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Differential access to continuity of midwifery care in Queensland, Australia

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Abstract.

Objective. To determine maternal access to continuity of midwifery care in public maternity hospitals across the state of Queensland, Australia.

Methods. Maternal access to continuity of midwifery care in Queensland was modelled by considering the proportion of midwives publicly employed to provide continuity of midwifery care alongside 2017 birth data for Queensland Hospital and Health Services. The model assumed an average caseload per full-time equivalent midwife working in continuity of care with 35 women per annum, based on state Nursing and Midwifery Award conditions. Hospitals were grouped into five clusters using standard Australian hospital classifications.

Results. Twenty-seven facilities (out of 39, 69%) across all 15 hospital and health services in Queensland providing a maternity service offered continuity of midwifery care in 2017 (birthing onsite). Modelling applying the assumed caseload of 35 women per full-time equivalent midwife found wide variations in the percentage of women able to access continuity of midwifery care, with access available for an estimated 18% of childbearing women across the state. Hospital classifications with higher clinical services capability and birth volume did not equate with higher access to continuity of midwifery care in metropolitan areas. Regional health services with level 3 district hospitals assisting with <500 births showed higher levels of access, potentially due to additional challenges to meet local population needs to those of a metropolitan service. Access to full continuity of midwifery care in level 3 remote hospitals (<500 births) was artificially inflated due to planned pre-labour transfers for women requiring specialised intrapartum care and women who planned to birth at other hospitals.

Conclusions. Despite strong evidence that continuity of midwifery care offers optimal care for women and their babies, there was significant variation in implementation and scale-up of these models across hospital jurisdictions.

What is known about the topic? Access to continuity of midwifery care for pregnant women within the public health system varies widely; however, access variation among different hospital classification groups in Australian states and territories has not been systematically mapped.

What does this paper add? This paper identified differential access to continuity of midwifery care among hospital classifications grouped for clinical services capability and birth volume in one state, Queensland. It shows that higher clinical services capability and birth volume did not equate with higher access to continuity of midwifery care in metropolitan areas.

What are the implications for practitioners Scaling up continuity of midwifery care among all hospital classification groups in Queensland remains an important public health strategy to address equitable service access.

Additional keywords: health equity, maternal health services, pregnancy, vulnerable populations.

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Introduction

Providing universal access to continuity of midwifery care for childbearing women, particularly those who are socially disadvantaged, is a public health issue in Australia and many other countries around the world.[1–6] Mapping access to services is critical to plan and implement effective system change that can address social gradient health inequality at the start to life.[7] Current population studies have demonstrated significant barriers and challenges to the provision of quality maternity services for Indigenous women; culturally and linguistically diverse women; those living in poverty; and those residing in rural and remote areas.[8–10] These groups often experience chronic health inequity and co-morbidities across the life course.[11]

Social and cultural determinants of health influence short- and long-term outcomes for women and their babies.[12,13] Traditional and mainstream maternity services contribute to active avoidance, non-engagement and exacerbate poor outcomes for many women because they are incongruent with requirements for cultural safety.[14–16] Parallel with this, population data in Australia show complex co-morbidity is increasing during pregnancy and childbearing for greater numbers of women and their babies.[17] The issues are multifactorial and include: rising levels of maternal and childhood obesity; pre-existing chronic illness during pregnancy (e.g. diabetes, heart disease, maternal and infant complications related to smoking); being pregnant and giving birth at an advanced age; greater use of assisted reproductive technology; and increasing medical and operative birth intervention.[18,19] Accessible maternity care that is safe and effective is therefore an important priority to address population health inequity at the start to life and across the life course.[20] Models of care that can address this priority should be scaled up.

There is compelling level 1 evidence that continuity of midwifery care for pregnant women is associated with improved clinical outcomes, cost effectiveness and higher satisfaction with care.[21] Continuity of midwifery care is provided by a known midwife to a woman throughout pregnancy, birth and postpartum. However, access to this model remains limited, including access for women living in Queensland, Australia.[22,23]

This study aimed to determine the level of maternal access to continuity of midwifery care in different hospitals offering a local birthing service across one state of Australia. It sought to determine if there were differences in access among hospitals clustered for clinical services capability and birth volume providing public maternity services in Queensland, Australia.

