

Interventions designed to improve uptake of allopurinol for gout treatment in Aotearoa New Zealand: a scoping review

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Handling Editor:

Tim Stokes

Received: 4 August 2022

Accepted: 6 October 2022

Published: 27 October 2022

Cite this:

Ofanoa S et al.
Journal of Primary Health Care 2023;
15(1): 48–58.
doi:[10.1071/HC22094](https://doi.org/10.1071/HC22094)

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ABSTRACT

Introduction. Gout in Aotearoa New Zealand (NZ) remains an equity issue. The prevalence in Pacific and Māori people is one of the highest internationally. Although Pacific and Māori experience earlier onset and higher burden of gout, which can severely impact their quality of life, their management of it is often sub-optimal. **Aim.** To conduct a scoping review of the NZ literature for interventions to improve the uptake/management of allopurinol for gout and their evaluation. **Methods.** Databases Medline, Scopus, Embase, and CINAHL Plus and the grey literature were searched systematically to identify all NZ intervention studies aiming to improve allopurinol uptake for gout treatment. Interventions included: if they were delivered in NZ, aimed to improve allopurinol uptake, and were provided in English. A narrative approach was used to extract and synthesise data. **Results.** Eighteen peer-reviewed and grey literature publications met the search criteria. Interventions clustered into three domains: multifaceted or multi-practitioner; gout app; and online booklets or fact sheets. Serum urate levels improved in multi-faceted or multi-practitioner interventions only, whereas the gout app only improved patients' awareness and understanding of gout and medications. Online fact sheets and booklets need more active utilisation from health professionals to improve gout health literacy. **Discussion.** Most gout interventions in NZ use multifaceted or multi-practitioner approaches. Although most interventions successfully controlled serum urate levels and improved equitable access for gout patients to urate-lowering therapy, these interventions did not sustain retention, completion, and engagement for certain population groups, particularly Pacific and Māori, who experience a higher burden of gout.

Keywords: gout intervention, Māori, New Zealand, Pacific, urate-lowering therapy.

Introduction

Gout is a common form of inflammatory arthritis caused by monosodium urate crystals deposited in joints due to high serum urate levels. Gout flares result in severe joint pain, and progressive joint damage can occur in the setting of tophaceous gout. If left untreated, gout can lead to frequent, disabling flares and joint damage, impacting on people's quality of life and sometimes leading to loss of independence.^{1,2}

Gout is a significant public health issue in most countries. In 2017, the global prevalence estimated of gout was estimated to be about 42 million, with 7.4 million new cases per year and a combined 1.3 million years lived with disability, with prevalence highest among males and older adults.¹

Aotearoa New Zealand (NZ) is one of the countries most affected by gout, with an annual gout incidence rate in 2017 of 190 per 100 000, followed by Australia (162 per 100 000) and the United States (146 per 100 000).¹ In NZ, the prevalence of gout is highest among Pacific people at 14% and Indigenous Māori at 9%, with non-Pacific/non-Māori (NP-NM) people at only 4%.³ Pacific and Māori people are more likely to be diagnosed with gout at a younger age, with a higher frequency of gout flares,⁴ higher hospital admission rates,^{5–7} and lower quality of life than NP-NM. Living with gout can

WHAT GAP THIS FILLS

What is already known: Aotearoa New Zealand has one of the highest prevalences of gout in the world. Pacific and Māori people are diagnosed with gout earlier and at much higher rates; they also experience more frequent gout flares, have the highest hospital admissions and hence poorer quality of life. However, although Pacific and Māori people experience the highest burden of gout, they are less likely to receive continuous allopurinol treatment compared to non-Pacific, non-Māori people with gout.

What this study adds: This scoping review provides an updated stocktake of all interventions in Aotearoa New Zealand that aim to improve the uptake of allopurinol for gout treatment, and their evaluations, where available.

have serious physical and social consequences, such as living with severe pain, being dependent on family, isolation, and not being able to work.³

