REVIEW ARTICLE

Deprescribing in Australian residential aged care facilities: A scoping review

Jenny Xinyu Liang[1,2] 🄳 | **Louise Thai**[3] | **Madeleine Healy**[1,2] | **Adam Mohd Idris**[1,2] | **Jian Wey Chin**[1,2] | **Christopher Grossman**[3]

[1]Aged and Rehabilitation Services, Kingston Centre, Monash Health, Cheltenham, Victoria, Australia

[2]Monash Ageing Research Centre, School of Clinical Sciences at Monash Health, Monash University, Clayton, Victoria, Australia

[3]Calvary Health Care Bethlehem, Caulfield South, Victoria, Australia

Correspondence
Jenny Xinyu Liang, Kingston Centre, Monash Health, Cheltenham, Victoria, Australia.
Email: jennyliangwork@gmail.com

Abstract

Objectives: Older adults residing in residential aged care facilities (RACFs) are particularly vulnerable to negative health outcomes from polypharmacy and sub-optimal prescribing in the context of frailty and multimorbidity. Deprescribing, the intentional withdrawal of inappropriate medications, has been proposed as a promising approach to reduce polypharmacy-related harms. Examining current deprescribing interventions in RACFs would help identify gaps in research knowledge. The aim of this scoping review was to synthesise the current literature, describe the current knowledge gaps and future research priorities that the authors identified.

Methods: MEDLINE, Embase, CINAHL, PsycINFO and AgeLine were searched according to the Joanna Briggs Institute (JBI) guidelines for scoping reviews from inception until February 2024 to identify relevant studies published in the English language.

Results: Of the 2244 articles screened, 13 studies (total of 133,150 RACF residents across Australia) were identified examining deprescribing interventions. Six studies were controlled trials and seven studies were observational studies. There were six pharmacist-led interventions, five multidisciplinary team-led interventions and two physician-led interventions. Main themes discussed included as follows: multidisciplinary care, education for health-care professionals, refining outcome measures, overcoming system issues and research logistics. The most commonly targeted medications in the included studies were psychotropics.

Conclusions: Deprescribing is an important intervention for RACF residents but more research into translating evidence into clinically meaningful outcomes is needed. Successful studies typically involved multidisciplinary interventions, had an educational component, followed-up longitudinally with residents and carers and involved stakeholders, such as nurses. The economic impacts of deprescribing in this cohort are poorly understood.

KEYWORDS
benzodiazepines, deprescribing, outpatients, polypharmacy, residential aged care facility

2 | INTRODUCTION

Polypharmacy, defined as use of five or more medications, is a growing concern globally driven by an ageing and multi-morbid population.[1] Polypharmacy has been associated with various negative health outcomes, such as falls, hospitalisations, mortality and excess health-care costs.[2,3] In addition, polypharmacy is associated with suboptimal prescribing and a high prevalence of potentially inappropriate medications (PIMs), defined as medications for which potential adverse risks may exceed the expected benefits.[4] Older adults residing in residential aged care facility (RACFs) are more susceptible to adverse drug reactions due to high levels of frailty, multimorbidity, complex medication regimens and cognitive and functional impairment.[5]

In Australia, studies have estimated that about 65% of Australians aged 75 years and over are affected by polypharmacy and the estimate is higher, up to 91%, for people residing in RACFs.[6] Moreover, with increasing age and frailty, continued use of certain medications may be no longer necessary, appropriate or aligned with evolving goals of care.[6] Deprescribing, defined as 'the process of withdrawal of an inappropriate medication, supervised by a healthcare professional, with the goal of managing polypharmacy and improving outcomes' has been shown to be safe, effective and feasible in reducing polypharmacy and related harms.[7,8]

There has been increased recognition and effort to support implementation of deprescribing worldwide, including introduction of policies, increased funding in research, system-wide changes to enable record-sharing and consistency in prescribing, development of clinical guidelines and educational programs to patients and prescribers.[9]

Similarly in Australia, the National Health Strategy for Quality Use of Medicines (QUM) was developed in 1992, and subsequently, the National Medicines Policy was introduced in Australia in 1999 to address the issue of polypharmacy and related harms.[10] Following this, there has been further development of national and local clinical guidelines and educational programs, introduction of a federally funded medication review services—the Residential Medication Management Review (RMMR) in 1997, new Medicare Benefits Scheme (MBS) items to incentivise proactive medication reviews and new funding made available in 2024 for onsite pharmacists in RACFs.[4,11–13] Additionally, Residential In-Reach (RIR) services have been implemented in some states of Australia providing specialist medical assessments and assisting with deprescribing in RACFs.[14]

