

The impact of nurse prescribing on health care delivery for patients with diabetes: a rapid review

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Handling Editor:

Tim Stokes

Received: 27 September 2023

Accepted: 23 November 2023

Published: 23 January 2024

Cite this:

Short K et al.
Journal of Primary Health Care 2024;
16(1): 78–89.
doi:[10.1071/HC23121](https://doi.org/10.1071/HC23121)

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ABSTRACT

Introduction. The global prevalence of diabetes is a pressing public health concern. Over 400 million individuals live with the effects of the disease, predominantly in low- and middle-income countries. In Aotearoa New Zealand (NZ), over 300 000 people have diabetes, resulting in a population rate of 43.1 per 1000. Enabling nurses to prescribe diabetes medications enhances accessibility and improves health outcomes for large sections of the population. **Aim.** This rapid review was undertaken to investigate the influence of nurse prescribing on health care delivery for individuals with diabetes in NZ, Australia, the United Kingdom, and Canada, countries sharing comparable health care systems and multicultural backgrounds. **Methods.** The review protocol was published on PROSPERO. In November 2022, a search was conducted across multiple databases to locate relevant literature and resources constrained to the last decade (from January 2012 to November 2022). Utilising the Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework, data extraction was systematically structured, while rigorous appraisal processes upheld selection quality. **Results.** Fifteen publications were identified as meeting predefined inclusion and exclusion criteria. The review of these articles revealed four main themes: the impact of nurse prescribing on clinical outcomes, levels of patient satisfaction, implications for health care service provisions, and identification of barriers and facilitators associated with nurse prescribing. **Discussion.** This report identifies outcomes of nurse prescribing, concluding it provides a potential avenue for enhancing access to and alleviating the burden on health care systems.

Keywords: advance practice nursing, clinical outcomes, diabetes care, health care delivery, medication prescriptions, non-medical prescribing, nurse prescribing, prescriptions.

Introduction

Diabetes, a chronic metabolic disorder resulting from inadequate insulin production or cellular insulin resistance,¹ potentially leads to severe comorbidities such as cardiovascular disease, neuropathy, retinopathy, and renal issues.² The World Health Organization estimates that 422 million people live with diabetes globally, predominantly in low- and middle-income countries.² Both the prevalence and mortality rates associated with diabetes have steadily increased, now causing 1.5 million annual deaths.² In 2022, approximately 307 400 people in Aotearoa New Zealand (NZ) were living with diabetes, a population rate of 43.1 per 1000.³ Diverse ethnic populations within NZ are disproportionately represented in the statistics: Pasifika 11.8%, Indian 10.1%, Māori 7.1%, and European New Zealanders/other populations 3.1%.³ The annual cost of diabetes in NZ is estimated at over 2.1 billion dollars (0.67% GDP), projected to increase by 63% in the next 20 years.⁴ Diabetes NZ explored the emotional burden of the disease and surveyed over 1000 people with type 1 and type 2 diabetes.⁵ Results revealed that 81% of New Zealanders with diabetes have experienced ‘condition-related’ distress, and 69% have experienced burnout due to living with a chronic condition.

The Diabetes NZ report ‘The Economic and Social Cost of Type 2 Diabetes’⁴ emphasised the potential to reduce diabetes prevalence and its economic burden while

WHAT GAP THIS FILLS

What is known about the topic: This rapid review offers an evidence-based synthesis of the existing literature concerning the evolving role of nurse prescribers. **What this study adds:** It provides valuable insights for the primary care interprofessional team, underscoring the potential of nurse prescribing as a solution to enhance diabetes care.

improving equity and health outcomes through enhanced diabetes medication interventions. This work underscores the importance of ensuring individuals have access to evidence-based, high-quality medications⁶ and highlights the difficulties people encounter when trying to access and navigate the health system. A recommended approach to greater accessibility to diabetes medications is increasing the number of nurses with prescribing capability. Non-medical prescribing represents legislative prescribing rights for health care professionals other than medical doctors. This practice facilitates a more efficient and quicker process for patients to obtain their required medications.⁷

Non-medical prescribing was introduced into many Westernised countries towards the end of the 20th century, with the United Kingdom (UK) playing a leading role.⁸ This movement aimed to address rising health care demands, improve care quality, and enhance patient access.⁹ In the NZ context, Smith *et al.* suggested that reorienting the health care system would be necessary to address challenges such as a shortage of general practitioners (GPs), an ageing population, and increasingly complex patient needs, and non-medical prescribing emerged as a viable solution.¹⁰ In 2001, the Nursing Council of New Zealand registered the first nurse practitioners (NPs), granting them prescribing authority.⁸ In 2011, commissioned by Health Workforce NZ and the Ministry of Health, Wilkinson *et al.*¹¹ conducted 'the diabetes nurse specialist (DNS) prescribing project', a four-site pilot project to assess the safety and effectiveness of diabetes nurse prescribing. Their findings demonstrated that these nurses provided safe, high-quality prescribing decisions and supported registered nurses (RNs) with limited prescribing rights.¹²

