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Long-acting reversible contraception prescribing coverage by nurse practitioners and midwives in Australia

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ABSTRACT

Background: Expanded patient access to long-acting reversible contraception (LARC) is needed to support patient choice and access to efficacious forms of contraception. Little is known about nurse practitioner (NP) and midwife LARC prescribing.
Aims: To examine LARC prescribing by NPs and midwives in Australia.
Methods: A cross-sectional study of Australian Pharmaceutical Benefits Scheme dispensing data from 2018 to 2021 for females aged 15–54. Age-standardised rates were calculated by state, remoteness area, and level 3 statistical areas (SA3s).
Findings: Despite a 1.6 fold increase since 2018, NPs and midwives accounted for 0.82 % (n = 2184) of prescriptions for LARC dispensed in 2021. The percentage of services in 2021 was greater in outer regional (2.21 %) and lowest in major cities (0.68 %) and was higher for the implant (0.92 %) compared with the hormonal intrauterine device (0.76 %). The proportion of total SA3s where a NP/midwife prescribed LARC increased from 23.35 % in 2018 to 29.94 % in 2021. NP/midwife LARC prescribing was highest in outer regional (42.6 %) and lowest in remote areas (18.8 %). When stratified by state/territory, coverage of SA3s was highest in Australian Capital Territory (50.0 %) and lowest in the Northern Territory (11.1 %).
Discussion and conclusion: Our findings suggest that whilst there has been an increase in NP and midwife LARC prescribing, the overall rate remains low and coverage across Australia appears fragmented. NPs and midwives are well placed to enhance women's access to efficacious forms of contraception, but this requires future efforts to identify and address critical barriers (e.g. legislative, funding, training) to service provision.

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Summary of relevance

Problem or issue

Little is known about patients' access to NP and midwife prescription of LARCs.

What is already known

In Australia, access to reproductive health services, namely efficacious forms of contraception, is limited for some communities impacting rates of unintended pregnancy and the management of conditions such as endometriosis. To support patient access to LARCs, the optimisation of NPs and midwives offers one solution.

What this paper adds

Person-centred care supports options for patient choice of LARC provider. While NPs and midwives can enhance patient access to LARC services, existing prescribing patterns show the need for better policy support to reduce service fragmentation as well as optimise clinician roles and service availability.

1. Introduction

Expanding access to effective contraception and reducing unintended pregnancy is a key public health issue and an integral part of the sustainable development goals that support universal access to reproductive health services (United Nations Department of Economic and Social Affairs, 2019; World Health Organization, 2019). In addition, preventing unintended pregnancy is a key focus of Australia's National Women's Health Strategy 2020–2030 where it is recognised that the burden of unintended pregnancies is greater for women in rural areas (Australian Government Department of Health, 2018a). Methods of long-acting reversible contraception (LARC) such as intra-uterine devices (IUD) and hormonal implants are known to be 99 % effective, have long duration and minimal adherence requirements (Trussell, 2009). The hormonal IUD is also recognised for its role reducing blood loss associated with menstruation (Australian Commission on Safety and Quality in Health Care, 2017) and in the management of endometriosis (Royal Australian and New Zealand College of Obstetricians and Gynaecologists, 2021). However, uptake of LARC in Australia is low (11 %) compared with European nations (10–32 %) and less effective methods of contraception such as oral contraceptives (33 %) and condoms (30 %) (Eeckhaut et al., 2014; Grzeskowiak et al., 2021).

In Australia, LARC is largely provided in primary health care (PHC) settings by general practitioners through general practices, sexual health or family planning services (Royal Australian and New Zealand College of Obstetricians and Gynaecologists, 2017). International and Australian literature identifies the issues for LARC uptake as including; high upfront patient costs, professional and patient misconceptions about efficacious methods of contraception, training opportunities, practice readiness, concerns about contraceptive coercion and access to services (Mazza et al., 2017; Phillips & Sandhu, 2018; Senderowicz, 2019; Thwaites et al., 2019). For example, those living in rural and remote locations have reduced access to professionals able to provide family planning care (Mazza et al., 2017). Without adequate numbers of LARC providers, women opting for IUDs and hormonal implants need to attend specialists increasing risks of unintended pregnancy, travel requirements, costs and wait times (Garrett et al., 2015).

