



## Examining equity in a void of evidence - Pharmacist minor ailments services and the role of systematic reviews

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### ARTICLE INFO

#### Keywords:

Equity  
Health services research  
Systematic reviews  
Ethnicity

### ABSTRACT

Pharmacist minor ailment services (PMAS) are formalised services which remunerate pharmacists for delivering care and providing medicines used to treat minor ailments such as hayfever, musculoskeletal pain, head lice and constipation. PMAS have been postulated to improve medicines access equity yet there is little evidence to suggest that equitable health outcomes from PMAS have been achieved in those countries where these services have been initiated. Systematic reviews are regarded as the gold standard in assessing evidence of outcome effectiveness, including equity of outcomes. Our research team developed a systematic search strategy and review protocol to examine ethnic variation in PMAS outcomes. No results were returned, even with the inclusion of grey literature, and therefore the impact of PMAS on ethnic equity could not be examined. This commentary discusses the potential for PMAS to achieve medicines access equity and the role of empty reviews in identifying gaps in the literature and advocating for equity.

We recently read a tweet from an academic pharmacist that mocked systematic reviews which included minimal studies. Other academics joined in, trumping the initial comment – what about those that return zero results?! The discussion that ensued suggested that researchers who undertake this type of systematic review are aiming at an easy path to research and publication. *I mean, how hard is it to synthesise data from just a few papers??*

At the same time as reading this chain of tweets, our research team was undertaking a robust, systematic search of the literature to examine ethnic equity of access to pharmacist minor ailments services (PMAS) in preparation of exploring the value of PMAS in the New Zealand (NZ) setting. Minor ailments can be defined as ‘common or self-limiting or uncomplicated conditions which can be diagnosed and managed without medical intervention’.<sup>1</sup> This group of conditions may also be referred to as ‘common ailments’ or ‘ambulatory conditions’ and health professionals often play a major role in the provision of medicines and advice to treat these conditions.<sup>2</sup> Examples of minor ailments include coughs and colds, eczema, head lice, musculoskeletal pain, hayfever, sore throat and constipation.<sup>3–5</sup>

Community pharmacists in primary care settings provide advice and medicines to support the treatment of minor ailments on a daily basis. PMAS formalise this service offering and establish funding pathways for pharmacists to be remunerated. PMAS often involve the supply of appropriate medicine although it can include education and/or onwards referral only. In addition to the resolution of clinical symptoms,<sup>6</sup> benefits of pharmacist utilisation to manage minor ailments through PMAS include reduced general practitioner consultations and prescriptions,<sup>1</sup> reduced costs associated with the treatment of minor ailments,<sup>7</sup> improved access to healthcare,<sup>5,8</sup> with high levels of patient satisfaction.<sup>6</sup> The potential for pharmacists to better optimise health resources and improve patient self-

management has led to a number of countries, including England, Scotland, Wales and Canada, developing PMAS that are distinctively developed and resourced.<sup>1,9</sup> Other countries, including NZ and Australia, are actively investigating the impact that this type of service could have on care and health system resourcing.<sup>10,11</sup>

There is evidence that ethnic minority groups experience reduced access to medicines and health services, and inequitable health outcomes associated with medicine use.<sup>12–15</sup> The introduction of PMAS has been postulated as a way to improve equity in access to medicines and the associated outcomes resulting from access equity.<sup>10,16</sup> In the majority of settings internationally, PMAS access is restricted (in varying degrees) based on age, other comorbidities and financial need<sup>4</sup>; it is not available free of charge to all; thereby incorporating an aspect of equity into service design and application. Research demonstrates that minor ailment schemes are important for refugee and rural communities in particular,<sup>17,18</sup> however, international evidence around the impact of a minor ailment scheme on equity is scarce. Although systematic reviews have been conducted to examine PMAS cost-effectiveness, intervention components, and the methodological considerations of outcome measures,<sup>4,7,19</sup> a comprehensive understanding of the impact of PMAS on equity of outcomes, particularly at a patient-level, is missing. Further information is needed to understand the impact of PMAS on these outcomes and to explicitly examine these outcomes in relation to ethnic variation in medicines access and related health outcomes.