In NZ, non-medical prescribing operates on two levels: authorised and designated prescribers. The NZ *Medications Act 1981* (version as at 1 July 2022)¹³ legislates that authorised prescribers, including medical practitioners, NPs, registered midwives, optometrists, dentists, and veterinarians, have the autonomy to prescribe, supply, sell, and administer medications within their defined scope of practice. NPs in NZ operate within a distinctive professional scope that sets them apart from RNs. This unique scope primarily revolves around prescribing, with all NPs now holding official registration as authorised prescribers.¹⁴

Designated prescribers, such as RNs, pharmacists, and dietitian prescribers, must prescribe from a list of medications

authorised by the Director General of Health and typically work as part of a collaborative team.¹³ Within RN designated prescribers, there are three specific groups: those focusing on specialist diabetes health (a qualification pathway no longer available to RNs), community health, and primary health and specialised team practice. Each group has its own distinct medication list and associated conditions, leading to variations in prescribing privileges. For example, community prescribers lack the authorisation to prescribe medications typically used in diabetes management.¹⁵

This rapid review aims to evaluate the effectiveness of nurse prescribing, at any level, for individuals with diabetes, and guide future research in this area. The limited available information on the impact of nurse prescribing, given its recent introduction, necessitates this review. Its primary objective is to offer guidance for future research in this field.

Methods

Search strategy

The rapid review approach is a modified form of the systematic review method. By limiting literature searches or simplifying the process of systematic reviews, rapid reviews ensure the timely generation of information while upholding 'systematic, transparent and reproducible' standards.^{16,17} The protocol for this rapid review has been lodged with PROSPERO.¹⁸ Between 2 and 30 November 2022, a search for relevant literature/resources (by KS) was completed across PubMed, CINAHL, Scopus, and MEDLINE; the ProQuest Dissertation and Thesis database; and the Cochrane Library of Clinical Trials. Grey literature was also searched, including [ClinicalTrials.gov](https://www.clinicaltrials.gov), the Australian New Zealand Clinical Trials Registry, and the World Health Organization database of clinical trials.

A restriction to publications within the last decade (between January 2012 and November 2022) was applied. This timeframe was chosen due to the limited literature available in the last 5 years. The following search terms were used across all databases (subject to any individual platform requirements): all related terms to non-medical prescribing with a focus on nursing (nurs* prescrib* AND nurse practitioner) OR (non-medical prescrib*) AND (diabet* OR diabetes). A forward and backward citation review was completed for all articles that met the inclusion criteria. From there, any further literature identified as meeting inclusion criteria was included.

Study selection

A set of open selection criteria allowing case reports, case-controlled studies, cohort studies, cross-sectional studies, prevalence studies, quasi-experimental, random control trials, qualitative research, mixed methods research, literature

Table 1. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Any nurse prescriber (including NPs and RNs) working with patients who have diabetes Nurses providing prescription services as part of their role Nurses of all designations with prescribing practices within their professional scope Patients with all types of diabetes 	<ul style="list-style-type: none"> Nurses providing specialist diabetes care that do not include prescribing services Research studies investigating allied health non-medical prescribers that do not have nurses in the cohort Research outside NZ, Australia, the UK, and Canada (but this review did include systematic multi-country literature reviews) Outside the publication dates of 2012–2022 Non-English language literature

reviews/research syntheses, and text/opinion pieces were used. The condition for inclusion was that the publication referenced the prescribing practice of nurses and nurse prescribers in diabetes, encompassing both NP and RN prescribers. The detailed inclusion and exclusion criteria are shown in Table 1. Endnote was used to manage and code extracted data.¹⁹

Data extraction

Potential literature for inclusion was identified by reviewing article titles. Subsequently, abstracts were screened for articles that met the inclusion criteria. Next, the full text of relevant resources was examined to determine eligibility for inclusion. Any uncertainties regarding publication suitability were resolved through discussions among the review team. A consistent template was used for recording extracted data, encompassing aims, design methods, setting, participant demographics, outcomes, appraisal tools for assessing resource quality, and suitability for inclusion in the rapid review. Each team member independently reviewed 10% of the data to ensure inclusion consistency.