While not all clinicians will undertake additional training to perform LARC insertions, there are 860 midwives who have the scheduled medicines endorsement (referred to as midwives hereafter), and 2425 nurse practitioners (NPs) able to prescribe medicines (Nursing and Midwifery Board of Australia, 2016, 2017, 2022). Midwives are experienced baccalaureate or postgraduate prepared registered nurses providing care to women and infants during pregnancy, labour, birth and in the postnatal period (NSW Health, 2022). NPs are clinically experienced Master's degree registered nurses with expertise in patient diagnosis and treatment (Australian Government Department of Health, 2018b; Nursing and Midwifery Board of Australia, 2016) whose role aims to improve access to services for at risk populations, and, rural and remote communities (Australian College of Nurse Practitioners, 2021). However, less than 7 % identify sexual health as a specialty (Currie et al., 2016).

Person-centred approaches include access to options for care provision. NPs and midwives have capability, are embedded in communities and may be a preferred option for LARC services (Royal Australian and New Zealand College of Obstetricians and Gynaecologists, 2017). To support community access, strengthening the nursing and multidisciplinary workforce is in line with the World Health Organization recommendations to expand nurse-led roles (World Health Organization, 2016), the Australia's Stronger Rural Health Strategy (Australian Government Department of Health, 2018b) and Long Term National Health Plan (Australian Department of Health, 2019). However, it is not known how this workforce is optimised to deliver LARC in Australia. This study therefore aimed to examine the extent to which LARC services are provided by NPs and midwives, and, to examine geographical variation in the provision of these services.

2. Methods

2.1. Research design

A cross-sectional design was employed to analyse Australian prescription dispensing data by NPs and midwives from 2018 until 2021 for women aged 15–54 years. Therefore, a STROBE checklist was used to inform the reporting of this study (Von Elm et al. 2007).

2.2. Data collection

All data were collected from Services Australia; an agency responsible for payments and services on behalf of Australian Government departments (Australian Government, 2022b).

2.3. Data analysis

Aggregated data for all LARC dispensing Pharmaceutical Benefits Scheme (PBS) claims were analysed. Listed medicines dispensed by private hospitals and community pharmacies for Australian citizens, permanent residents, and eligible foreign visitors (from countries with reciprocal healthcare agreements with Australia) are subsidised by a federal government funded program called the PBS (Mellish et al., 2015). In most states, the PBS also subsidises medicines dispensed to public hospital outpatients and non-admitted patients, and for inpatients on discharge from hospital (Mellish et al., 2015).

Services Australia provided the number of LARC prescriptions dispensed to females aged 15–54 years who resided in each Australian Bureau of Statistics (ABS) level 3 statistical area (SA3) during the calendar years 2018–2021. Data were stratified by prescriber type (i.e. NP/Midwife vs Medical Practitioner), State/Territory, year and remoteness indicator (i.e. major city, inner regional, outer regional, and remote/very remote). Individual LARC methods supported by the PBS included the contraceptive implant (PBS Item: 08487Q) and the hormonal IUD (PBS Items: 11909T, 08633J).

SA3s provide a regional breakdown of Australia into areas that usually include populations of between 30 000 and 130 000 people (Australian Bureau of Statistics, 2013). In urban centres, they are often closely aligned with local government areas; outside urban centres, they include areas recognised as sharing a distinct identity