Overarching principles for managing gout are early treatment of gout flares and long-term urate-lowering therapy (ULT) to prevent flares and tophaceous disease.⁸ Although Pacific and Māori people experience a higher prevalence of gout and severe physical, social, and economic impacts of this condition, coupled with other co-morbidities, they are less likely to receive continuous ULT compared to NP-NM population groups.^{3,9} On average, 33% of Pacific people and 39% of Māori people with gout receive allopurinol (the commonly used ULT medication) regularly to treat their symptoms, compared to 43% of European/other ethnicities.⁹ Furthermore, Pacific and Māori people are more likely to be prescribed more non-steroidal anti-inflammatory drugs compared to NP-NM people, which increases the risk of kidney disease.^{5,9} Recent reports^{6,7} by Pharmac (the government agency that decides which medicines are funded in NZ) indicated that although Pacific and Māori people start being dispensed preventive gout medications on average at a younger age (46 and 49 years respectively) compared to NP-NM people (59 years), they should start on ULT much earlier.^{6,7}

Collectively, these findings indicate an urgent need to improve gout management in NZ. A previous systematic review has been conducted on international gout interventions published in peer-reviewed journals.¹⁰ This scoping review aims to identify and stocktake all interventions that aim to improve the uptake of allopurinol for gout in NZ in both the peer-reviewed and the grey literature, and report on evaluation outcomes where these are available.

Methods

Eligibility criteria

All published studies and grey literature reports on interventions aiming to improve the uptake of allopurinol (the first-

line ULT recommended in NZ) among gout patients in NZ and which were written in English were included in this review, regardless of whether they included results of any evaluation. Studies that focussed on medications other than allopurinol, or interventions not related to the use of ULT, were excluded.

Information sources

The design and reporting of this scoping review used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines 2020 – see Supplementary material Table S1.¹¹ The following databases were searched in April 2022: Medline, Scopus, EMBASE, and CINAHL Plus. The search engines, Google and Google Scholar, were also used to search for grey literature, mainly reports, of interventions that have not been peer-reviewed or published, augmented by a snowball method (following up references found in documents and searching government websites). Using the knowledge of our research team and expert advisors of unpublished gout interventions, we approached authors and health providers for further information.

Search strategy

The key terms used for this review followed those used by the international systematic review,¹⁰ but with a particular focus on NZ. Databases were searched using the following key search terms: 'gout' AND 'uric acid OR urate', 'allopurinol' AND 'intervention OR management OR self-management', AND 'New Zealand'. Subject terms and medical subject headings (MeSH) relevant to these terms were used. Because of the limited literature available in this area in NZ, filters and limits were not applied. See Supplementary Table S2 for details of the search strategy in each database.

Study selection process

The identified articles were exported into Endnote 20 software (Clarivate). Data exported included the reference details, abstract, uniform resource locator (URL), and digital object identifier. Two investigators (SO, ST) independently reviewed the title and abstracts of selected articles based on the inclusion criteria, and any uncertainties with eligibility were discussed before moving forward. The process of selecting relevant studies involved first the removal of duplicates, second, the screening the article titles and abstracts, and third, retrieving and reading through the full-text. Some reports discussed more than one intervention, and several interventions were the subject of more than one document.

Data charting and synthesis

The different interventions were identified and described (Table 1). A narrative approach was used to extract relevant data from the included studies of the interventions into a

summary table. For each study, one investigator (SO) extracted and tabulated the following information: study design (eg pre and post-evaluation, randomised control trial (RCT), qualitative study), participant details, nature of the initiative, and outcomes such as evidence of effectiveness (change in ULT use and/or serum urate acid levels (SUA)), or improvements in knowledge/health literacy about gout.

The interventions were differentiated into those with and without an evaluation. The findings from the former are described in Table 2.

Quantitative meta-analysis and quality assessment were not conducted because of the heterogeneity in methods and outcome measures across the included studies and the grey literature reports in this review.

Results

Selection of sources of evidence

The database search identified 69 articles, with three additional records identified from other sources (Fig. 1). Following the removal of duplicates ($n = 28$), the title and abstracts of 41 articles were reviewed. This resulted in a further 26 articles being excluded; the full paper of the remaining 18 articles was reviewed, of which eight studies were deemed eligible. Three reports, two online booklets, five online fact sheets, and one presentation slide were identified via a Google search and were screened, resulting in the inclusion of 10 grey literature documents. A total of 18 documents were included in the synthesis of the results.