Despite growing evidence that deprescribing can reduce PIM use, particularly for those residing in RACFs, the implementation of such measures into clinical practice remains challenging due to the complex health-care environment with many competing priorities.[15,16] Many researchers in this field have commented on the practical, systemic and cultural barriers to deprescribing in RACFs and some have explored barriers from a patient and health-care professional perspective.[17–20] There is an evolving field of implementation science to help address barriers that impede the translation of deprescribing recommendations into real-world practice.[21] To date, there remains no consensus as to a best-practice tailored for deprescribing in the RACF setting in the literature internationally or locally.

Although there have been several reviews on deprescribing interventions in RACF, their focus has been on specific medications or specific outcomes; none to date have specifically focused on an Australian aged care cohort or current gaps in research literature for this population.[22,23]

Policy impact

This work demonstrates the need for further research in deprescribing in residential aged care settings. In particular, the long-term feasibility and economic benefits of different deprescribing models for older adults are poorly understood.

2.1 | Objective

The aim of this scoping review was to identify and evaluate existing deprescribing studies conducted in Australian RACFs, which reported patient-based outcomes. Our secondary aim was to analyse the study authors' suggested priorities for future research in this area.

3 | METHODS

3.1 | Protocol and registration

This review was conducted in accordance with the Joanna Briggs Institute (JBI) guidelines for scoping reviews.[24] The protocol was registered prospectively with PROSPERO (CRD42023482173).[25] A patient/population, intervention, comparison, outcomes and study type (PICOS) framework was developed and used to guide our review[26] (Table 1).

3.1.1 | Inclusion criteria

1. Studies must describe the use of a deprescribing intervention.

TABLE 1 PICOS framework.

PICOS	Description
Population	Patients living in an Australian residential aged care facility
Intervention	Any deprescribing intervention
Comparator	Standard care, no intervention or other control population
Outcomes	Outcomes must include at least one direct patient-based outcomes (e.g. number of medications pre and post intervention, mortality benefit, hospitalisation rate, etc.)
Study design	Comparative studies (randomised or non-randomised controlled trials, comparative cohort studies, case control studies, before/after studies). Studies can be quantitative, qualitative or mixed methodology

2. Studies must report at least one direct patient-based outcome, for example, number of medications pre- and post-intervention, mortality benefit or hospitalisation rate.
3. Intervention based in the RACF (residential aged care facility) setting only.
4. Intervention based in Australia only.

3.1.2 | Exclusion criteria

1. Not published in English.
2. Not peer-reviewed.
3. Mixed study cohorts, that is, participants not exclusively RACF residents or study not exclusively completed in Australia.
4. Meta-analyses, case series, opinion pieces or letters.
5. Pilot or feasibility study that did not report specific data or outcomes.
6. Studies that only reported the outcomes of carers, professional caregivers or health practitioners, but did not report patient-based outcomes.

3.2 | Search strategy

The following electronic databases were searched: Embase, MEDLINE, CINAHL, PsycINFO and AgeLine. Hand-searching was conducted on relevant websites, local journals, reference lists and publications of key authors in the field to identify relevant keywords and devise a preliminary search strategy. Keywords and medical subject heading (MeSH) search terms associated with the concepts of 'residential aged care facility' (RACF), 'Australia', 'deprescribing' and multiple synonyms of 'RACF' (e.g. 'nursing home', 'long-term care', 'assisted living facilities') were included to account for the changes in terminology over time. 'Deprescribing' keywords were derived from a recent validation study by Morel et al.[27]

No limits were placed on the type of methods used in the studies (qualitative, quantitative or mixed) or whether the deprescribing intervention was related to a single or multiple medications.

The search was limited to peer-reviewed, English language articles with no restriction on publication dates. Relevant local journals, online trial registries, reference lists and publications of key authors in the field were manually searched to identify relevant full-text articles for inclusion. The initial search was conducted in August 2023 and was repeated in February 2024.

3.3 | Study selection

All identified studies retrieved by the search were collated and uploaded into a reference management database and duplicates were removed. Titles and abstracts were initially screened by three reviewers (XL, CG, LT) to assess eligibility for inclusion. Full-text studies were retrieved when there was insufficient information from the abstracts. Full-text screening was conducted by two reviewers (XL, CG) and a list of potentially relevant full-text studies were created for group review. This list was distributed to three reviewers (LT, AI and JWC) who independently assessed the studies in detail against the inclusion criteria. Discrepant views were resolved by full group discussion.