Our team aimed to undertake a systematic review to assess the ethnic variation in PMAS outcomes. We anticipated a paucity of results and therefore applied broad inclusion criteria and extended the search beyond peer-reviewed articles, into grey literature. We anticipated heterogeneity in outcomes and planned to pivot to a narrative review of findings if the data did not allow for the systematic presentation of findings. Our systematic search

<http://dx.doi.org/10.1016/j.rcsop.2022.100174>

Received 1 August 2022; Received in revised form 19 August 2022; Accepted 19 August 2022

Available online xxx

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of the literature, which included contacting professional bodies in countries where these PMASs are delivered, returned zero results. The most common reason for excluding papers that reached full-text review was that the association between outcomes and ethnicity was not examined. One study did report service provision by ethnicity although over 30% of records did not have ethnicity data recorded which makes review of equity of access by ethnicity difficult.<sup>20</sup> The fact that no articles could be identified to include in a review is an important finding, but what are the mechanisms for reporting and publishing this finding in the 'absence of evidence'?

Systematic reviews which return no results are also known as empty reviews. The importance of publishing empty reviews has been discussed, including empty reviews in the Cochrane database, with benefits including identifying gaps in knowledge and highlighting the state of evidence for interventions at a particular point in time.<sup>21</sup> The likelihood of returning empty reviews is increased with narrow research questions and inclusion criteria, comprehensive exclusion criteria, and by only including certain types of studies, for example, randomised controlled trials. These aspects should be considered when empty reviews are returned, with the potential to revise questions and scope, however, none of these factors were present in our approach to reviewing the literature.

Despite PMASs being postulated to improve equity of health care, including for ethnic minorities which often experience reduced access to and lower quality health care, there is no publicly available evidence that can be used to evaluate the supposition that PMAS will equitably improve outcomes for ethnic minorities. In NZ, although many pharmacists provide clinical consultations for the management of minor ailments, these are not funded by the government, and pharmacists only recoup some of the related time-costs if patients purchase a medicine.<sup>22</sup> If patients are required to purchase a medicine to best manage their minor ailment, financial means may affect one's ability to access medicines.

The implementation of PMAS has been a NZ 'priority', included on the national Pharmacy Action Plan since at least 2016 where commissioning agencies were to "complete a business case to assess the matters involved in implementing a minor ailments and referral service".<sup>23</sup> The ability for health system organisations to undertake that type of work, when there is often a large focus on day-to-day operational functions, is limited. This is particularly the case in unforeseen circumstances, such as the COVID-19 pandemic. We therefore rely on systematic reviews to inform the implementation of innovative health services in a way that assesses for, and aims to eliminate, bias from the process. There is the potential that if PMAS review information was available to NZ commissioners of health services, and the evidence of PMAS in achieving medicines access equity had been established, then action to establish PMASs could have been taken sooner. How can we instigate services on a pretence of providing equitable care having not examined outcomes in relation to equity in the first instance?

We have provided our search strategy, methods and search results have been included as an appendix to this commentary. We are hopeful that this could be used in the not-too-distant future to explore our proposed research question and assess the ethnic variation in PMAS outcomes. We wish to highlight to researchers undertaking primary interventional research, and those designing and delivering pharmacy services, that it is important to both design for equity and to include mechanisms to assess for equity of access and outcomes resulting from interventions and services.

In response to 'Twitter': sometimes systematic reviews which return few, or nil, results serve a purpose additional to the research aim; they call out bias and racism in research funding, methods, reporting and publication. They provide evidence with which to advocate for equity. They provide evidence with which to advocate for change. In fact, it could be argued that, in contrast to the views of academic twitter in relation to empty reviews, the easier path is indeed the one that adheres to academic norms for publication and to epistemological traditions of mainstream scientific research as to what constitutes knowledge. Our research team is intentional

in our approach to contribute to the achievement of health equity through transformative research practices, which includes highlighting through extensive and systematic literature review processes, a lack of evidence that PMAS deliver equitable health outcomes.