Quality appraisal

A quality assessment was completed for each publication meeting the rapid review inclusion criteria. Joanna Briggs Institute's Critical Appraisal Tools²⁰ were used to evaluate the quality of qualitative and quantitative studies, literature reviews, and narrative publications. The Mixed Methods Appraisal Tool Version 2018²¹ was used for appropriate studies. Studies not meeting quality criteria were excluded from the review.

Ethics

There were no human subjects involved, as this was a rapid review.

Results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart was used to record the data extraction process, as shown in Fig. 1.

Fifteen studies were included, consisting of nine identified via CINAHL ($n = 9$), three from PubMed ($n = 3$), two from Medline ($n = 2$), and one from Scopus ($n = 1$).

Seven of the publications were primary research articles. These included a case study, two retrospective (cohort and observational) studies, three surveys (including open-text data), and one mixed methods research study. A further four review articles (meta-analysis, systematic analysis, and a STARLITE review) and four narrative articles were also included in this rapid review. Five publications were from NZ, one from Australia, four from the UK, and one from Canada. One publication included data collected in both NZ and the UK, and three of the review articles included multi-country data. The common findings across the articles describe the clinical outcomes associated with the implementation of nurse prescribing ($n = 7$), the level of satisfaction ($n = 6$), the implications for service provisions ($n = 12$), and the factors that act as barriers and facilitators of nurse prescribing ($n = 6$). A summary of the included articles has been provided in Table 2.

Clinical outcomes through the inclusion of nurse prescribing

Seven of the articles addressed the clinical outcomes associated with nurse prescribing. Courtenay *et al.*'s²² case study based in the UK aimed to compare nurse prescribers and non-prescribing nurses in relation to the processes, outcomes, and cost of care for people with diabetes. Clinical outcomes for patients managed by nurse prescribers or nurses without a prescribing role were similar. No significant statistical differences were observed in patients' initial and subsequent changes in raw scores for HbA1c and body mass index or self-management behaviours. Patients cared for by both groups were reported to have a significantly decreased HbA1c.

Further to this, Tabesh *et al.* conducted a systematic review and meta-analysis to explore the clinical outcomes of HbA1c for patients with diabetes attending nurse-led clinics where nurses were involved in prescribing.²⁹ This work explored the clinical outcomes for patients where the nurse prescriber was a supplementary member of the health care team versus when the nurse prescriber was working in an independent role. The findings indicated no clear benefit to glycaemic control when the nurse prescribed alongside the doctor. However, when nurses prescribed independently, the

