food and Drug Administration Arthritis Advisory Committee. J.A. Singh is the chair of the Veterans Affairs Rheumatology Field Advisory Committee. J.A. Singh is the editor and the Director of the UAB Cochrane Musculoskeletal Group Satellite Center on Network Meta-analysis. J.A. Singh previously served as a member of the following committees: member, the ACR Annual Meeting Planning Committee and Quality of Care Committees; the Chair of the ACR Meet-the-Professor, Workshop, and Study Group Subcommittee; and the cochair of the ACR Criteria and Response Criteria subcommittee. N. Dalbeth has received fees from Janssen, AbbVie, CymaBay, AstraZeneca, Crealta, Takeda, Kowa, Horizon, Hengrui, Dyve Biosciences, Arthrosi, Selecta, bpac, the Health Research Council of New Zealand, UpToDate, Oxford University Press, the Pharmaceutical Society of New Zealand, the Spanish Society for Rheumatology, the Asia Pacific Gout Consortium, and the ACR. Her institution has received research grants from the Health Research Council of New Zealand, the Auckland Medical Research Foundation, PHARMAC, AstraZeneca, and Amgen.

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