
From: Katelyn Commerford
Sent: Tuesday, 16 April 2024 8:21 PM
To: Birth Trauma
Cc:
Subject: CM: Re: Birth Trauma – Post-hearing responses – 11 March 2024
Attachments: Birth Trauma and Homebirth Poll - Women.pdf; Birth Trauma and Homebirth Poll - Midwives.pdf; Callander et al. (2021) Cost-effectiveness of public caseload midwifery compared to standard care in an Australian setting- a pragmatic analysis to inform service delivery.pdf; Coddington et al. (2023) Getting kicked off the program_ Women's experiences of antenatal exclusion from publicly-funded homebirth in Australia.pdf; Appendix A_ Birth Trauma and Homebirth Poll - Women.pdf; HBNSW why homebirth report.pdf; HBNSW GP referral refusal report.pdf; Sassine et al. (2021) Why do women choose homebirth in Australia_ A national survey.pdf; Tracy et al. (2014) Caseload midwifery compared to standard or private obstetric care for first time mothers in a public teaching hospital in Australia_ a cross sectional study of cost and birth outcomes.pdf; Scarf et al. (2021) Modelling the cost of place of birth - a pathway analysis.pdf; HBNSW Statistics on Homebirth Safety.pdf; HBNSW economic report.pdf

Dear Julianna,

Please find our post-hearing responses below:

Transcript correction:

Katelyn Commerford, Page 50, Paragraph 1 (Line 1)

Please amend "public indemnity insurance" to "professional indemnity insurance"

Questions taken on notice:

Attached are a number of documents that respond to questions taken on notice regarding the proportion of women who choose homebirth to avoid traumatic birth experiences, based on our survey of our members and community. There are two reports "Birth Trauma and Homebirth Poll - Women" and "Birth Trauma and Homebirth Poll - Midwives" as well as an Appendix A to the "Birth Trauma and Homebirth Poll - Women" that relate to this question on notice.

Also provided are studies Tracy et al. (2014) "Caseload midwifery compared to standard or private obstetric care for first time mothers in a public teaching hospital in Australia: a cross sectional study of cost and birth outcomes", Scarf et al. (2021) "Modelling the cost of place of birth - a pathway analysis" and Callander et al. (2021) "Cost-effectiveness of public caseload midwifery compared to standard care in an Australian setting- a pragmatic analysis to inform service delivery" which all relate to the cost savings of continuity of midwifery care models.

In addition to these questions on notice, we have also attached a couple of extra research papers related to some of the topics we discussed during the hearing: Coddington et al. (2023) "Getting kicked off the program: Women's experiences of antenatal exclusion from publicly-funded homebirth in Australia" and Sassine et al. (2021) "Why do women choose homebirth in Australia: A national survey".

We are also providing a few reports that Homebirth NSW developed alongside research assistants from Macquarie University in 2020. One is an economic report, another is on GP referral refusals, and one on why women may choose homebirth. Finally, we also have a short document providing quick statistics on homebirth safety that we updated ahead of the Inquiry hearing.

If there are any further questions or if there is any more assistance we can provide to the Select Committee, please let us know. We are honoured to have had the opportunity to present evidence to the Committee on this critical issue, and thank you all again for the work and sensitivity it has been given.

Kind regards,
Katelyn Commerford
President - Homebirth NSW

Birth Trauma and Homebirth: Survey Results - Midwives

By Homebirth NSW, March 2024

Ahead of the fifth hearing for the NSW Senate Inquiry into Birth Trauma, Homebirth NSW surveyed their database of Privately Practising Midwives across February and March for recent information related to our midwives' caseloads and birth trauma. We received 16 responses to our survey, with a number of our longer-established PPMs unfortunately too busy to complete the survey.

The results are summarised below. Results are rounded to one decimal place.