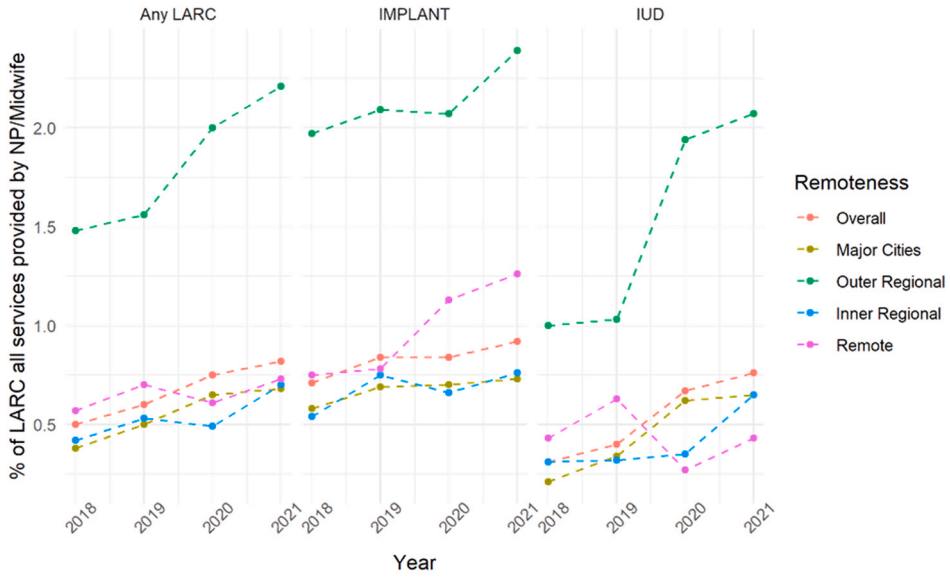

Fig. 1. Percent of all LARC services provided by nurse practitioner and midwife by remoteness and year.

and socio-economic characteristics (Australian Bureau of Statistics, 2016).

Age-standardised rates of LARC dispensing were calculated for women of reproductive age in each remoteness area and SA3 for each year by applying the ABS standard population (Australian Bureau of Statistics, 2013). This was calculated for LARC overall, as well as separately for implants and hormonal IUD. Data were stratified by prescriber type, allowing calculation of the ratio of nurse/midwife prescribing to medical practitioner prescribing.

The magnitude of variation in NP/midwife prescriptions dispensed within a given year was calculated as the ratio of the highest and lowest age-standardised rates by SA3; we also calculated variation after excluding the 10 % of SA3s with the lowest and the 10 % with the highest age-standardised rates. When assessing rates of LARC dispensing according to SA3, we excluded SA3s that included fewer than 1000 women of reproductive age.

Given aggregate data provided by Services Australia suppresses counts where only one to five prescriptions had been dispensed for a combination of SA3, practitioner type, and year, we replaced the suppressed counts with a value of five services. We also calculated the number and proportion of SA3s in which LARC had not been prescribed by a NP/midwife in each year, according to State/Territory and remoteness category.

2.4. Ethical considerations

Ethics approval was not needed as all data were de-identified from Services Australia. Project agreement was obtained with the External Request Evaluation Committee on behalf of Services Australia (RMS1869) on the 25th October 2021.

3. Results

In 2021, NPs/midwives accounted for 2184 dispensed prescriptions for LARC, comprising implant (n = 958) and hormonal IUD (n = 1226). NPs/midwives accounted for 0.82 % of prescriptions in 2021 for LARC dispensed to women aged 15–54 years (Fig. 1; Supplementary Table 1). This represents a 1.6-fold increase from 2018. When stratified by remoteness, in 2021 the percentage of services provided by a NP/midwife was greater in outer regional (2.21 %) and lowest in major cities (0.68 %) (Supplementary Table 1). The highest SA3 rate of all LARC prescriptions per 1000 women was 18.11 and the lowest was 0.09 (Fig. 2: Table 1). Irrespective of remoteness indicator, the percentages of services provided from 2018–2021 by a NP/midwife was higher for the implant (2018: 0.71 %; 2019: 0.84 %; 2020: 0.84 %; 2021: 0.92 %) compared with the hormonal IUD (2018: 0.31 %; 2019: 0.40 %; 2020: 0.67 %; 2021: 0.76