Characteristics of sources of evidence

The 18 included documents addressed a total of 12 interventions. All were published between 2008 and 2022. There was one RCT,¹² one pilot intervention study,¹³ two qualitative studies,^{14,15} two open evaluation studies,^{16,17} two conference abstracts,^{18,19} three reports,^{20–22} two information booklets,^{23,24} three online fact sheets,^{25–27} and one slide presentation.²⁸ Overall, studies defined patients with gout as those with one of the following criteria: classification of gout,^{12,13,16,17} more than one gout flare in the past 12 months,^{17,18,20} and prescription of either allopurinol, probenecid or colchicine.^{13,16}

Synthesis of results

The interventions aimed to improve the uptake and management of gout identified in this review were clustered into three domains: multifaceted or multi-practitioner interventions; a mobile app for gout intervention; and health education resources (online fact sheets or booklets). See Table 1 for descriptions of the 12 interventions. Table 2 summarises the study characteristics and outcomes for the nine interventions that have undergone evaluation.

Evaluated interventions

Multifaceted or multi-practitioner interventions

The majority of included studies,^{14–16} conference papers,^{18,19} and reports^{20,21} in this review highlighted interventions that used a multifaceted or multi-practitioner delivery by multiple providers including general practitioners (GPs), nurses, pharmacists,^{14–16,18–21} kaiāwhina (community support workers), community champions and rheumatologists.¹⁴ Interventions delivered included: education sessions and resources (booklets and videos) delivered by either a clinician or community support worker;^{14,16,17,19} structured approaches to managing gout (Owning My Gout, Gout Stop packs, online support tools, mail sent to patients);^{13,14,17} and the monitoring of SUA levels (usually by a pharmacist or nurse).^{13,18–20} One intervention used an online decision support tool for practitioners to identify key indicators and measures to enable the best possible support and management for their gout patients, with a traffic light system to prompt and direct clinicians to prescribe ULT, plus titration to achieve SUA levels <0.36 mmol/L.^{14,28}

Although most studies^{14,17–20,28} reported some improvement in SUA levels in gout patients after the intervention and improved access, the interventions generally led to lower completion, retention, and engagement by Pacific and Māori patients (see Table 2), who experience a disproportionate burden of gout prevalence in NZ, compared with NP-NM populations.^{17,20}

Mobile app for gout intervention

One RCT of patients with gout recruited from the community and health clinics examined the difference between engagement with gout compared to a dietary app.¹² Participants using the app had increased awareness and understanding of gout and engagement with the app; however, this did not translate into improved self-care behaviour. This might be attributed to the short duration of the study, and patient feedback on this app only found it helpful to patients during gout flares.

Health education resources

A Ministry of Health NZ review of health education resources on gout medication indicated the need for health professionals to actively use resources such as 'out with gout' and 'starting on allopurinol' pamphlets while discussing gout with patients, rather than handing these to them after consultations.²² The information in online fact sheets and booklets needs to be better structured so that the importance of medication use is explicit, especially for Pacific and Māori audiences who are genetically predisposed to produce larger amounts of urate and suffer from gout compared to NP-NM people. Furthermore, resources need to separate information from instructions to avoid confusion.

Table 1. Description of interventions and nature of evaluation where conducted.

Programme	Description
Gout Stop Pack ^{17,20}	• Patient presents to GP • GP diagnoses gout, enrolls patient in programme, writes prescription (four medication cost free blister pack options) • Patient takes prescription to pharmacist who arranges lab tests for SUA & other markers • Patient monitored by community pharmacist who communicates with GP about initial SUA levels, last dose of allopurinol and date of last prescription to finish programme • Patients prescribed Gout Stop Pack according to renal function and whether they have diabetes • Patient revisits GP after 91 days to check SUA • Kaiāwhina present throughout process providing education and support to the patient and their family Pre post evaluation
Owning My Gout (OMG CMDHB) ^{18–20}	Collaborative model of care: three general practices and three pharmacies provide service to 70 patients funded by CMDHB as of July 2017 @ NZ\$27.70/patient/month • Local community pharmacist works in collaboration with GPs, nurses and patients • Understanding orders from the GP • Titration of allopurinol doses • Nurse and patient initiates electronic shared-care plan, which allows secure messaging between patient, GP, pharmacist and specialist • Goalsetting – with nurse and support of At-Risk Individuals programme • Conducts point-of-care testing (SUA levels) • Provides self-management advice – translation of Stop Gout Booklet into Mandarin, Samoan and Tongan Pre post evaluation
Oranga Rongoā project ^{14,15,21,28}	Multi-layered initiative at marae-based practice • Community design and community 'champions' • Community Hui • Traffic light decision support tool in practice management system to prompt and guide delivery of best-practice gout management • Practice staff education • Point-of-care urate testing • Nurse standing orders • Gout health literacy resource • Direct communication to rheumatologist • Evening clinic available Qualitative studies
Structured gout package of care ¹⁶	• 1-day individual education session by rheumatologist and nurse specialists on lifestyle issues, importance of ULT and medication adherence, and management of gout flares • Use of standard written information sheets about gout and its management in English and Māori • Gout card provided to track SUA levels • Structured approach to treating gout flares with non-steroidal anti-inflammatory drugs, colchicine or corticosteroid, depending on patient's comorbidities, concomitant medications and preferences • Phone referrals to a rheumatologist for starting dose and when needed • Nurses who prescribed allopurinol monitored SUA levels in consultation with GPs; this included titration • Screening of comorbidities associated with gout, including diabetes, hypertension, hyperlipidaemia, chronic kidney disease and obesity Pre and post audit
Practice audit ¹³	Intervention 1: Gout patients in the first practice were sent a questionnaire about the number of gout flares in the past 12 months and adherence to medication Intervention 2: Gout patients in the second practice with no SUA level recorded or a SUA level >0.36 mmol/L were sent a letter, phoned and offered an appointment Pilot intervention study
Gout Central app ¹²	Free mobile app providing: • Information about gout and its causes • Common triggers that may cause flares and lifestyle tips for preventing these • Treatment options • Health trackers: SUA tracker and gout flare tracker for user to enter details and track changes across time