3.4 | Data extraction and analysis

Information from relevant studies was systematically extracted using a standardised template developed by the reviewers, which included intervention details, cohort sizes, cohort demographics, follow-up duration, medication class targeted for deprescribing, reported outcome measures, including primary and secondary outcomes and key findings. Data extraction was completed independently by three reviewers (XL, CG and LT), with differences resolved through full team discussion. Included studies were reviewed by at least three authors and agreed topics or themes and priorities for future research were then extracted.
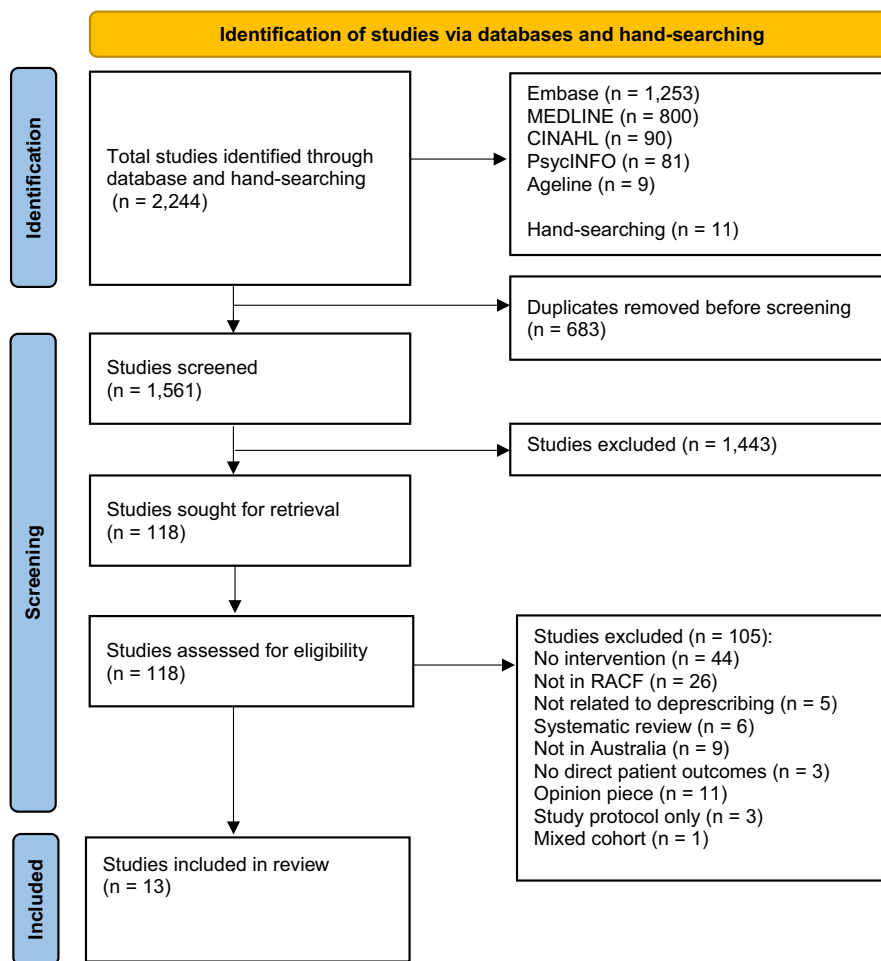
FIGURE 1 PRISMA flow chart of identification, screening and inclusion of eligible studies.

3.5 | Data presentation

Extracted data were presented in tables outlining publication information, study information, medication class targeted and key findings. Studies were further categorised based on their intervention types and domains of outcome measures (medication outcomes, clinical outcomes and system outcomes) following guidance by Bayliss et al.[28] for analysis and discussion purposes. Medication outcomes are quantifiable medication changes, including number/quantity of medication.[28] Clinical outcomes consist of mortality, quality of life and adverse drug withdrawal events secondary to medication reduction.[28] System outcomes are defined as outcomes related to health-care utilisation and implementation, for example, hospitalisation rate and associated cost.[28]

Topics, themes and priorities for future research discussed by included study authors were extracted into a concept matrix based on frequency of occurrence.