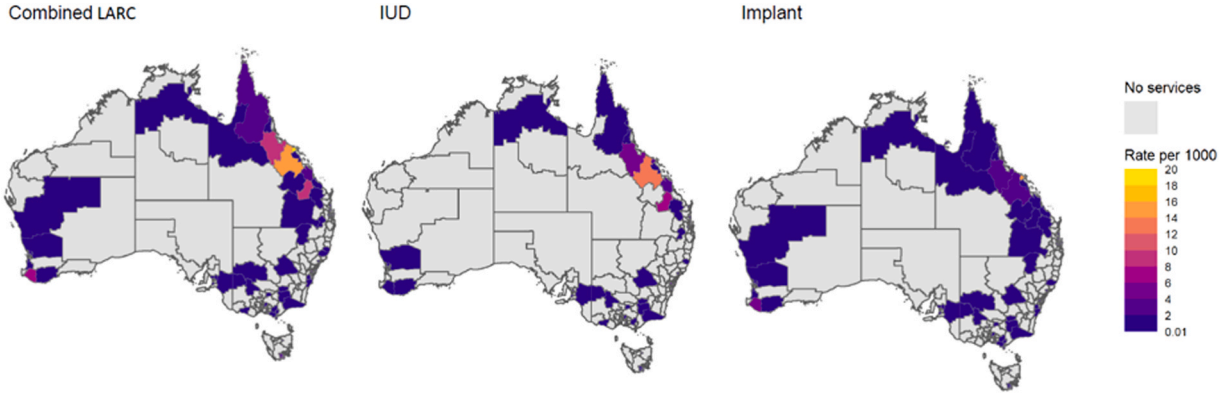

Fig. 2. Rate per 1000 of LARC prescribed by nurse practitioner and midwife in 2021 by level 3 statistical area.

Table 1
SA3 rate per 1000 of women of reproductive age (aged 15–54) where nurse practitioner or midwife prescribed.

	2018			2019			2020			2021		
	IUD	IMPLANT	Any LARC	IUD	IMPLANT	Any LARC	IUD	IMPLANT	Any LARC	IUD	IMPLANT	Any LARC
Total SA3	331											
Distinct number of sa3	49	71	78	54	77	83	62	80	95	68	90	99
Highest Rate	6.66	17.10	19.38	5.33	15.90	17.36	18.08	11.12	23.81	13.14	15.57	18.11
Lowest Rate	0.08	0.07	0.07	0.07	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.09
Magnitude of variation	83.25	244.29	276.86	76.14	318.00	347.20	258.29	222.40	476.20	262.80	311.40	201.22
EXCLUDING 10 % HIGHEST AND LOWEST RATE												
Highest rate	1.15	1.47	0.80	1.18	1.65	1.01	1.84	1.58	1.08	2.14	1.45	1.25
Lowest rate	0.15	0.15	0.17	0.17	0.14	0.22	0.15	0.13	0.13	0.14	0.13	0.15
Magnitude of variation	7.67	9.80	4.71	6.94	11.79	4.59	12.27	12.15	8.31	15.29	11.15	8.33