Methods

This study identified public continuity of midwifery care models available in Queensland Health Hospital and Health Services sites in 2017 by conducting a web-based search of available maternity services. National Maternity Care Classification (MaCCs) definitions were applied to the maternity care models (Table 1).[24–26] Queensland birth data for 2017 (publicly reported) were examined alongside data reported from a 2017 state-wide Maternity Models of Care audit undertaken by Queensland Health.[23,27,28] The audit, completed as part of the Maternity Services Action Group on Models of Care and workforce (MSAG3), identified all the major maternity models available within Queensland Health public maternity services (with the exception of Mater Mothers' Hospital) using the MaCCs.[23] This included a prior review of aggregate midwifery workforce numbers within public midwifery continuity models undertaken by the Office of the Chief Nursing and Midwifery Officer.[28] The audit and review aligned with the Queensland Health's initiative to develop an interactive decision-making framework (i-DMF), a tool to support health and hospital services to plan, develop and transition to maternity continuity of care models.[23]

In this study, all public maternity hospitals (except Mater Mothers' Hospital, which was not included in the aforementioned audit or review) were grouped into five clusters (referral, large, medium, district, remote) applying standard Australian hospital classification, Queensland clinical services capability framework and birth volume.[22,29] Aggregated data from a state-wide review determining the number of full-time equivalent (FTE) midwives working in public continuity of midwifery care models in each of the five hospital groups was usedin the model. Because the upper and lower limit of caseload numbers per FTE midwife within continuity of midwifery care models is variable and influenced by acuity levels of childbearing women, the caseload was imputed to model an estimate of the number of women potentially able to access continuity of midwifery care relative to birth volume for five hospital classification groups. The imputed caseload (hypothetical) of 35 women per FTE midwife working the equivalent of a 38-h week is justified by applying employment and industrial conditions in place at the time.[30,31] Professional standards and prior studies have recommended a viable caseload for 1 FTE midwife per annum within a continuity of midwifery care workforce model as 40 women (upper limit – women with a healthy pregnancy) and 30 women (lower limit – where women experience pregnancy complications).[32–35] These limits further justify the imputed caseload average of 35 women per FTE midwife used in the model for this study.

Model

Access to public health continuity of midwifery care across 15 hospital jurisdictions offering a maternity service, grouped by size and birth volume into five clusters using standard hospital classification frameworks was studied. This included 39 of 43 facilities (four being non-birthing sites) across the state of Queensland, Australia. The access percentage of continuity of midwifery care was simply estimated for each hospital

Table 1. Models of maternity care based on the National Maternity Care Classification Categories (MaCCs)[53]
AN, antenatal; GP, general practitioner; IP, intrapartum; MGP, Midwifery Group Practice; MW, midwife; PN, postnatal; OB, obstetrician