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Table 1. (Continued)

Programme	Description
	- Allows users to enter doctor appointments, log questions for healthcare providers, log medications and supplements used to manage gout and other conditions - Links to online resources RCT comparing Gout Control app with diet app
Health Literacy NZ booklet ²³	Booklet created on behalf of MoH available online on the MoH website - Information about gout, its cause, lifestyle changes to reduce flares, ULT, prevention and treatment medications - Includes stories about people's experiences with gout - Available in English, Samoan and Tongan No evaluation available
Arthritis New Zealand fact sheet ²⁵	fact sheet available online on the Arthritis NZ website - Information about gout, its diagnosis, lifestyle changes to reduce flares, ULT, prevention and treatment medications - Link to private Facebook support group page for those with gout to go to for information and other types of support No evaluation available
Medsafe and Ministry of Health Fact sheets ²⁶	Fact sheet created by Medsafe and MoH available online on Health Navigator NZ website - Information about gout, its diagnosis, diet and self-management, ULT, prevention and treatment medications - Fact sheets available in English, Te reo Māori, Samoan - Health Navigator site includes patient story in English, Samoan and Tongan and links to other gout resources No evaluation available
PHARMAC Booklet ²⁴	Booklet 'Out with Gout: How to live a healthy life with gout' available online on the PHARMAC website Information on what gout is, why it happens, how to prevent gout flares, ULT and gout management medications, monitoring SUA No evaluation available
Counties Manukau District Health Board Fact and Instruction Sheet ²⁷	Fact and instruction sheet designed to support adherence to ULT available online on the Health Navigator NZ website Support for health professionals when advising patients about taking gout medications and lifestyle information for reducing gout attacks No evaluation available
New Zealand Formulary Patient Information Sheet ²⁹	Fact sheet available on the New Zealand Formulary website. - Information about allopurinol – what it is? How to take it? Possible side-effects. - Fact sheets available in English and Te reo Māori. No evaluation available

CMDHB, Counties Manukau District Health Board; GP, general practitioner; MoH, Ministry of Health; OMG, Own My Gout; SUA, serum urate; ULT, urate lowering therapy.

Meaning of Māori words: hui = meeting; kaiāwhina = community health worker; marae = Māori meeting place.

Non-evaluated interventions (online fact sheets and booklets)

Several organisations have created booklets and online fact sheets about gout and related medications, although there are no evaluations reported from these.^{23–27,29} Types of information included what gout is, how it is diagnosed and how to manage it,^{23–26} whereas one booklet provided directions to support health professionals when advising and educating patients about taking gout medications and prevention measures for gout flares.²⁷ These information booklets/fact sheets came in different languages, such as Te reo Māori,^{26,29} Samoan,^{23,26} and Tongan.²³ The gout online

fact sheet provided by Arthritis NZ also provides a link to a Facebook support group page where patients with gout could access and seek further information and support from clinicians and other gout patients.²⁵

Discussion

Summary of evidence

In this NZ scoping review, three types of interventions (multifactorial or multi-practitioner, mobile app, and health education resources) were identified to improve the uptake

Table 2. Characteristics of studies and outcomes for interventions with an evaluation.