4 | RESULTS

4.1 | Study characteristics

A total of 13 studies met the inclusion criteria and were included in the review (Figure 1). The details of all included studies are summarised in Table 2. Studies were published over a 30-year period between 1993 and 2023. The number of participants in these studies varied widely, ranging from 60 to 113,909. The number of RACFs that were recruited for each study ranged from 2 to 1979. Five studies were randomised controlled trials and seven studies were observational studies (four prospective and three retrospective). The remaining one study was cross-sectional. The follow-up period for the interventions ranged between 3 and 18 months, with a median of 8 months. Four studies were conducted in multiple jurisdictions with one study being nation-wide.

Studies included in the review contained three categories of interventions: pharmacist-led, physician-led and

TABLE 2 Summary of included studies.

Author (year)	Study design	No. of residents, no. of RACFs jurisdiction	Intervention	Length of study/ follow-up period	Medication class/es targeted	Key findings
Brodaty et al. (2018)[36]	Prospective longitudinal study without concurrent control	139 residents 23 RACFs in NSW	Multidisciplinary program	12 months	Antipsychotics	Significant reduction in antipsychotic use by 81.7% with no significant increase in PRN psychotropic administration or adverse clinical outcomes.
Crotty et al. (2004)[29]	RCT	154 residents (54 control, 50 within facility control, 50 intervention) 10 RACFs in SA	Multidisciplinary case conference	3 months	Polypharmacy	Significant improvement in MAI scores between the intervention group and the control group ($p = .04$). Significant improvement in MAI scores for benzodiazepines ($p = .017$).
Crotty et al. (2004)[41]	Cluster RCT	715 residents (334 control, 381 intervention) 20 RACFs in SA	Outreach pharmacist visit	7 months	Psychotropics, aspirin	No significant changes in fall rate or psychotropic drug use between intervention and control group.
Etherton-Beer et al. (2023)[30]	Three-arm double-blinded RCT	303 residents (100 control, open intervention 101, blind intervention 102) 17 RACFs in NSW and WA	Pharmacist-led and GP-approved medication review	12 months	Polypharmacy	Significant reduction in DBI in intervention groups without apparent adverse effects on clinical outcomes.
Gilbert et al. (1993)[37]	Prospective observational	60 residents (33 control, 27 intervention) 2 RACFs in SA	Multidisciplinary program	3 months	Benzodiazepines	Significant decrease in benzodiazepine users from baseline (70%) to post intervention (35%) in control group with no adverse clinical outcomes observed.
Hui et al. (2023)[31]	Retrospective observational	147 residents (59 control, 88 intervention) No. of RACFs not specified VIC	Medication review via Residential In-Reach service	3 months	Polypharmacy	Significant reduction in the mean number of PIMs and median DBI in intervention group.
Nishtala et al. (2009)[32]	Retrospective cross-sectional study	500 residents 62 RACFs in NSW	Medication review (RMMR)	8 months	Polypharmacy	Significant decrease in median DBI score following RMMR and GP uptake.
Potter et al. (2016)[34]	RCT	95 residents (48 control, intervention, 47 intervention) 4 RACFs in WA	Medication review by research GP and geriatrician	12 months	Polypharmacy	Significantly lower number of regular medications in intervention group with 59% of targeted medications deprescribed.

(Continues)

TABLE 2 (Continued)

Author (year)	Study design	No. of residents, no. of RACFs jurisdiction	Intervention	Length of study/ follow-up period	Medication class/es targeted	Key findings
Poudel et al. (2015)[35]	Prospective observational cohort study	154 residents 4 RACFs in QLD	Comprehensive geriatric assessment	18 months	Polypharmacy	Moderate prevalence of potentially inappropriate high-risk medications was identified. Geriatricians made relatively few changes.
Roberts et al. (2001)[40]	Cluster RCT	3230 residents (2325 control, 905 intervention) 52 RACFs in QLD and NSW	Clinical pharmacy service	12 months	Polypharmacy	No significant difference in mortality rates between intervention and control group. Significant reduction in psychoactive medications and hypnotics in intervention group. Net cost saving of $16 per resident per year observed.
Sluggett et al. (2022)[33]	Retrospective cohort study	113,909 residents (58,888 control, 55,021 intervention) 1979 RACFs in SA, VIC and NSW	Medication review (RMMR)	4 months	Polypharmacy	Decrease use in certain classes of medications, including statins, proton pump inhibitors, calcium channel blockers, benzodiazepines/zopiclone and antidepressants.
Westbury et al. (2010)[38]	Prospective longitudinal study without concurrent controls	1591 residents 25 RACFs in TAS	Multidisciplinary program	6 months	Antipsychotics, benzodiazepines	The proportion of residents prescribed antipsychotics declined by 5% and benzodiazepines by 3% in intervention group. Significant dose reductions/cessations in benzodiazepines and antipsychotics for those who remained on these medications in intervention group.
Westbury et al. (2018)[39]	Prospective longitudinal study without concurrent controls	12,157 residents 150 RACFs in NSW, VIC, QLD, SA, WA, TAS and ACT	Multidisciplinary program	6 months	Antipsychotics, benzodiazepines	The proportion of residents prescribed antipsychotics declined by 13% and benzodiazepines by 21%. Mean chlorpromazine equivalent dose and mean diazepam equivalent dose both declined.