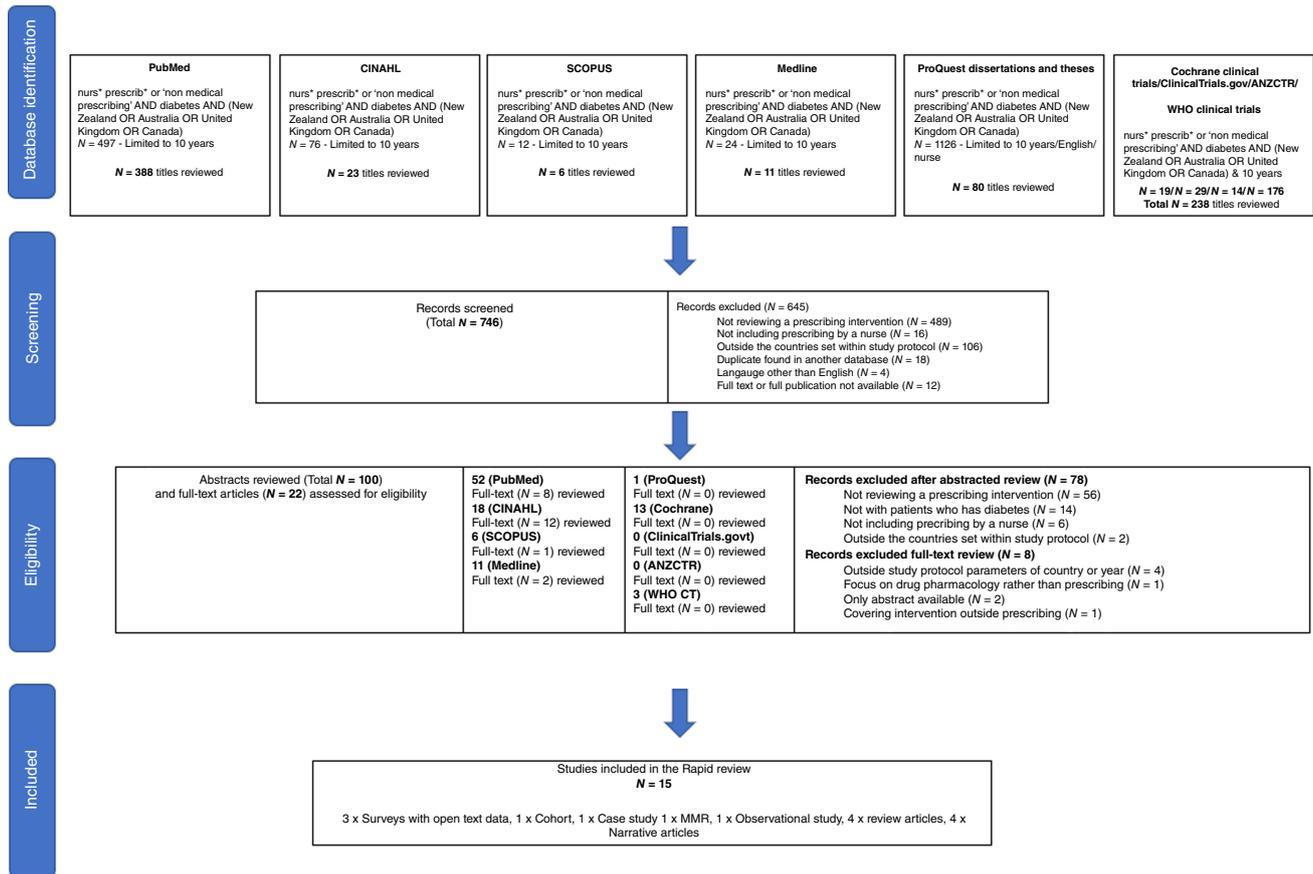


Fig. 1. The PRISMA diagram.

patients of both the nurse prescribers and medical prescribers achieved comparable improvements in HbA1c results.

The comparable clinical outcomes of HbA1c levels for patients with diabetes were also reported in other studies.^{30,31} Through a meta-analysis of 46 studies, Weeks *et al.* examined the clinical outcomes of non-medical prescribing in acute and chronic disease management in primary and secondary care.³¹ Findings indicated a high certainty of evidence to support comparative glycosylated haemoglobin levels at 12 months between groups receiving non-medical and medical prescribing interventions. Wang *et al.*'s meta-analysis of 17 randomised control trials also evaluated the impact of nurse-led clinics and nurse-led prescriptions on HbA1c control in type 2 diabetes (with a combined sample size of 2701 patients).³⁰ Their findings also indicated that the clinical outcomes of HbA1c from the nurse-led prescribing group were comparable to those of the medical practitioners.

Level of satisfaction

Seven articles explored the level of satisfaction associated with nurse prescribing services.^{9,12,22,27,32,33,35} Satisfaction encompasses the patient, nurse, and service perspectives. In Courtenay *et al.*'s study,²² patients reported a high level of

satisfaction with all nurses about their levels of medication knowledge. However, nurse prescribers received higher patient satisfaction ratings for previous symptom knowledge, treatment confidence, practical advice, and coping support. A similarly high level of patient satisfaction with nurse prescribers was reported by Wilkinson *et al.*¹² in their multi-method study. Patients noted comprehensive consultations and proactive management plans in nurse-led care. Across several studies, patients consistently viewed nurse prescribing as safe and acceptable.^{9,32}

Akin to patient satisfaction levels, studies also noted job satisfaction for nurses who were able to prescribe.^{27,33} Wilkinson's²⁷ study evaluated the perceptions and intentions of experienced nurses working in NZ's primary health care about the two proposed levels of RN prescribing practice (specialist and community). Prescribing was seen as an extension of the nurse's scope of practice that would overcome the limitations of working under standing orders, increasing job satisfaction, autonomy, and accountability. Diggle also highlighted job satisfaction through independence and nurse autonomy.³³ Moreover, fellow professionals in the multidisciplinary team, including physicians, GPs, and other medical staff, expressed satisfaction, often due to fewer interruptions for doctors when nurse prescribers worked more independently.¹²

Table 2. Summary of included articles.