MGP Continuity of Midwifery Care[A]
A woman has a primary, known, midwife assigned for pregnancy, labour, birth and PN period. Each MW has an agreed number of women (caseload) per year and acts as a second or 'back-up' for women who have another MW as their primary carer. MWs work on-call (with group support) and may be employed on an annualised salary.
Team Midwifery
AN, IP and PN care is provided by a small team of rostered MWs (no more than eight) in collaboration with Drs in the event of identified risk factors. IP care is usually provided in the hospital or Birth Center; PN care may continue in the home or community with the team of MWs.
Public Hospital
AN care is provided in hospital outpatient clinics (either onsite or outreach) by MWs and Drs. Care should also be provided by a multidisciplinary team. IP and PN care is provided in the hospital by MWs and Drs in collaboration. PN care may continue in the home or community by the hospital MWs.
Public Hospital High Risk
AN care is provided to women with medical/high-risk complex pregnancies by maternity care providers (specialist OBs and/or fetal medicine sub specialists in collaboration with MWs) with an interest in high-risk maternity care in a public hospital. IP and PN care are provided by hospital Drs and MW. PN care may continue in the home or community by hospital MWs.
Private Obstetric Care
AN care provided by private specialist OBs. IP care provided in private or public hospitals by private specialist OB and hospital MWs in collaboration. PN care provided in hospital by private OB and hospital MWs and may continue in the home, hotel or hostel.
GP Obstetric Care
AN care is provided by a GP OBs. IP care is provided by the GP OBs and hospital MWs in collaboration. PN care usually provided in hospital by the GP OBs and hospital MWs and may continue in the community or a woman's home.
Shared Care
AN care is provided by community maternity service (Dr/MW) in collaboration with hospital medical/MW under an established agreement. Can occur in the community and hospital Out Patient clinic. IP and early PN care in hospital by hospital MW/Drs, in conjunction with community MW or Drs in rural settings.
Combined Care
AN care provided by a private maternity service provider (Dr and/or MW) in the community; IP and early PN care provided in the public hospital by hospital MWs and Drs. PN care may continue in the home or community with hospital MWs.
Remote
AN and PN care is provided in remote areas by a remote area MW or a remote area nurse or group of MWs, in collaboration with a remote area nurse and/or Dr; AN care may also be provided via telehealth and/or fly-in-fly-out clinicians in an outreach setting; IP and early PN care is provided in a regional or metropolitan hospital (involving temporary re-location before labour) by hospital MWs and Drs.
Private Practice Midwife
AN, IP and PN care is provided by a privately practising midwife (PPM)or group of MWs in collaboration with Drs in the event of identified risk factors. AN, IP and PN care could be provided in a range of locations, including the home.
Private Obstetric and Private Midwife
AN, IP and PN care provided by privately practising OBs and PPM from the same collaborative private practice; IP care usually provided by private or public hospital MWs in collaboration with private practice OB/MW; PN care is provided by hospital staff with community follow up by private OBs/MWs.

[A]27 of 39 Queensland hospitals with birthing on-site offered some access to continuity of midwifery carer in 2017.

classification group by multiplying the aggregate number of midwives employed in a public continuity of midwifery care model by the imputed caseload of 35 women per FTE midwife per annum per hospital group to obtain a numerator (The Assumed Midwifery Continuity Capacity). The denominator was the total number of births recorded for each hospital classification group per annum.

Results

In 2017, there were 27 out of 39 facilities that offered birthing on-site across 15 hospital and health service jurisdictions in Queensland and some offered continuity of midwifery care compared with alternative maternity models. Public access to continuity of midwifery care, applying an assumed caseload of 35 women per FTE midwife and based on the numbers of FTE midwives employed in this model for each hospital classification group, is shown in Table 2. Of 61 158 births recorded in Queensland in 2017, 39 973 births occurred in public hospitals or facilities staffed by public employees. The remainder of births occurred in private hospitals or at home, with exception of Mater Mother's Hospital (MMH) (the largest private hospital), which is funded to provide public care to ~10% of state births and is a provider of some public access to continuity of midwifery care.

Based on aggregate numbers and caseload assumptions, access to continuity of midwifery care for women who used Queensland public health birthing services in 2017 was 18%. The range for access to continuity of midwifery care recorded for hospital classification groups was 77.3% (Level 3 Remote hospitals with <500 births, highest) to 11% (Level 4 Medium size hospitals with less than 2000 births, lowest) (Table 2).

Access to continuity of midwifery care across metropolitan, regional and rural areas of Queensland demonstrated significant variation among the five hospital groups (referral, large, medium, district, remote). Overall, the number of models did not necessarily equate with higher access for women attending Level 6 Referral Hospitals in metropolitan areas (17.2%) or Level 5 and Level 4 Large hospitals (>2000 births) in metropolitan or regional

Table 2. Queensland hospitals offering a maternity service in 2017 with birth on-site access to continuity of midwifery care: clinical services capability using National and State Hospital Classifications[A]

CSC, Clinical Service Capability; CSCF, Clinical Service Capability Framework; FTE, full-time equivalent; MW, midwife