Abbreviations: ACT, Australia Capital Tertiary; DBI, drug burden index; GP, general practitioner; MAI, medication appropriateness index; NSW, New South Wales; PIM, potentially inappropriate medication; PRN, pro-re-nata; QLD, Queensland; RACF, residential aged care facility; RCT, randomised controlled trial; RMMR, residential medication management review; SA, South Australia; Tas, Tasmania; VIC, Victoria; WA, Western Australia.

multidisciplinary team-led interventions. A pharmacist-led intervention was used in six studies.[29–34] In two studies, a physician (either a general practitioner or geriatrician) led the intervention and conducted the medication review.[34,35] A multidisciplinary team-led intervention was utilised in five studies involving nurses, physicians, psychologists and pharmacists and representatives from Dementia Australia.[29,36–39] The included studies are highly heterogenous in terms of outcomes and outcome tools utilised. Similarly, there were diverse definitions across the studies of key terms, including what a deprescribing intervention entailed, varying time points for follow-up post intervention and different reporting methods.

Among the 13 studies, eight studies targeted polypharmacy and five targeted psychotropics. There was a trend in more recent studies targeting general polypharmacy rather than specific medication classes. Seven out of eight studies included pharmacist-led and physician-led interventions targeted polypharmacy. In contrast, psychotropics, including benzodiazepines and antipsychotics, were the most commonly targeted medications in multidisciplinary team-led deprescribing interventions.

For the purpose of our study discussion, the included studies were grouped into three main intervention types described above and study outcomes were grouped into three domains—medication outcomes, clinical outcomes and system outcomes adapted from Bayliss et al.[28] (Table 3).

All included studies measured and reported medication outcomes. Only two studies reported on the cost of care as a part of system outcomes.[29,40] Crotty et al. compared change in medication cost between intervention and control groups whereas Roberts et al. provided a cost-effectiveness analysis.[29,40] Five studies reported both medication and associated clinical outcomes.[30,34,37,41] The remaining six studies reported only on medication outcomes.[31–33,35,38,39]

4.2 | Suggested priorities of future research work

Study authors' suggested priorities for future research work were grouped into the following five identified recurring core themes: a multidisciplinary care approach, education for health-care professionals, refining outcomes measures, health system issues and research logistics (Table 4).

These themes have multiple interdependencies and some overlapping relationships. It is noteworthy that there is remarkable uniformity of discussion themes regardless of the date of publication of the included papers.

5 | DISCUSSION

This scoping review examined 13 heterogenous studies published over a 30-year period to evaluate a variety of deprescribing interventions utilised in RACFs in Australia.

Overall, a diverse range of interventions were used to deprescribe the targeted medications, including pharmacist-led medication reviews and prescriber education, physician-led reviews and multidisciplinary teamwork. The most common medications targeted in this cohort were psychotropics.

Successful deprescribing interventions were often multidisciplinary, involving nursing staff, physicians and pharmacists, which is consistent with findings of previous studies in this area.[40,42,43] Pharmacist-led interventions and physician-led interventions showed mixed results in comparison. For instance, Crotty et al.[41] demonstrated clinical pharmacists providing education to GPs yielded no significant change in prescribing of psychotropic drug. Similarly, geriatrician-led comprehensive assessments studied by Poudel et al.[35] were useful in identifying PIMs; however, relatively few changes of medications were made following the assessment. In contrast, pharmacist-led structured medication reviews in the form of RMMR or embedded into RIR services were associated with a reduction in many classes of medications, including PIMs and a subsequent reduction in Drug Burden Index (DBI).[14,31–33]

Study designs varied across the included studies. The absence of a control group in three observational studies made it difficult to determine whether the changes in reported outcomes were a result of medication dose changes or other time-dependent effects (e.g. fluctuations in neuropsychiatric symptom burden over time).[35,36,39] Three out of 13 included studies were retrospective observational studies and their retrospective nature limits the establishment of causality.[31–33] Many authors also acknowledged selective recruitment of residents or RACFs as a major limitation of their studies, which restricted the generalisability of the studies.[30,34–36,40]

Moreover, many of the results of the selected studies were derived from a small participant sample. Study authors discussed in their limitations that they were unable to adequately power for statistically significance for certain targeted outcomes.[29,34,36] Many commented on the lack of engagement with some RACF management teams and lack of funding being a barrier to recruitment.