Author/s, year and country	Study aims/objectives	Population and sample	Methods	Results/key findings	Conclusions
Courtenay et al. (2015) ²² UK	Aimed to compare the processes, outcomes, and costs of care of people with type 2 diabetes managed in 12 general practices in England by nurse prescribers and nurses without a prescribing capability to inform the decisions of those engaged in service organisation and care delivery	Purposive and snowballing sampling comprised six nurse prescribers and six non-nurse prescribers; the patient sample comprised 131 in prescriber sites and 83 in non-prescriber sites	A mixed methods comparative case study	<ul style="list-style-type: none"> • Clinical outcomes • Satisfaction • Service provision 	<ul style="list-style-type: none"> • Increase in medication access • Decrease in haemoglobin A1c (HbA1c) across patients who have prescribing and non-prescribing care • High levels of self-care • Having a nurse prescriber compared to a general nurse was more expensive • Considered safe and acceptable by both clinicians and patients
Edge et al. (2019) ²³ Canada	Aimed to use Ontario administrative databases to identify the sociodemographic characteristics and comorbidities of patients aged 65 years and older who were prescribed medications by NPs and family physicians between 2000 and 2015	Ontario residents aged 65 years or older who received prescriptions from NPs (<i>N</i> = 25 220) and family physicians (<i>N</i> = 1 952 904) between 1 January 2000 and 31 December 2015	A population-based descriptive retrospective cohort study	<ul style="list-style-type: none"> • Service provision • Clinical outcomes 	<ul style="list-style-type: none"> • NPs prescribed to more patients outside the urban areas, females, and younger patients • NPs prescribed to patients with few comorbidities • NPs prescribed most commonly to patients with hypertension and diabetes
Poot et al. (2017) ²⁴ NZ	Aimed to describe the patterns of medicines prescribed by NPs in NZ	Ministry of Health pharmaceutical collection between 2013 and 2015	A retrospective observational study	<ul style="list-style-type: none"> • Service provision 	<ul style="list-style-type: none"> • NPs prescribed a broad range of medications • NZ NPs' prescriptions were comparable to NPs in Australia • Areas of deprivation were highly serviced by NPs • A higher percentage of Māori patients than in the general population • A lower percentage of Pasifika patients
Snell et al. (2022) ²⁵ UK and NZ	Aimed to compare diabetes-related prescribing practices, barriers and facilitators amongst nurse prescribers in NZ and the UK	An opportunistic sampling method was used with 250 nurses authorised to prescribe in diabetes care responding to the invitation, 139 in the UK and 111 in NZ. However, an overall response rate cannot be determined	An exploratory study using an online survey incorporating both quantitative and qualitative data	<ul style="list-style-type: none"> • Clinical outcomes • Barriers to nurse prescribing • Service provision • Facilitation to nurse prescribing 	<ul style="list-style-type: none"> • More NPs prescribed to patients with hypertension and diabetes in NZ • Barriers were lack of time and inadequate mentoring • Nurses appeared to prescribe more for minority groups (Māori, Pasifika, and Asian), which experience disproportionately higher diabetes prevalence than the general population • Facilitators were as follows: good supervision collegial relationships with specialists, pharmacists, and peers; and ongoing education

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Table 2. (Continued)

Author/s, year and country	Study aims/objectives	Population and sample	Methods	Results/key findings	Conclusions
Philips and Wilkinson (2015) ²⁶ NZ	Aimed to inform future workforce planning	A non-probability purposive sample of the Members of the DNS Section of the NZ Nurses Organisation from May and June 2012 (N = 92)	A cross-sectional survey design using an online survey and a questionnaire	<ul style="list-style-type: none"> • Service provision • Facilitation to nurse prescribing • Barriers to nurse prescribing 	<ul style="list-style-type: none"> • Nurses' responses in the current study showed a general trend of positivity of being enabled to practise to the top of their scope • Standing orders are not always adequate, and prescribing is recognised as a natural progression for nurses • Increases access to diabetes services • Continuity and quality of care • Reduce delays for patients • Access to the nurse's expert knowledge • A percentage of nurses already on education pathways to meet the prescribing outcomes • Concerns include ongoing access to the required medical supervision
Wilkinson <i>et al.</i> (2014) ¹² NZ	Aimed to evaluate the DNS prescribing project to determine whether DNS prescribing is safe and effective and to inform the implementation and extension of RN prescribing	Clinical record data were collected for 1274 patients who were seen by 12 DNSs in four localities between April and September 2011	A mixed methods research based on the theoretical notion of valuing	<ul style="list-style-type: none"> • Service provision • Satisfaction • Barriers to nurse prescribing 	<ul style="list-style-type: none"> • DNS prescribing was determined to be safe, high-quality and appropriate • Improved timely access to medications • More in-depth consultations • Nurse prescribers were able to see patients with complex needs • Decreased GP workload • Decreased GP interruptions (after the supervision period) • Generally supported by the multidisciplinary team • Improved patient satisfaction and confidence • Deemed acceptable by patients • Mentoring is time-consuming
Wilkinson (2015) ²⁷ NZ	Aimed to describe the views and intentions of nurses who work in primary health care settings about the proposed two levels of RN prescribing	A non-probability snowballing sample of RNs working in primary health care settings (N = 305)	A descriptive cross-sectional self-administered survey incorporating both quantitative and qualitative data	<ul style="list-style-type: none"> • Service provision • Facilitation to nurse prescribing • Satisfaction • Barriers to nurse prescribing 	<ul style="list-style-type: none"> • Expected to improve efficiency and access to medicines for high-needs populations • Prescribing education pathways and preparation was key