CSC Classification	Hospital jurisdictions (39 facility sites)	Hospital jurisdictions with continuity of midwifery care	Birth numbers 2017[B]	Qld Health CSCF[C]	Australian Institute of Health and Welfare classifications	Assumed midwifery continuity capacity; 35 women per 1 FTE MW (in 2017)	Estimated access relative to births; 35 women per 1 FTE MW (in 2017) (%)
Referral Hospital	3 sites	3 sites	12 382	Level 6	Principal Referral Hospital	2135	17.2
Large Hospital >2000 births	4 sites	4 sites	11 386	Level 5 and 4	Public acute A-city × 2 Public acute A-regional × 2	1610	14.1
Medium Hospital <2000 births	8 sites	7 sites	11 830	Level 4	Public acute A-city × 1 Public acute B-city × 2 Public acute A-regional × 5	1296	11
District Hospital <500 births[D]	18 sites	8 sites	3488	Level 3[F]	Public acute B-regional × 2 Public acute C-regional × 14 Public acute D-regional × 2	1470	42.1
Remote Hospital <500 births[E]	6 sites	5 sites	860	Level 3[F]	Public acute B-remote Public acute C-remote × 4 Public acute D-remote × 1	665	77.3[E] Inflated
TOTAL	39 sites	27 sites	39 946			7176	18

[A]Hospital classification as per Australian Institute of Health and Welfare (AIHW)[29] and Queensland Health.[48]
[B]Queensland government data.[27]
[C]CSCF, Clinical Service Capability Framework, where 1 = lowest (no birth on-site) and 6 = highest (tertiary care with neonatal intensive care).
[D]Includes one Level 2 site.
[E]Inflated. Birth number not reflective of women who birthed at other sites or who were intrapartum transfers. Included site with temporary closure during 2017, with two-thirds of birthing women ($n = 259$) transferred to a Level 5 hospital.
[F]Level 3 hospitals (Queensland classification) sub-grouped in two categories District hospitals <500 births and Remote hospitals <500 births using AIHW classification for regional and remote areas.

hospital classification groups (14.1%). As reflected in Table 2, Level 4 Medium hospitals (<2000 births) showed the lowest overall access to continuity of midwifery care (11%), with higher access recorded for the Level 3 Regional district hospital (<500 births) cluster (42.1%). Remote hospitals that had <500 births appeared to have the highest access (77.3%).

Discussion

Access to culturally safe, woman-centred primary maternity care has a significant effect on the outcomes of pregnancy and infancy.[5] Current evidence supports the most effective way to do this is through provision of relationship-based care where women have access to a known midwife.[1,8,21,36] Despite strong evidence that continuity of midwifery care offers optimal care and outcomes for women and their babies, in the Australian public health system, access to this model remains limited and *ad hoc*.[20,37] The crude national estimate for access to caseload continuity of midwife care in Australia ranges between 8 and 19%.[38–40] The intention of this study was to determine women's proportional access to continuity of midwifery care among public hospitals offering maternity services in Queensland, Australia, grouped by clinical services capability and birth volume using standard Australian hospital classification. Identifying variation can inform targeted scale-up of continuity of midwifery care for vulnerable women and infants. This aligns with current State and National policy initiatives to address health inequality.[37,41]

Although Queensland has a strong maternity care system, emerging models of best practice and a low perinatal mortality rate (9.9 perinatal deaths per 1000 births), this study identified limited access to publicly funded continuity of midwifery care, but higher than national figures previously reported.[39] Midwives employed in the public sector provided care for 72% of the State's childbearing population in 2017, but only 16% were reported as working in continuity of care models.[23,42] Moreover, although Queensland (as compared with other states) reported a greater number of private midwifery models (11 public hospitals have access agreements for private practice midwives to admit women in their care), most practise in metropolitan hospitals alongside public continuity models, whereas this study focussed on access to publicly funded models.[28] And although overall access to public continuity of midwifery care calculated in this study (18%) remained consistent with that reported by Toohill *et al.* (2020),[23] wide variation among hospital jurisdictions and classification groups was evident.

Despite strong policy support to scale-up access at Queensland maternity sites, for most women in metropolitan areas, access to continuity of midwifery care in tertiary referral hospitals in 2017 was actually <18%. Access reduced further for large hospitals that recorded >2000 births (Levels 4 and 5,

14.1%) and medium-sized hospitals that recorded <2000 births (Level 4, 11%). Surprisingly, district hospitals that recorded <500 births (Level 3) in regional areas showed higher overall access to continuity of midwifery care than larger maternity facilities (42.1%); however, this group also masked the greatest number of individual facilities with no access to continuity of midwifery care.