Author, year	Nature of intervention	Design	Participants	Duration	Outcomes
Phone 2018 ¹⁸	OMG CMDHB collaborative model of care	Conference abstract	Not reported	Started 2014	Statistically significant reduction in SUA levels to <0.36 mmol/L but no figures given 'Positive feedback from patients, nurses and GPs' No further details reported
Lawrence et al. 2019 ¹⁷	Gout Stop pack	Pre-post evaluation	887 gout patients 71% Pacific or Māori	6 months	• Pacific and Māori people had lower completion rate (55%) than NP-NM people (84%) • Pacific and Māori people were less likely to reach target the SUA threshold <0.36 mmol/L (40%) in 91 days than NP-NM people (51%) • Pacific and Māori people more likely to require further titration (26%) than NP-NM people (19%) • Pacific and Māori people more likely to continue ULT (68%) than NP-NM people (65%) at end of the study
Andrews et al. 2020 ²⁰	Compared OMG and Gout Stop	Evaluation report	Gout patients OMG = 148; Gout Stop = 1421	3 months	OMG: 29% (48/164) reached target SUA level (last three recordings) 3% (5/164) were still in titration. Low retention: 27% did not have secondary contact with a pharmacist Gout Stop: 47% (668/1421) completed the programme. 18% (253/1421) reached the target SUA level 12% (167/1421) were still in titration Low retention: 24% did not collect a prescription pack Both interventions: • Improved access for Pacific and Māori people • Less likely to engage Pacific and Māori people than NP-NM people with gout • Less likely for Pacific and Māori people to achieve clinical success (<0.36 mmol/L for 3 months) than NP-NM people • Less likely to retain Pacific and Māori young people with gout

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Table 2. (Continued)

Author, year	Nature of intervention	Design	Participants	Duration	Outcomes
Te Karu et al. 2020 ¹⁵	Oranga Rongoā project	Qualitative study	23 Māori patients with gout	Started 2017 Evaluation 2019 Interviews 60 min	12/23 patients interviewed achieved a SUA target of <0.3 mmol/L 11 attended educational Hui Qualitative findings from interviews: • Biomedical domain Issues with access (physical and financial), loss of trust in health professionals, and medicines for prevention versus treatment • Kaupapa Māori domain Holistic effects of gout (physical, social, spiritual); importance of whānau support; embedded common knowledge about gout causes, anxiety and misinformation impacting on effective treatment; culturally competent and safe education can empower community to improve gout management
Te Karu et al. 2021 ¹⁴	Oranga Rongoā project	Qualitative study	10 primary care staff	2020 Interviews 17–48 min	Three themes: • Community disadvantage Factors such as social disadvantage, employment issues and inaccurate views of gout can inhibit effective treatment for Māori • Demands unique to Māori providers Structural and funding demands can impact on the ability to focus on their Māori community needs. • Challenges and opportunities Need more emphasis on monitoring
Stamp et al. 2019 ¹⁶	Structured gout package of care	Pre and post audit	Gout patients 120 in 2012 171 in 2015	3 years	2012: 2-year pre intervention audit 2014: intervention introduced 2015: 1-year post intervention audit Number not reaching target SUA level decreased (39% vs 64%, $P < 0.001$) Number of times SUA tested (2012–15) increased (2 [0–10] vs 1 [0–3], $P < 0.001$)
Arroll et al. 2009 ¹³	Audit of two practices	Pilot intervention study	82 patients with gout (41 in each practice)	Intervention 1: 3 months Intervention 2: 24 months	Intervention 1: No significant change in SUA pre- and post-intervention (after 3 months) Intervention 2: Mean SUA level decreased over time from 2007 to 2009: 0.4–0.36 mmol/L ($P = 0.039$). Non-significant increase in proportion of those with controlled SUA – 38% to 50% ($P = 0.48$)

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Table 2. (Continued)