Most studies had a relatively short follow-up with only five studies having follow-up periods of more than 12 months. Therefore, the effect of the interventions could be temporal and the long-term sustainability and impact of the interventions remained unclear. Only 2 of the 13 studies had a follow-up study to determine the intermediate

TABLE 3 Categories of interventions and outcome measures used in each study.

Author (year)	Intervention details	Domains of outcome measures
Pharmacist-led interventions (six studies)		
Crotty et al. (2004)[41]	Outreach pharmacist visit providing prescriber education to GP	Medication and clinical
Etherton-Beer et al. (2023)[30]	Structured medication withdrawal plan developed by pharmacist	Medication and clinical
Hui et al. (2023)[31]	Medication review by pharmacist embedded in Residential In-Reach service	Medication
Nishtala et al. (2009)[32]	Medication review by pharmacist (RMMR)	Medication
Roberts et al. (2001)[40]	Multifaceted clinical pharmacy service involving development of professional relationships, nurse education and individualised medication reviews	Medication, clinical and system
Sluggett et al. (2022)[33]	Medical review by pharmacist (RMMR)	Medication
Physician-led interventions (two studies)		
Potter et al. (2016)[34]	Individualised medication review and cessation by research GP	Medication and clinical
Poudel et al. (2015)[35]	Geriatrician-led comprehensive assessment via videoconference	Medication
Multidisciplinary team-led interventions (five studies)		
Brodaty et al. (2018)[36]	Multidisciplinary program, including GP, pharmacist and residential care staff with train-the-trainer approach, consisted of individualised deprescribing protocol and education program	Medication and clinical
Crotty et al. (2004)[29]	Two multidisciplinary case conferences conducted 6–12 weeks apart, including GP, geriatrician, pharmacist, residential care staff and a representative from the Alzheimer's Association of South Australia	Medication, clinical and system
Gilbert et al. (1993)[37]	Multidisciplinary educational and skill training program, including GP, psychologist and residential care staff	Medication and clinical
Westbury et al. (2010)[38]	Multi-strategic, interdisciplinary program, including pharmacist, GP and residential care staff, consisted of medication audit and feedback, education and medication review	Medication
Westbury et al. (2018)[39]	Multi-strategic program, including pharmacist, GP and residential care staff, comprised medication audit and feedback, staff education and interdisciplinary case review	Medication

to long-term impact of the interventions. The initial pilot RedUse study by Westbury et al.[38] showed promising results with significant reduction in the use of antipsychotics medications from 20.3% to 18.6% in the 6-month trial. However, in the longer term, this was not sustained; a 12-month follow-up study revealed the prevalence of antipsychotic use had returned to baseline level after 12 months.[44] Similarly, a follow-up study of the Halting Antipsychotics in Long-Term care (HALT) trial revealed 19% of the participants from the trial had their antipsychotics recommenced or never reached a dose of zero after 12 months.[45]

It was noted that nurses were the most common drivers of re-prescribing (63%), followed by family members (40%) in the HALT follow-up study.[46] Enablers and barriers of deprescribing, either from patients or their representatives, health-care professionals or organisational perspectives have been examined extensively in previous studies.[17,19,20,47,48] It appears this knowledge has not yet been fully translated into study designs and there has been a limited number of process evaluations embedded within deprescribing intervention studies.[48] Further evaluation studies would be helpful to determine feasibility of deprescribing interventions and how to best achieve shared decision-making about deprescribing in a real-world setting.[49]

There were inconsistent and heterogenous outcome definitions between studies in accordance with findings of previous systematic reviews.[23,28,50] For instance, there is substantial heterogeneity in measurement and reporting in relations to quantifying medication changes. Multiple different measurements were used in several different studies, such as the Medication Appropriateness Index (MAI), DBI, number of PIMs, defined daily dose (DDD), percentage reduction and prevalence of users. Similarly, a wide range of non-standardised clinical outcomes were used with little overlap between studies, which hinders attempts at comparisons of the clinical trials. This has also made it challenging to synthesise results across studies to generate actionable clinical evidence to guide future practice.[28]

TABLE 4 Concept matrix identifying key themes and authors' suggested priorities for future research.