Although Level 3 remote hospital sites that recorded <500 births appeared to have high access to continuity of midwifery care, the use of aggregated data and imputed caseload artificially inflated the access percentage and was not indicative of maternity service complexity or midwifery service volume delivered. Many women who received rural antenatal and postnatal care did not birth locally. The range for the proportion of women giving birth outside the health and hospital service of their usual residence between 2013 and 2017 varied from 32% in the Torres Strait and Cape area (lowest) to 89% in the North-West region (highest).[22] This included women with higher levels of complications identified before labour and intrapartum transfers from these sites to referral hospitals. To reduce travel and inconvenience to their families during pregnancy, some women received local antenatal and postnatal care with the publicly employed continuity of midwifery care midwives, but planned their birth with a private obstetrician in a private hospital out of town. Access to continuity of midwifery care in the Remote hospitals group (<500 births) therefore needs to be examined, taking account of the residential address for women who also received pre and post birth maternity services at those sites, but who then birthed within a different hospital classification group.[43] Other local factors influencing or distorting available workforce and access also need further consideration; for example, temporary service closures or requirement or desire of local populations receiving the majority of their antenatal and postnatal care locally but who birth elsewhere. These factors hide variation that skew access estimates when based only on birth numbers at rural and remote sites, as do temporary closure of services. As noted in Table 2, a site within the Remote hospital (<500 births) classification was temporarily closed during 2017. Although this facility recorded 148 women who birthed locally, two-thirds of birthing women ($n = 259$) from that site alone transferred to a Level 5 – Large regional hospital (>2000 births); therefore, birth numbers and staff numbers were not consistent or congruent for the Remote hospital (<500 births) classification during the period. Similarly, birth numbers recorded for higher-level hospitals who received transfers from rural and remote sites also increased, thus affecting reliability of hospital access estimates.

Health inequity associated with geographical location, particularly rurality and remoteness, present ongoing challenges to the Australian health system.[9,44] One of the features of Queensland is its large size. This encompasses the dilemma of equity of access to maternity care for rural and remote women and those who are socially isolated.[22] Proportionately, women and babies in rural areas of Queensland experience consistently poorer outcomes across national indicators (infant and child death; low birthweight; percentage of mothers who smoked and gave birth; and women giving birth who had at least one antenatal visit) than women and babies in metropolitan areas.[22,45] Many of these women also experience pregnancy complications related to social determinants. However, some regional and remote areas of the state where Hospital and Health Services have moved to the full continuity of midwifery care model demonstrate that improved access and outcomes are possible for women. In 2017, this was the case for one region only, which covered a large geographical area bordering three other jurisdictions including the Northern Territory, South Australia and New South Wales. Reported outcomes since moving to full continuity of midwifery care in this region include increased spontaneous vaginal birth and breastfeeding; decreased preterm labour and postnatal depression; and increased maternal satisfaction.[42] Additionally, few other small regional sites also have successfully prioritised access to continuity of midwifery care for pregnant women in configuring midwifery workforce models.[32,46,47] Audit outcomes for a primary maternity unit in North Queensland providing care for twice as many young women (13.3% vs 5.1%) and five-fold as many Indigenous women (27.5% vs 5.7%) showed that clinical birth outcomes for mothers and babies who received continuity of midwifery care were comparable or better than State outcomes over a 3-year period for: induction of labour (0.5% vs 22.2%); vaginal birth (94.2% vs 56.9%); instrumental birth (3.2% vs 9.6%); Caesarean (2.7% vs 33.6%); 3rd/4th degree perineal tear (0.6% vs 1.7%), which is similar for those women in the model who experienced antenatal or intrapartum transfer to the base hospital.[46] A separate study from the Darling Downs that compared outcomes for women who received continuity of midwifery care with National Core Maternity Indicators over an 18-month period also showed higher spontaneous labour (79.6% vs 54.8%); fewer inductions of labour (10.2% vs 26%); reduced pharmacological pain relief (54.8% vs 23.9%); increased vaginal birth (70.3% vs 55.1%); fewer Caesareans (22% vs 32.3%) and less transfer of babies to the special care nursery (8.4% vs 15.3%).[47] Despite geographical isolation and previous closure of birthing services, two of the largest geographically remote regions in Queensland that provide health services for significant proportions of First Nations women and families (66%) have, subsequent to 2017, expanded access to continuity of midwifery care, including on-site birthing.[22,28,42,48] The capacity of some regional and remote area hospital and health services to establish higher levels of access to continuity of midwifery care shows this to be achievable with strategic investment by government, aligned with workforce recruitment and reconfiguration.[23] These jurisdictions can be demonstration sites to support others. The 2019 Rural Maternity Taskforce Review,[22] coupled with recent increases in the midwifery workforce[23] and development of decision-making tools to assist scale-up of continuity models in maternity care,[41] all contribute to strategic efforts to address the need for expanded access to continuity of midwifery care for women who live remotely.