Author, year	Nature of intervention	Design	Participants	Duration	Outcomes
Serlachius <i>et al.</i> 2019 ¹²	Self-reported engagement of gout compared with dietary app	RCT	72 patients: 36 in each arm 10/36 Pacific people in the gout arm	2 weeks	Gout app more engaging (md -0.58, 95% CI -0.96 to -0.21), more informative (md -0.34, 95% CI -0.67, -0.01), created high awareness (md -0.64, 95% CI -1.27, -0.003), and understanding of gout (md -0.70, 95% CI -1.30, -0.09). Users indicated stronger negative beliefs, stronger emotional response and beliefs to the severity of gout compared with dietary app. No difference in selfcare behaviours between the two groups post-intervention was observed
Ministry of Health 2012 ²²	Review of all publicly available resources on gout that focus on medication therapy	Evaluation report	Not applicable	Not applicable	Health literacy of people with gout: Poor health literacy of Pacific and Māori people may make it difficult to read comprehensive brochures Resource content: Structure with lifestyle first and medications second may not suit Pacific and Māori people because of their genetic predisposition to gout Health professional use of resources: Should actively use them during rather than after consultations Information and instructions: Confusing for patients to include both in the same resource

CMDHB, Counties Manukau, District, Health Board; GP, general practitioner; md, mean difference; NP-NM, non-Pacific, non-Māori; OMG, Owning My Gout; RCT, randomised controlled trial; SUA, serum urate acid; ULT, urate-lowering therapy; vs, versus.

Meaning of Māori words: Kaupapa Māori = collective vision, aspiration and purpose of Māori communities; whānau = family.

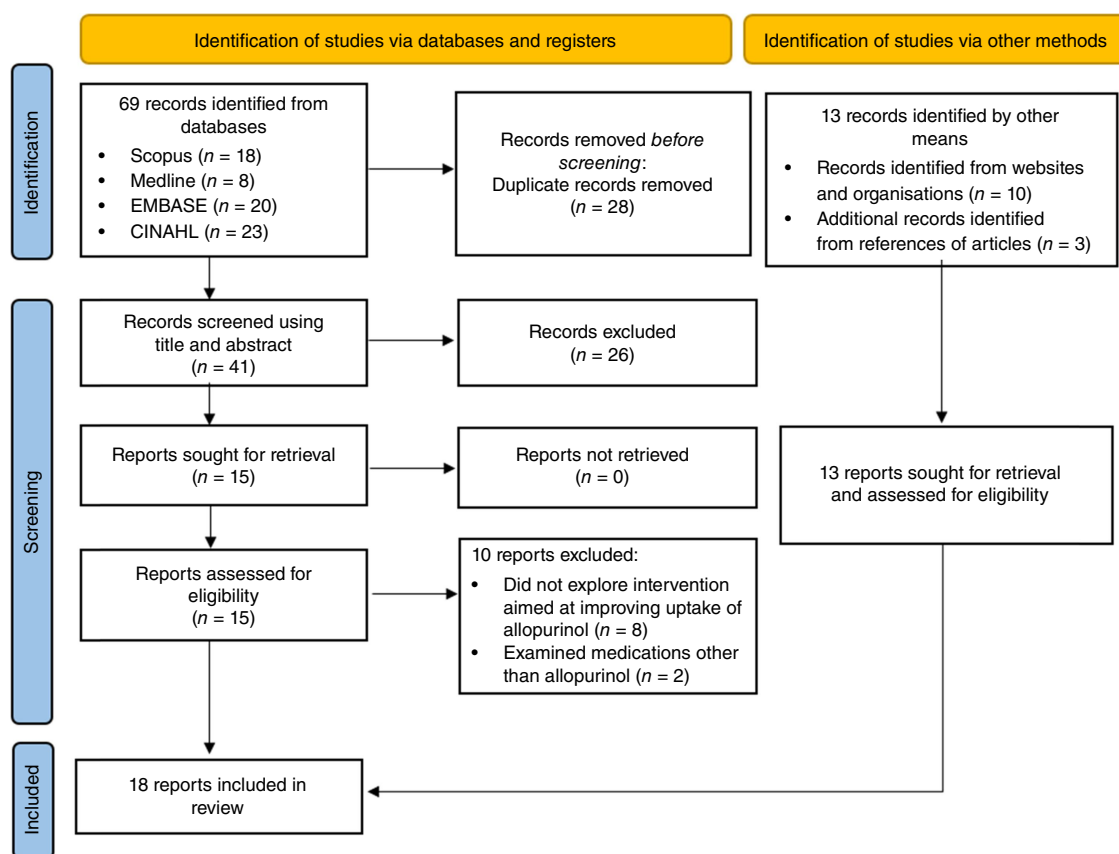


Fig. 1. Preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram of study selection (from: Page et al.¹¹).

of allopurinol among gout patients. Most studies^{12,16–20} that evaluated their intervention showed some improvement in SUA levels in gout patients pre- versus post-intervention compared to control groups (Table 2).