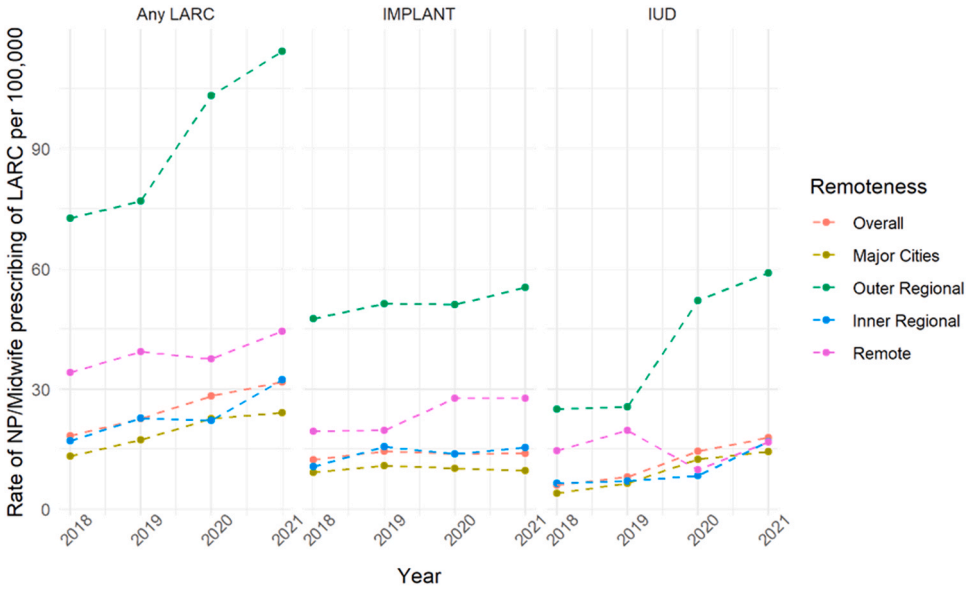

Fig. 3. Rate of nurse practitioner and midwife prescribing of LARC per 100,000 women aged 15–54 by remoteness and year.

%). Similar trends were evident when examining rate of NP/midwife prescribing per 100,000 women aged 15- to 54-years (Fig. 3; Supplementary Table 1).

The proportion of total SA3s where a NP/midwife prescribed LARC increased from 23.35 % in 2018 to 29.94 % in 2021 (Table 2). The proportion of SA3s where a NP/midwife prescribed LARC was highest in Outer Regional (42.6 %) areas and lowest in remote areas (18.8 %). When stratified by State/Territory, coverage of SA3s in 2021 was highest in Australian Capital Territory (50.0 %) and lowest in the Northern Territory (11.1 %) (Fig. 2; Table 2). The magnitude of variation in dispensing rates declined from 277 in 2018–201 in 2019, but increased if the SA3s in the highest and lowest rate deciles were excluded (2018, 4.7; 2021, 8.3) (Table 1).

4. Discussion

Despite an increase in NP and midwife LARC prescriptions from 2018 to 2021, the overall number of prescriptions is low and coverage across SA3 areas is lacking. NP and midwife LARC provision is impacted by factors such as government health service use funding, collaborative arrangements and policy (Australian Government, 2022a; Currie et al., 2019b). Reducing barriers to accessing government funded care would support medical practitioner workloads, the financial viability of NP and midwife services as well as reduce patient burden and service fragmentation (Currie et al., 2019a). For example, if a patient has heavy menstrual bleeding and a candidate for an IUD, or, if there is doubt about IUD position, the patient cost for an NP ordered pelvic ultrasound is greater than one ordered by a general practitioner (GP). While a collaborative arrangement with a GP is one solution, this can add to service fragmentation. In addition, the funding structure for NP LARC services is less than for medical practitioners.

There is a need for more health professionals to be aware of efficacious methods of contraception to inform patient choice and address misconceptions such as adverse effects on the return to fertility post IUD removal (Caetano et al., 2020). The removal of barriers to practice such as access to LARC training pathways and opportunities for skills maintenance would better utilise NPs and midwives for discussions about variety of contraceptive methods and support patient access to reproductive services. Training as well as skills maintenance could be met through family planning organisations with higher numbers of patients requiring LARC. While providers who are trained in LARC methods are more likely to recommend their use (Mazza et al., 2017), the reduced number of NP and midwife prescriptions could, in part, be as a result of challenges for patients identifying and accessing trained providers, particularly in rural and remote areas (Mazza et al., 2017).

The location of NP and midwife dispensing services was lowest in major cities. This result is in line with the role of NPs role that aims to improve access to services for rural and remote communities (Australian College of Nurse Practitioners, 2021). The distribution of full-time equivalent NPs is also highest amongst very remote communities (Australian Governmnet Department of Health and Aged Care, 2021). However, in Australia over 69 % of NPs and 70 % of all

Table 2
Level 3 statistical areas (SA3s) for where any LARC had been prescribed by a nurse practitioner or midwife by year, state and remoteness area.