## Funding

This work was supported by the NZ Health Research Council and PHARMAC NZ (HRC:20/1466).

## Acknowledgements

Thank you to the pharmacy professional bodies who engaged with authors and supplied reports for potential inclusion in the systematic review.

There are no conflicts of interest to disclose.

## Appendix A. A systematic review protocol to examine ethnic variation in Pharmacist Minor Ailment Service outcomes

This review aimed to assess the ethnic variation in pharmacist minor ailment service (PMAS) outcomes. A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses - Equity (PRISMA-E 2012) guidelines.<sup>24</sup> Best practice methods relating specifically to equity-focussed systematic reviews were used.<sup>25</sup>

### A.1. Methods

#### A.1.1. Eligibility criteria

The participant population could consist of any patient type, with no limit placed on participant age. This review included intervention studies, where the PMAS occurred in the primary care setting, utilising pharmacists or trained pharmacy staff to deliver the service. The intervention may or may not have included the supply of medicine (for example, the consultation may have resulted in the provision of advice only). Where medicine supply was part of the PMAS, this had to occur without the requirement for a prescription from a designated prescriber (or equivalent). Studies were excluded if the intervention occurred in the secondary care setting, including outpatient clinics. The PMAS intervention had to include multiple (more than one) minor ailment conditions. There was no requirement for control or comparator groups. Due to the anticipated paucity and heterogeneity of studies, all reported outcomes were included. No restriction was placed on study design. Review articles, conference abstracts, editorials, methodology papers, and letters were excluded.

#### A.1.2. Identification of studies

A search of the Ovid Medline, SCOPUS, Web of Science, and Embase databases was undertaken from the year 2000 until 4th October 2021. The strategy had a language limit set to only include studies reported in the English language. The search strategy was developed by the authors through review of other literature relating to PMAS and the adaption of search strategies used in previous equity-focussed systematic reviews,<sup>26,27</sup> and used subject heading and keyword searches (title and/or abstract). Search terms related to 'minor ailments' AND 'pharmacy' AND ('equity' OR 'ethnicity'). Adaptation of the search strategy was made for the syntax requirements of each database (Table A1 shows the Ovid Medline search strategy). A systematic approach to grey literature searching was undertaken.<sup>28</sup> The professional pharmacy bodies in New Zealand, Australia, the United Kingdom, and Canada were contacted directly to identify reports that were not publicly available. Hand-searching of references lists within the included studies was also undertaken to identify other studies for potential inclusion.

**Table A1**  
Results for OVID Medline.

ID	Search term	Results
1.	Pharmacy/or Community Pharmacy Services/	13,803
2.	Pharmacists/	18,885
3.	Pharmacy.mp.	68,585
4.	Limit 3 to abstracts	42,417
5.	Pharmacies.mp.	18,047
6.	Limit 5 to abstracts	12,441
7.	Pharmacist\$.mp.	41,603
8.	Limit 7 to abstracts	32,450
9.	Combine 1 or 2 or 4 or 6 or 8 with OR	76,622
10.	Self Medication.mp	7515
11.	Minor ailment\$.mp.	335
12.	Minor illness\$.mp.	588
13.	Minor injur\$.mp.	2165
14.	Non-urgent.mp.	1347
15.	Common illness\$.mp.	1065
16.	Common ailment\$.mp.	435
17.	((minor or common or self-limiting or non-urgent or nonemergency or non-emergency or ambulatory) adj3 (ailment or illness or sickness or symptom or injury or condition or problem)).mp.	61,175
18.	Limit 17 to abstracts	60,345
19.	Over-the-counter.mp.	9485
20.	Limit 19 to abstracts	8690
21.	Otc.mp.	5437
22.	Limit 21 to abstracts	5075
23.	Non-prescription.mp.	1187
24.	Limit 23 to abstracts	1108
25.	Combine 10–16, 18, 20, 22, 24 with OR	83,303
26.	(ethnic* or race or racial* or racis*).mp	300,585
27.	(equit* or inequit* or inequal* or disparit* or equality).mp	171,169
28.	Vulnerable Populations/	12,022
29.	Health Status/	86,048
30.	Indigenous Canadians/ or Health Services, Indigenous/ or Indigenous Peoples/ or indigenous.mp.	38,494
31.	Racism/ or Ethnic Groups/ or Cultural Diversity/	80,206
32.	Oceanic Ancestry Group/	11,167
33.	Population Groups/	5179
34.	Combine 26–33 with OR	569,210
35.	Combine 9 AND 25 AND 34	99
36.	Limit 35 to last 21 years AND to English language	87