1. Do you have to turn away enquiries because you don't have capacity? If so, can you estimate how many per month?

We received 16 responses, with the results ranging from 0-5 enquiries turned away per month with a mean average of 2.3

The results to this question, keeping in mind that it may be higher still given a number of our longer established PPMs were unable to complete the survey in time, demonstrate the demand for PPMs outweighs the supply. This is despite the significant financial barriers to accessing this model.

2. Can you estimate, as a percentage, how many multiparous women in your caseload disclose prior traumatic birth experiences as their motivator for seeking a homebirth?

We received 16 responses, with the results ranging from 37% - 100% with a mean average of 69.9%

Some midwives were able to give specific figures and others were estimating. This number may also be higher if women don't disclose prior traumatic birth experiences, which is possible, but it is a clear majority regardless.

3. Can you estimate, as a percentage, how many primiparous women in your caseload express a desire to avoid birth trauma as a reason for choosing to birth at home?

We received 16 responses, with the results ranging from 50% - 100% with a mean average of 81%

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Again, some midwives were able to give specific figures here, and others were estimating. It is evident from these responses that the proportion of first time mothers choosing PPMs and homebirth to avoid birth trauma is an overwhelming majority.

4. Can you estimate, as a percentage, many women in your caseload are planning a vaginal birth after caesarean (VBAC)?

We received 16 responses, with the results ranging from 5% - 57% with a mean average of 21.3%

We chose to ask this question because VBAC is one of many categories that would see women “risky out” of Publicly Funded Homebirth Programs. Given the ever increasing number of caesareans being performed in this state (and our country, and worldwide), the number of women pursuing a VBAC is only going to increase and they will continue to seek support for that birth outside of the system where they can access that care.

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Midwives were also asked to provide comments relating to their experiences with vexatious reporting. We received 15 comments on this topic, shared below.

Note: once again, there are a number of our longer established privately practising midwives who did not respond to our survey in time who are more likely to have experienced this due to the length of their career in privately practising midwifery.

1. "No experience"
2. "I have not yet encountered any but am careful about what I say to whom just in case. It's always in the back of my mind"
3. "I felt that it was something I had to come to terms with as likely to happen at some point in time in private practice rather than an it may or may not happen. I practice very defensively and write extremely long notes for each antenatal appointment etc about discussions had with clients which is quite different to how I practiced when I worked in the hospital."
4. "Not personally but live my job everyday with the stress that it could happen to me any day."
5. "I have seen and heard of fellow PPEMs experience vexatious reporting and are still traumatised by this with ongoing anxiety and depression."
6. "No-one has reported me yet... but, many scrutinise and pass judgement on me offering home-birthing services. Hospital Staff (Midwives and OB's) are very vocal & judgemental about us, and GP's often refuse to provide a GP Referral letter to clients for my services, yet currently this is essential for clients to obtain a Medicare Rebate for my antenatal & postnatal visits. It is all so wrong, and things need to change."
7. "Reported 6 months into private practice by an obstetrician for supporting a woman to have a HBAC (not her first VBAC)."
8. "I have had 2 experiences of vexatious reporting - they are traumatic and stressful experiences. They take an enormous amount of time and effort to answer. They are humiliating and unnecessary. I simply stood up to the doctor who was assaulting the woman. He clearly did not like being held to account, and therefore put in a complaint about me. The other report came from the same hospital- the woman did not wish to disclose her new address to her mother (due to a family violence issue), the womans mother then contacted the hospital to report that I had 'kidnapped her daughter and was 'forcing' her to birth at home" - the hospital put in a complaint about me - this was quickly dismissed, but i still had to put an enormous effort into providing evidence that I had not kidnapped the woman!"
9. "Not yet happened but I am sure it will happen at some stage"
10. "Not me personally but colleagues have had this happen"
11. "It is a very challenging and stressful time when a report has been put against you especially when you know that you have done the right thing by the woman and her baby and the woman is 100% happy with the care she was provided."
12. "Not yet"
13. "None as of yet, although I'm only 1 year into private practice. It's a constant mental threat though."
14. "I have experienced vexatious reporting. I have also completed research on this topic."
15. "Horrendous I've been reported three times but hospital staff and anonymously, having to prove myself against false information about my practice , never has the report been from the women or families in my care, it took me away from my practice and the work I do , it was extremely stressful and unfounded after months of working on my responses found there to be nothing wrong with my practice."