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Table 2. (Continued)

Author/s, year and country	Study aims/objectives	Population and sample	Methods	Results/key findings	Conclusions
					<ul style="list-style-type: none"> • Promoting 'individual accountability'/ autonomy: an extension of nurses' knowledge and role • The majority of respondents (82.3%, N = 251) indicated their interest in becoming a community nurse prescriber • Less cost to the patient • Perceived patch protection of income • Support for the role-workplace culture and mentoring
King <i>et al.</i> (2017) ²⁸ Australia	Aimed to complete a historical review exploring the interprofessional evolution of the diabetes educator workforce in Australia and describes the major drivers shaping the role boundaries of diabetes educators from 1981 until 2017	Reviewing 46 documents using the STARLITE framework	A documentary analysis in the form of a literature review	• Service provision	• A key process in the evolution of the diabetes workforce was the introduction of non-medical prescribing
Tabesh <i>et al.</i> (2018) ²⁹ Multiple database search	Aimed to examine the effectiveness of nurse-led clinics, in which nurses were involved in prescribing HbA1c among people with type 2 diabetes	Randomised controlled trials: in one group, the nurses supplemented a team as an add-on to usual care; in the other group, they worked independently and were compared directly to a doctor	A systematic review and meta-analysis	• Clinical outcomes	<ul style="list-style-type: none"> • There is no clear evidence associated with beneficial glycaemic control when a nurse prescribed alongside a doctor or other prescribers • However, glycaemic control was comparable to the medical staff when the nurse independently prescribed
Wang <i>et al.</i> (2019) ³⁰ Multiple database search	Aimed to evaluate the impacts of nurse-led clinic and nurse-led prescription on HbA1c control in type 2 diabetes	Seventeen studies with 2701 patients	A meta-analysis review	• Clinical outcomes	<ul style="list-style-type: none"> • The nurse-led clinic had positive significance for HbA1c control • The impact of nurse-led prescriptions on controlling HbA1c was comparable to that of doctors
Weeks <i>et al.</i> (2016) ³¹ Multiple database search	Aimed to assess clinical, patient-reported, and 'resource use outcomes' of non-medical prescribing for managing acute and chronic health conditions in primary and secondary care settings compared with medical prescribing (usual care)	Randomised controlled trials, cluster randomised controlled trials, controlled before-and-after studies, and interrupted time series analysis compared 46 studies (37 337 participants), including 26 studies in non-medical prescribing by nurses and 20 in pharmacists. Among	A systematic review and meta-analysis	• Clinical outcomes	<ul style="list-style-type: none"> • High certainty of evidence existed for comparative glycated haemoglobin management at 12 months • Little significance is associated with medication adherence between groups, but it is likely to be higher in the non-medical prescribing group

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Table 2. (Continued)

Author/s, year and country	Study aims/objectives	Population and sample	Methods	Results/key findings	Conclusions
		the 46 studies, 45 compared non-medical prescribing as a component of care with usual care medical prescribing, while the remaining one compared nurse prescribing supported by guidelines with usual nurse prescribing care			<ul style="list-style-type: none"> No significant difference in patient-related adverse events between treatment groups
Courtenay (2015) ³² UK			Narrative piece	<ul style="list-style-type: none"> Service provision Clinical outcomes Barriers to nurse prescribing Satisfaction 	<ul style="list-style-type: none"> Nurse prescribing shows equivalent outcomes to medical prescribing Patients have increased satisfaction with longer consultations May cost more to the service Nurses can work more independently
Courtenay ⁹ (2016) UK	Reports on the findings between non-medical prescribers and medical prescribers in the area of diabetes medicine		Narrative piece	<ul style="list-style-type: none"> Satisfaction Service provision 	<ul style="list-style-type: none"> Patients and clinicians reported the prescription of medicines by these nurses to be safe and acceptable The use of medicines is a key component of effective diabetes management, and growing evidence indicates the equal importance of education and self-care support for diabetes management Enabling speedier access to medicines, holistic, patient-centred care, and increased service efficiency
Diggle (2018) ³³ UK	Review of non-medical prescriber role, Nursing legislation, Education development requirements		Narrative piece	<ul style="list-style-type: none"> Satisfaction Service provision Barriers to nurse prescribing 	<ul style="list-style-type: none"> Royal College of Nursing suggested prescribing has the potential to increase nurses' autonomy, job satisfaction, and independence³⁴ Patient satisfaction with nurse prescribing is high Evidence that nurse prescribing can improve patient care by ensuring timely access to medicines and treatment Little empirical evidence supports the clinical and economic outcomes of nurse prescribing