The results in this study show variation in access to continuity of midwifery care among groups of hospitals providing maternity services in Queensland. Some women who experience social and geographical isolation have poorer access. Attention needs to be focussed on the provision of culturally safe midwifery services in regions that have higher proportions of Australian First Nation mothers and babies. These areas should prioritise scale-up of culturally safe continuity of midwifery care, as should metropolitan and regional hospitals where service demand is oversubscribed or not available. Mapping

access to maternity services at a local level is also required to inform scale-up, to increase access to continuity of midwifery care at the population health level.[9,44,49,50] In the decade since the Improving Maternity Services Review identified Australia as a safe country in which to have a baby, access to continuity of midwifery care for women with social disadvantage continues to be a significant public health issue. Specific targeted intervention, investment and community co-design is urgently required to address this.[37,51,52]

A unique strength of this study is that results estimated proportional access to the continuity of midwifery care model for groups of public hospitals that provided maternity services in Queensland based on clinical services capability. A key weakness of the study includes a model that applied hospital birth volume and assumptions based on an average caseload per FTE midwife when variation is the reality. For example, higher-level services across the state may only provide continuity of midwifery care for women without identified obstetric risk and therefore the average caseload per FTE midwife can be 40 women per annum. Additionally, in rural and remote sites where there is no core support staff and increased transfer of women with intrapartum risk or who plan to birth elsewhere, midwifery work is disguised by birth numbers that can be skewed. This may include the absence of information of any additional care midwives may be providing to that of usual care in continuity of care models; for instance, including women for antenatal and postnatal care who don't plan to birth locally or providing immunisation and contraceptive and sexual health services. Access estimates may therefore show greater variability in different locations, with dependence on the acuity of women.

To date, a significant limitation in State, Territory and National perinatal datasets is that current collections do not specify and record the model of maternity care received by childbearing women. Therefore, although evidence shows improved outcomes under continuity of midwifery care models at site level,[36] ongoing absence of this as a standardised data collection item hinders population level studies and planning. Systematic introduction of the Maternity Care Classification system, a validated tool for classifying models of care, including continuity of midwifery care, will enable future robust evaluation of access and outcomes for women with and without pregnancy risk factors in Australia.[24–26] When routinely included in the Queensland Perinatal Data Collection, future analysis would focus on use of the Maternity Care Classification data items to improve and inform evaluation and decision-making in scale-up of continuity of midwifery care models.

Conclusion

Despite a high-quality and safe maternity care system, many women in Queensland during 2017 experienced low levels of access to continuity of midwifery care. The Queensland Government is committed to improvements in maternity services and has further invested in the midwifery workforce since 2017. However, scaling-up continuity of midwifery care models remains an important public health strategy to address equitable service access and disparate maternal and infant health outcomes. Increasing access to continuity of midwifery care across many Queensland hospital jurisdictions at the population level is required for women who are geographically and socially isolated. Access for vulnerable groups, including First Nation mothers and babies who are more likely to experience multiple co-morbidity and poorer social determinants of health, also require further investigation using individual-level data. Health system targets that increase the volume of women able to access continuity of midwifery care should be set and regularly monitored using performance indicators such as the National Core Maternity Indicators and the National Maternity Care Classification system. Addressing these challenges at preconception and at the start of life with continuity of midwifery care access can improve health service engagement and maternal / infant outcomes and, importantly provide a healthy start to life for newborns. This strategy maximises opportunity to interrupt the pathways and trajectory of chronic disease in vulnerable populations, to close health gaps and address inequitable outcomes.

Competing interests

The authors declare no competing interests.

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