A reference management system (Zotero™) was used to group the results and exclude duplicates. Titles and abstracts were independently reviewed by two reviewers (JH and RH) and papers which did not meet the pre-defined criteria were excluded. The full text of the remaining papers were reviewed for inclusion, independently by JH and RH. Disagreements regarding exclusion/inclusion were resolved by discussion between the two reviewers.

#### A.1.3. Data extraction and synthesis

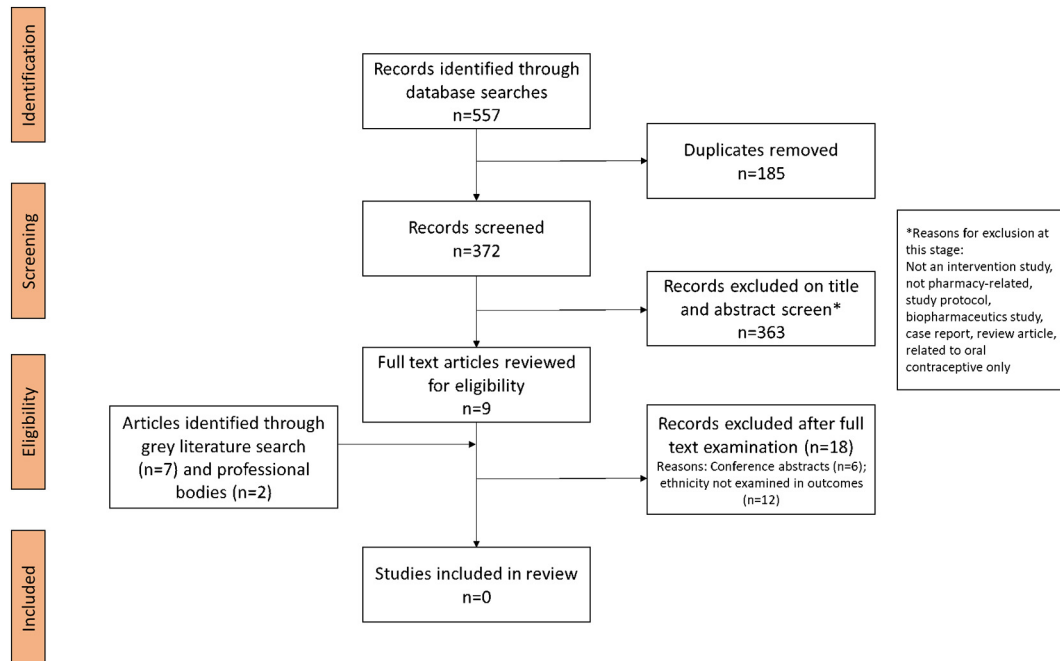
Data extraction was performed by two reviewers using a form guided by the Cochrane Effective Practice and Organisation (EPOC) group standards.<sup>29</sup> Extracted data consisted of participant characteristics including method for assigning ethnicity, study aims, conditions included for treatment, target population, who delivered the intervention, intervention setting, study type, and all reported outcomes. Outcomes

were grouped according to the EPOC guidelines<sup>30</sup> into the following patient outcomes; quality of care; utilisation, coverage or access; resource use; health care provider outcomes; social outcomes; adverse effects or harms; satisfaction. Equity was considered across all of these outcomes. Due to likely heterogeneity of outcomes, a narrative approach to presentation of findings was taken if there was a lack of similar outcome measures.