	Multidisciplinary care	Education for health-care professionals	Outcome measures for deprescribing	System issues of aged care	Research logistics in the RACF setting
Brodaty et al. (2018)[36]	•	•	•	•	•
Crotty et al. (2004)[29]	•	•		•	•
Crotty et al. (2004)[41]	•	•		•	•
Etherton-Beer et al. (2023)[30]	•			•	•
Gilbert et al. (1993)[37]	•	•	•		•
Hui et al. (2023)[31]	•		•		•
Nishtala et al. (2009)[32]	•		•		•
Potter et al. (2016)[34]			•		•
Poudel et al. (2015)[35]					•
Roberts et al. (2001)[40]	•	•	•	•	•
Sluggett et al. (2022)[33]	•		•		•
Westbury et al. (2010)[38]	•	•		•	•
Westbury et al. (2018)[39]	•	•		•	•

Moreover, there is a general lack of reporting of clinical and system outcomes secondary to medication reduction. A trend was noted where pharmacist-based medication review studies often reported only a primary endpoint of medication outcomes alone.[31–33] Among the 13 included studies, only two reported on potential economic impact on the health-care system.[29,40] Given the huge cost of polypharmacy already present in Australia further data on the impact of health-care utilisation, such as cost-effectiveness, this would be helpful to guide sustainable change in policy and practice and may assist with advocacy to government and policy makers.[49]

5.1 | Priorities for future research

The authors discussed a wide variety of priorities for future research work in this field (Table 4). For ease of interpretation, we have grouped the most common topics into subheadings below.

5.1.1 | Multidisciplinary care approach

Deprescribing was often described as a collaborative effort among members from different disciplines, including GPs, specialists, nursing staff, pharmacists, residents, family members and organisational management team. Active engagement of all involved stakeholders was linked to greater success in the outcomes.[51] Future studies could assess the specific strengths of the

different components or professional groups of the multidisciplinary approach, such as team member composition, contributions and different responsiblities.[36,38] At present, it remains unclear whether the multifaceted strategies involving team members from different disciplines have a synergistic effect to facilitate deprescribing, but it seems this is accepted practice in the current Australian system.

In addition, concerns have been raised by study authors about the lack of formal communication and multidisciplinary planning in general in Australian residential care settings.[29] A multidisciplinary team approach was therefore proposed as a beneficial pathway for bilateral communication that enables care staff to participate in the development of a comprehensive care plan.[10,29]

5.1.2 | Education for health-care professionals

The integral role of nursing staff in deprescribing efforts in RACFs was recognised and further education and training opportunities for this group is advocated for. A 'train the trainer' model was implemented in several studies to educate and empower nursing staff in fields of understanding antipsychotic prescribing, non-pharmacological management of behavioural and psychologic symptoms of dementia (BPSD) and monitoring medication withdrawal side effects.[36–39] A wide range of educational programs were provided as part of the interventions, which consisted of

sessions provided by psychologists, pharmacists and representatives from Dementia Australia. Education programs were also extended to GPs, which include educational outreach visits and case conferences.[29,37,41] The emphasis on education by the included studies was consistent with the findings from previous studies that there were often knowledge or skill gaps in deprescribing in RACF settings.[19] In addition, a companion paper related to the Halting Antipsychotic use in Long-Term care (HALT) trial by Chenoweth et al.[46] reported the need for ongoing education and onsite support for health-care professionals rather than one-off training courses to sustain and lead practice change.

5.1.3 | Outcome measures for deprescribing

A wide range of outcome measures were adopted in the included studies. The most common outcomes measures were medication-related outcomes. The importance of incorporating clinical outcomes and cost-effective measures in future studies to help establish a business case for policymakers and service providers has been highlighted.[31,33] In a companion paper related to the RedUse program by Westbury et al., a full economic analysis and comprehensive review of the long-term clinical outcomes using a standardised approach was recommended.[39,52] More reliable and objective outcome measures, especially in relation to self-reported health outcomes in the older adults, are also needed. Study authors found that many residents were unable to reliably complete detailed assessments due to cognitive impairment.[34] This mirrors recommendations from other researchers advocating for a greater focus on outcomes that are clinically meaningful and have realistic potential to demonstrate the benefits of deprescribing, such as demonstrating non-inferiority in response to deprescribing intervention.[28,49,53]