Location	Total no. of SA3	2018		2019		2020		2021	
		N	%	N	%	N	%	N	%
Australia	334	78	23.35	83	24.85	95	28.44	100	29.94
State									
ACT	10	4	40.00	4	40.00	4	40.00	5	50.00
NSW	90	10	11.11	10	11.11	14	15.56	18	20.00
NT	9	1	11.11	0	0.00	0	0.00	1	11.11
QLD	82	24	29.27	27	32.93	33	40.24	31	37.80
SA	28	3	10.71	7	25.00	5	17.86	7	25.00
TAS	15	3	20.00	3	20.00	3	20.00	2	13.33
VIC	66	14	21.21	16	24.24	19	28.79	21	31.82
WA	34	19	55.88	16	47.06	17	50.00	15	44.12
Remoteness									
Major Cities	190	42	22.11	42	22.11	52	27.37	54	28.42
Inner Regional	81	15	18.52	20	24.69	20	24.69	23	28.40
Outer Regional	47	17	36.17	17	36.17	18	38.30	20	42.55
Remote	16	4	25.00	4	25.00	5	31.25	3	18.75

midwives work in metropolitan areas (Australian Governmnet Department of Health and Aged Care, 2021). Compared with metropolitan areas, the higher number of outer regional LARC dispensing services found in this study, whilst low overall, suggests that the distribution of NPs and midwives providing these services have demand in rural PHC settings.

From 2018 to 2021, there was an overall increase in LARC services, despite a detrimental impact of COVID-19 on other PHC nursing preventive care (Ashley et al., 2022). Results also indicate the percentage of services provided by a NP or midwife, whilst low, was higher for the implant than the hormonal IUD. This may be due to differences in training and set-up costs between implant and IUD procedures. The role of nurses and midwives in the provision of LARC is less common in Australia, than other countries (Botfield et al., 2021; Ouyang et al., 2019). While nurses and midwives are ideally placed to provide LARC, few have been trained in IUD or implant insertion and removal (Botfield et al., 2021; Ouyang et al., 2019). There are increasing calls to improve the accessibility of LARC for patients through reduced upfront costs and reducing the number of appointments, with nurses and midwives forming part of this solution (Botfield et al., 2021; Mazza et al., 2017).

4.1. Limitations

An exception from analysis is the Copper IUD, not currently supported by the PBS. This is unlikely to significantly impact results given Copper IUD usage is low, accounting for approximately 8.8 % of all LARC uptake by Australian women (Mazza et al., 2020). The data also does not capture LARC provision within sexual health clinics outside of the PBS. The extent to which this occurs is not known. In addition, the aggregate data suppression provided by Services Australia was managed by replacing the one to four prescriptions with a value of five services. As there was a low proportion of NP and midwife prescribers, it is recognised that this may overestimate prescription dispensing across SA3s.

5. Conclusions

Whilst NP and midwife LARC prescribing increased from 2018 to 2021, they account for a low overall proportion of LARC prescriptions, and service availability and spread across Australia is fragmented. Provider options for services would support person-centred approaches to LARC care, optimise NP and midwife capability and enhance access to providers. Further policy support is needed to ensure enhanced clinician roles and patient access to efficacious contraception, reducing unintended pregnancy risk, travel, costs and wait times. To do this, legislation and funding barriers to NP and midwife LARC care must be addressed as well as support for training and ongoing skills development.

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Ethical statement

Ethics approval was not needed as all data were de-identified from Services Australia. Project agreement was obtained with the External Request Evaluation Committee on behalf of Services Australia (RMS1869) on the 25th October 2021.

CRediT authorship contribution statement

SJ conceptualised and led the manuscript development. LEG was involved manuscript conceptualisation and development. AK performed statistical analyses of the manuscript. SJ, LEG, AK, JT and DM edited and approved the final manuscript.

Conflict of interest

None.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.colegn.2023.04.004.

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