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Table 2. (Continued)

Author/s, year and country	Study aims/objectives	Population and sample	Methods	Results/key findings	Conclusions
Manchester (2016) ³⁵ NZ			Narrative piece	<ul style="list-style-type: none"> • Service provision • Satisfaction 	<ul style="list-style-type: none"> • Employers are responsible for ensuring prescribers can undertake the relevant continuing professional development, but the ultimate responsibility rests with the prescribers • At the end of a 6-month pilot project, results showed that DNSs were able to prescribe common diabetes medications safely • Patient care was enhanced • Barriers to timely medications decreased in caring for those with diabetes • Provides outreach for Māori • Holistic focus on comorbidities • Specialist nurses see complex patients, leaving provision for the GPs to manage more straightforward patients • Overcoming poverty • Nurses derived immense satisfaction from delivering immediate and on-the-spot care while observing patients gain real insight into their diabetes management

Implications for service provision

The implication for the provision of services was a central theme evident across 12 of the studies.^{9,12,22–28,32,33,35} Several studies indicated that nurse prescribing may have met the unmet needs of minority populations.^{24,25,27} Poot *et al.*'s retrospective observational study explored nurse prescribing patterns in NZ, revealing that NPs prescribed a wide range of medications, primarily serving patients with greater health needs in areas of high deprivation, including Māori populations.²⁴ While the results suggested that NPs interacted with a higher percentage of Māori, a lower percentage of Pasifika patients were seen. Snell *et al.* reported similar findings, noting that NZ nurses prescribed more frequently to minority groups (Māori, Pasifika, and Asian) due to their higher risk status in diabetes. In contrast, UK nurses primarily prescribed to a predominantly white ethnicity, which mirrors the demographic composition of the UK reported in the 2011 national census as 86% white.²⁵

Improved access to medications for patients was another key service provision that was frequently reported in the literature. A historical review exploring the development of the interprofessional diabetes workforce concluded that a key evolution in the provision of diabetes care could be attributed to the introduction of non-medical prescribing.²⁸ In the study by Wilkinson,²⁷ most respondents – experienced nurses working in primary health care settings – saw the proposed RN prescribing practices as a pathway to addressing issues such as poor availability of doctors, the cost of doctor visits, and transport difficulties, thereby improving access to medications for high-needs populations. Courtenay *et al.*²² also reported that being able to prescribe allows nurses to work more independently and permits more patient reviews across the multidisciplinary team, despite an increased cost to the employer when having nurse prescribers as part of the team.

A survey of 92 members of the DNS Section of the NZ Nurses Organisation aimed to gather data supporting workforce planning.²⁶ Results of the survey indicated that participants agreed with the findings from Courtenay *et al.*²² and suggested that having nurse prescribers increased patients' timely access to diabetes medications. Wilkinson *et al.*¹² found that nurse prescribing resulted in more in-depth consultations, adding to patients' education and understanding of the medications. Further publications support that enhanced access results in improved patient outcomes by ensuring timely treatment.^{33,35}

Barriers and facilitators to the role of nurse prescribing

Factors that act as barriers and facilitators to the nurse prescribing role were also identified as impacting service provisions for patients with diabetes. Snell *et al.* reported that there is consensus that inadequate time for quality mentoring was a barrier to these nurses working at this level;

other barriers included poor organisational prescribing policies and limited access to ongoing professional development.²⁵ In addition, a lack of formal and continuing clinical supervision was also reported as a barrier to sustainable nurse prescribing.^{12,26} As Snell *et al.* concluded, factors including good supervision, positive collegial relationships with specialist medical staff, pharmacists, and nursing peers, and access to ongoing education would positively influence the nurses' prescribing role and facilitate their ability to work at the top of their scope of practice.²⁵ The positive influence of strong educational pathways and academic preparation for nurse prescribing practice was also expressed.^{26,27}

Discussion

This rapid review aimed to explore the impact of nurse prescribing on health care delivery for patients with diabetes across NZ, Australia, the UK, and Canada, as they are all Commonwealth countries with comparable health systems and similar multicultural backgrounds. The review examined the relevant literature from the past decade, with the intention of informing a future research project that considers the impact of nurse prescribing on diabetes care in NZ. To the best of the authors' knowledge, there were no other reviews within this timeframe.