5.1.4 | System issues of aged care

Multiple factors within the current Australian healthcare system compound the complexity of polypharmacy and suboptimal prescribing among older people residing in RACFs. Clinicians have raised the need for systematic, reproducible approaches, such as evidence-based practical algorithms or clinical decision support tools to be available to assist with deprescribing.[35] Similarly, Brodaty et al. outlined that there was a lack of implementation of general medication reviews and withdrawal practices in RACFs in relation to antipsychotic use, despite the presence of current health-care policy and clinical guidelines

advocating against routine antipsychotic use in people with dementia.[36]

Almost all studies emphasised the barriers of research participation and implementation due to lack of funding and resources to support person-centred care in Australian RACFs and this will be a consideration in future research. Resources in RACFs are often allocated to areas other than clinical needs to satisfy demands, such as regular accreditation processes and requirements.[41] Commitment from RACF management staff and a cultural change would be required to facilitate implementation of training and utilisation of non-pharmacological management of BPSD.[45] There are major obstacles resulting in limited GP engagement in the studies, which included time constraints, a lack of formal communication channels and financial incentives in participating in multidisciplinary care.[29,32,38] Following the study by Crotty et al.,[29] a scheduled payment for GPs to organise, coordinate or participate in multidisciplinary case conferences was added to the Australian Medicare Benefits Schedule in November 2000, acknowledging the integral role of GP in collaborative care in RACFs.

5.1.5 | Research logistics in the Australian aged care setting

All 13 included studies commented on issues with research logistics in this area and cohort. The most common issue was results that were derived from small participant samples and that authors were only able to draw associations or incomplete trends towards significance as a result. Many authors have commented on challenges of reaching prespecified recruitment targets despite continued efforts.[30,36,40] For instance, Brodaty et al. reported a recruitment rate of 41% among approached RACFs and Roberts et al. reported an overall enrolment rate of 45%.[36,40] It is widely acknowledged that Australian RACFs are a difficult environment to conduct research in.[20,45]

5.2 | Strengths and limitations

This is the first scoping review to specifically examine deprescribing for older people in Australian RACFs. Due to the decision not to limit the search to a specific contemporary time-period, we found that the identity and nature of Australian deprescribing studies had changed significantly over time. It is also acknowledged that this resulted in inclusion of older research articles; however, more than half of the studies were from the last decade, and research priorities over time were surprisingly similar when examined longitudinally.

For instance, some of the included studies did not include 'deprescribing', likely as it was still a relatively novel concept at the time of publication.[37] In addition, the definitions of 'deprescribing' and 'PIMs' varied across many of the studies, likely as trends in research, definitions and governance recommendations for the cohort evolved over time.

The review included both interventional and retrospective studies. Uncertainly exists regarding impact of interventions under non-research conditions. Additionally, this review focuses on deprescribing interventions which occurred in the RACF settings only. As a result, several studies examining deprescribing interventions among RACF residents that occurred outside the RACF setting were not included.[54–58] We acknowledged that deprescribing can be implemented in several different settings, including inpatient, outpatient and transitional care units prior to RACF admissions.[55,59] It seems that the more experienced authors in this field recommended a broader approach where deprescribing occurs opportunistically in different care settings.[53]

6 | CONCLUSIONS

Polypharmacy and suboptimal prescribing are prevalent in older adults in Australian RACFs. There has been substantial research interest in deprescribing in RACFs in the past decades. Yet, evidence for effective and sustainable deprescribing interventions to improve care in the setting remains limited. Current evidence in literature suggests that a multidisciplinary team care approach with emphasis on effective communication and further education may be the best way forwards to sustainable change. Over time, there has been a trend towards general deprescribing targeting polypharmacy rather than a specific medication class, echoing recommendations from government and policymakers. However, more recently, the pendulum seems to be swinging back again towards antipsychotic deprescribing as the main targeted intervention due to the final report of findings of the Royal Commission into Aged Care Quality and Outcomes in March 2021.[15]

Future research priorities identified included overcoming health system and logistic barriers, implementing multidisciplinary care models, providing education to empower health-care professionals and clarifying and standardising meaningful outcome measures—to benefit both individuals and the greater economy.

CONFLICT OF INTEREST STATEMENT
No conflicts of interest declared.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID
Jenny Xinyu Liang https://orcid.org/0009-0001-3876-1978

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