#### A.2. Results

Biomedical database searching yielded 372 unique results, grey literature searching identified 7 studies for further review and professional pharmacy organisation supplied 2 additional reports. No studies met the pre-defined inclusion criteria and therefore hand-searching of reference lists was not undertaken (See Fig. A1 for PRISMA flowchart).

Fig. A1. PRISMA flowchart of screening and assessment of papers.



References

- Paudyal V, Watson MC, Sach T, et al. Are pharmacy-based minor ailment schemes a substitute for other service providers? *Br J Gen Pract* 2013;63(612):e472–e481.
- Lee R, McCarthy L. Canadian “minor ailments” programs. *Can Pharm J (Ott)* 2015;148(6):302–304.
- Formulary Subgroup of, NHS Highland Area Drug and Therapeutics Committee. *Community Pharmacy Minor Ailments Service formulary*. Scotland: NHS. 2017:60. Available from: [https://www.communitypharmacy.scot.nhs.uk/documents/nhs\\_boards/highland/NHS\\_Highland\\_MAS\\_Formulary\\_8thEdition.pdf](https://www.communitypharmacy.scot.nhs.uk/documents/nhs_boards/highland/NHS_Highland_MAS_Formulary_8thEdition.pdf).
- Aly M, García-Cárdenas V, Williams K, Benrimoj SI. A review of international pharmacy-based minor ailment services and proposed service design model. *Res Social Adm Pharm* 2018;14(11):989–998.
- Taylor JG, Joubert R. Pharmacist-led minor ailment programs: a Canadian perspective. *Int J Gen Med* 2016;10(9):291–302.
- Mansell K, Bootsman N, Kuntz A, Taylor J. Evaluating pharmacist prescribing for minor ailments. *Int J Pharm Pract* 2015;23(2):95–101.
- Rafferty E, Yaghoubi M, Taylor J, Farag M. Costs and savings associated with a pharmacists prescribing for minor ailments program in Saskatchewan. *Cost Eff Resour Alloc* 2017;15(1):3.
- Research Power Inc. Evaluation of the provision of Minor Ailment Services in the pharmacy setting demonstration project - final evaluation Nova Scotia. Available from: [https://pans.ns.ca/sites/default/files/2016\\_10\\_05\\_minor\\_ailments\\_demonstration\\_project\\_final\\_evaluation\\_report\\_2.pdf](https://pans.ns.ca/sites/default/files/2016_10_05_minor_ailments_demonstration_project_final_evaluation_report_2.pdf) 2016.
- Nakhla N, Shiamptanis A. Pharmacist prescribing for minor ailment service development: the experience in Ontario. *Pharmacy* 2021;9(96):1–18.
- Ministry of Health. *Pharmacy Action Plan 2016 to 2020*. Wellington, N.Z.: Ministry of Health. [cited 2021 Mar 25]. Available from: <https://www.health.govt.nz/system/files/documents/publications/pharmacy-action-plan-2016-to-2020.pdf> 2016.
- Dineen-Griffin S, Benrimoj SI, Williams KA, Garcia-Cardenas V. Co-design and feasibility of a pharmacist-led minor ailment service. *BMC Health Serv Res* 2021;21(1):80.
- Metcalfe S, Beyene K, Ulrich J, et al. Te Wero tonu—the challenge continues: Māori access to medicines 2006/07–2012/13 update. *NZ Med J* 2018;131(1485).
- Hikaka J, Hughes CM, Jones R, Connolly MJ, Martini N. Ethnic variations in the quality use of medicines in older adults: Māori and non-Māori in Aotearoa New Zealand. *Drugs Aging* 2021;38(3):205–217.
- Ministry of Health. *Wai 2575 Māori Health Trends Report*. Wellington: Ministry of Health. 2019. [cited 2020 Apr 29]. Available from: <https://www.health.govt.nz/publication/wai-2575-maori-health-trends-report>.