Similar to prior literature reviews, the results of this rapid review focused on clinical outcomes for diabetes patients under nurse prescribing. Many studies, including systematic reviews, examined differences in clinical outcomes (especially HbA1c levels) between medical and nurse prescribing. This rapid review concludes that clinical outcomes, particularly HbA1c levels, are comparable regardless of the prescriber's status. This finding aligns with Gielen *et al.*'s³⁶ earlier systematic review encompassing 35 studies from 2006 to 2012 across six countries, which showed that nurses provided an equivalent or superior prescribing service to medical counterparts with no significant differences in clinical outcomes, quality of care, or patient satisfaction.

Limited NZ data exist on clinical outcomes related to nurse prescribing in diabetes care. However, several studies in this review reported the demographics of patients under nurse-prescribing interventions. It appears that NZ nurses involved in medication prescribing frequently serve patient populations affected by hypertension and diabetes. These patients mostly reside in rural areas, are likely to identify as an ethnic minority, and are typically located in socio-economic deprived areas.^{24,25} Cardiovascular disease and diabetes continue to have a significant global burden, and the World Health Organization reports that these diseases are represented in the top 10 causes of death and disability.³⁷ In NZ, these burdens disproportionately affect Māori, Pasifika, and Indian populations.^{38,39} Nurse prescribing could alleviate this burden and improve health care

availability by offering a safe and comparable medication and treatment management option.

The literature highlights the benefits and disadvantages of nurse prescribing. Studies indicate that patients, other health care professionals, and non-nurse prescribers generally accept nurse prescribing.^{22,27,33} Nurse prescribers provide improved access to care, comprehensive health assessments, and treatment recommendations that patients find relatable.^{9,12} Nurse prescribing is considered more acceptable for younger patients with fewer comorbidities in some countries,²³ while associated with specialist nurse roles and complex patient needs in others.³⁵ The cost benefits of nurse prescribing are debated. Although historical arguments suggest cost advantages compared to doctors,^{40,41} employing RN prescribers or NPs instead of non-prescribing RNs may increase costs for employers. While nurse prescribing can reduce medical staff workloads, there is a time burden on authorised prescribers, typically medical doctors and NPs, during the training process.

Strengths and limitations

This review benefits from a structured search process backed by a PROSPERO protocol and a robust appraisal strategy. While the inclusion criteria focused on NZ, Australian, the UK, and Canadian literature, global context was provided through several multi-country systematic reviews. One limitation is the 10-year timeframe, excluding older articles that could have enriched the discussion. However, this timeframe aligns with the recent introduction of nurse prescribing in NZ, making it more locally relevant. In the context of a rapid review, the search spanned multiple databases and grey literature sources, offering a comprehensive data overview. Although not all literature underwent double screening, the inclusion of a moderation process bolstered the findings. The international variation in NP and RN prescribing practices represents a limitation of this rapid review, as it encompasses publications from various countries, each with its distinct regulatory frameworks and scopes of practice, potentially impacting the generalisability of findings.

Recommendations for practice and research

The review underscores the need for ongoing support and mentoring, especially for RN prescribers, both during the learning process and beyond. Establishing a culture of mentorship for all health care professionals, while not strictly mandated beyond registration for authorised prescribers, would be mutually advantageous for the multidisciplinary team, significantly benefiting RN prescribers and enhancing patient care. Nurse prescribing potentially enhances access to care and alleviates the health care system's burden. Future research should prioritise investigating clinical outcomes for diabetes patients under nurse prescribing, assess

the influence of nurse prescribers on treatment compliance and management, and explore nurse prescribing's impact on health care service delivery in the NZ context.

Conclusion

This rapid Review summarises literature from the past decade concerning the impact of nurse prescribing on health care delivery for individuals with diabetes, presenting methodological details for future replication. It highlights the effects of nurse prescribing on clinical outcomes, satisfaction levels, and service provision, whilst reporting on the barriers and facilitators associated with this prescribing role.

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Data availability. Data used to generate the results in the paper are available on request from the corresponding author.

Conflicts of interest. The authors declare no conflicts of interest.

Declaration of funding. This research did not receive any specific funding.

Transparency declaration. The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported, that no important aspects of the study have been omitted, and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

Acknowledgements. The authors thank Margaret Paterson, subject librarian at the University of Canterbury. Her support with defining the search terms and identifying appropriate databases and resources was invaluable. They also thank Margaret for her support with the final editing of the document.

Author contributions. All members of the research team contributed throughout the review process, including the development of the PROSPERO protocol, data review, and drafting of the final document for publication. KS reviewed the literature and wrote the first draft of the findings. IJ, CA, and WY reviewed and edited additional drafts of the paper.

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