Our review indicates that most NZ interventions that aim to improve the uptake of allopurinol are multifaceted. This is consistent with previous international literature,¹⁰ although one study indicated that nurses' input was more helpful than pharmacists.³⁰

A phone app to improve gout management and awareness was shown to improve patients' knowledge and understanding of gout and engagement in one study. However, this did not translate to self-care behaviour for gout management.¹² Although this app provided patients with gout information and tools to track data, research suggests a need to utilise phone technology to its full potential, such as real-time collection of information and visuals, which can help patients engage with their gout management rather than just wait until a gout flare.³¹ Furthermore, having a nurse readily available through the app to be able to deliver certain educational, support and monitoring services can help improve engagement in gout self-care behaviours for gout patients.³²

This review highlighted a number of resources available online to improve awareness and understanding of gout and

optimal management of SUA levels using allopurinol.^{23–27} Although these resources are important, in order to improve health literacy for gout medications particularly for high-risk populations such as Pacific and Māori, health professionals need to actively use these resources during their consultations with gout patients for them to be effective.²²

Interventions in NZ have evolved over time. The multicultural and complex makeup of the NZ population means that there are diverse and complex needs, which may differ from other countries. An evaluation report of the interventions, 'Owning my gout' and 'Gout Stop pack', showed that although these interventions improved equitable access for Pacific and Māori people, they may increase disparities in regard to participation and retention, especially when patients start to experience painful gout flares.²⁰ Although these programmes were designed with good intent, relying on health service delivery being culturally safe and responsive to Pacific and Māori communities may be problematic. Rather, these communities need to be consulted earlier and become active decision-makers at every step when designing, implementing, and evaluating these programmes in order to reduce inequities in gout health.^{33–35}

The Oranga Rongoā intervention^{14,15} highlights the importance of tailoring gout allopurinol interventions in a

culturally safe and competent way that incorporates patients' voices and empowers them to take control of their gout management. However, staff members delivering health care to Māori communities reported that although Māori health providers understand the needs of their community, they are restricted by funding and structural demands.¹⁴ Hence, there is a need to reorient structures and demands from the health system to align with the complex needs of Māori communities, reducing the root causes that maintain inequities in gout management and treatment.

Strengths and limitations

A strength of this scoping review is that it provides a comprehensive account of all gout interventions and their evaluation in NZ. We systematically searched through different databases, Google search engines, and contacted GPs and journal authors for access to information that has not previously been published. We had a robust selection strategy, with two reviewers screening all the selected documents to improve validity. It is possible that limiting the search to English may have excluded some potential eligible articles.

This review focussed on allopurinol because it is the first line of ULT recommended in NZ. We acknowledge that other ULTs, such as probenecid and benzbromarone therapy, are also part of our armamentarium for treating gout. Two studies in our search findings included mention of these other ULTs, but interventions were not focussed on these. It is possible, although unlikely, that we will have missed studies looking at these two ULTs in isolation from allopurinol in our search strategy.

Conclusion

In conclusion, this scoping review provides an updated stocktake of the types of interventions or initiatives for improving the uptake of ULT among gout patients in NZ. Reviewing the current interventions in NZ, it is clear that there are still some unmet needs, particularly for Pacific and Māori people. These key learnings can be used to inform future interventions for gout in specific NZ population groups.

Supplementary material

Supplementary material is available [online](#).

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Data availability. Data sharing is not applicable as no new data were generated during this study.

Conflicts of interest. Felicity Goodyear-Smith is an Editor of the *Journal of Primary Health Care*, but was blinded from the peer-review process for this paper. Nicola Dalbeth has received consulting fees, speaker fees or grants from AstraZeneca, Dyve Biosciences, Horizon, Amgen, Selecta, Arthroci, JW Pharmaceutical Corporation, PK Med, PTC Therapeutics, Protalix, Cello Health, outside the submitted work. There are no other conflicts of interest.

Declaration of funding. This study is funded by the Health Research Council of New Zealand (Pacific Health Project grant), Reference no: 21/452. The funding body plays no role in the design of the study and collection, analysis, and interpretation of data, or in the writing of the manuscript.

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