- Tomlin A, Woods DJ, Lambie A, Eskildsen L, Ng J, Tilyard M. Ethnic inequality in non-steroidal anti-inflammatory drug-associated harm in New Zealand: a national population-based cohort study. *Pharmacoepidemiol Drug Saf* 2020;29(8):881–889.
- Technical Advisory Services Ltd. *Pharmacy Services Expert Advisory Group meeting minutes*. Wellington: Technical Advisory Services Ltd. 2019. Available from: <https://tas.health.nz/assets/Community-pharmacy/Draft-EAG-minutes-13-August-2019.pdf>.
- Parmentier H, Golding S, Ashworth M, Rowlands G. Community pharmacy treatment of minor ailments in refugees. *J Clin Pharm Ther* 2004;29(5):465–469.
- McKeirman KC, Garrelts MacLean L. Pharmacist, physician, and patient opinions of pharmacist-treated minor ailments and conditions. *J Am Pharm Assoc* 2003;58(6):599–607.
- Paudyal V, Cunningham S, Smith KG, MacLure K, Ryan C, Cordina M. Methodological considerations in clinical outcomes assessment of pharmacy-based minor ailments management: a systematic review. *PLoS One* 2018;13(10), e0205087.
- Pharmaceutical Services, Negotiating Committee. *PSNC Briefing 044/17: Analysis of Minor Ailment Services Data*. London: Pharmaceutical Services Negotiating Committee. 2017.
- Lang A, Edwards N, Fleischer A. Empty systematic reviews: hidden perils and lessons learned. *J Clin Epidemiol* 2007;60(6):595–597.
- Abdul Aziz YH, Heydon SJ, Duffull SB, Marra CA. What free services do pharmacists offer? Investigating the provision of unfunded pharmacy services in community pharmacies. *Res Social Adm Pharm* 2021;17(3):588–594.
- Ministry of Health. *Pharmacy Action Plan 2016 to 2020*. Wellington, N.Z.: Ministry of Health. [cited 2019 Mar 25]. Available from: <https://www.health.govt.nz/system/files/documents/publications/pharmacy-action-plan-2016-to-2020.pdf> 2016.
- Welch V, Petticrew M, Tugwell P, et al. PRISMA-Equity 2012 extension: reporting guidelines for systematic reviews with a focus on health equity. *PLoS Med* 2012;9(10), e1001333.
- Welch VA, Petticrew M, O'Neill J, et al. Health equity: evidence synthesis and knowledge translation methods. *Syst Rev* 2013;2(1):43.
- Fujioka JK, Budhwani S, Thomas-Jacques T, et al. Challenges and strategies for promoting health equity in virtual care: protocol for a scoping review of reviews. *JMIR ResProtoc* 2020;9(12), e22847.
- Hosking J, Macmillan A, Jones R, Ameratunga S, Woodward A. Searching for health equity: validation of a search filter for ethnic and socioeconomic inequalities in transport. *Syst Rev* 2019;8(1):94.
- Godin K, Stapleton J, Kirkpatrick SI, Hanning RM, Leatherdale ST. Applying systematic review search methods to the grey literature: a case study examining guidelines for school-based breakfast programs in Canada. *Syst Rev* 2015;4(1):138.
- Cochrane Effective Practice and Organisation of Care (EPCC). Describing interventions in EPOC reviews. EPOC resources for review authors. [cited 2018 Jul 14]. Available from: [/resources/epoc-resources-review-authors](https://resources.epoc-resources-review-authors) 2017.
- Cochrane Effective Practice and Organisation of Care (EPCC). What outcomes should be reported in Cochrane Effective Practice and Organisation of Care (EPOC) reviews? EPOC Resources for review authors. Available from: <http://epoc.cochrane.org/resources/epoc-resources-review-authors> 2017.