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

We asked the PPMs if they had any other commentary on birth trauma and homebirth, barriers to women accessing homebirth, barriers to becoming endorsed, experiences of transferring, etc. that you would like us to be aware of ahead of presenting at the Inquiry interviews. A brief thematic analysis of the 16 comments received is shared below as a summary, followed by the comments themselves.

Thematic analysis of comments:

Financial Barriers:

- Cost is cited as the most significant barrier preventing women from accessing homebirth services. The out-of-pocket expenses, combined with the high costs of living, make homebirth financially unfeasible for many.
- Lack of Medicare coverage for homebirth services and minimal rebates further exacerbates the financial burden on women and discourages them from choosing homebirth.
- Private health funds do not cover homebirth, adding to the financial strain on families.

Medicare Rebates and GP Referrals:

- The requirement for GP referrals for Medicare rebates poses a barrier to accessing homebirth services. There are calls to expedite the removal of this requirement to make homebirth more accessible.
- There is a demand for Medicare rebates to cover homebirth services fully, acknowledging the potential cost savings for the government and recognising homebirth as a valid option.

Challenges with Hospital Transfers:

- Privately practicing midwives report difficulties and lack of cooperation when transferring clients to hospitals, especially in obtaining timely and accurate clinical information.
- There are instances of disrespectful treatment and judgment from healthcare professionals upon transfer to hospitals, which undermines the midwives' expertise and the choices made by women.
- Midwives encounter skepticism and disbelief from hospital staff regarding the information they provide, leading to delays in treatment and potential risks to the birthing woman and baby.

Professional Environment and Support:

- Midwives express concerns about a hostile professional environment, including unfounded criticisms, lack of support from hospital staff, and fear of reporting.
- Some midwives report experiencing verbal abuse, dismissal, and disrespect from healthcare professionals, including obstetricians and paediatricians, due to their support for homebirth and continuity of care.

Trauma and Safety Concerns:

- Prior trauma experienced by women in hospital settings contributes to their preference for homebirth. However, restrictive eligibility criteria and lack of support for Publicly Funded Homebirth models limit options for women.
- Midwives highlight the importance of informed decision-making and evidence-based care, emphasising that coercion and bullying tactics in hospitals contribute to birth trauma and undermine women's autonomy.

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Endorsement, Education and Insurance:

- The requirement for midwives to complete 5000 clinical hours poses a barrier to becoming endorsed and working in private practice.
- Lack of insurance coverage for endorsed midwives to provide intrapartum care in private practice restricts their ability to offer comprehensive services and educate future midwives.

GP Referral Refusals:

- Some GPs refuse to provide referrals for private midwives, either due to personal opinions on homebirth or a lack of understanding about the practice.
- The power dynamics created by the need for GP referrals limit women's choices and perpetuate barriers to accessing homebirth services.

Direct Comments:

1. "The biggest barrier for women is cost. I have more capacity but women simply cannot afford it with the already high costs of living. We are not covered by Medicare very well and not at all by private health funds. More women would access private midwifery for planned hospital birth which has better Medicare support, but that has been slow to eventuate in NSW with each LHD left to figure out the details essentially repeating the process in each area."

2. "Cost is the biggest barrier I hear for women accessing homebirth, as well as a GP referral for medicare rebates. The removal of the need for GP referrals needs to be expedited and a rebate available for birth to be implemented to make it more accessible for more women. The women choosing to birth at home are saving the government big money by not using the hospital system and this should be recognised."

3. "The out of pocket costs particularly in recent times with interest rate rises has been a massive factor. Whilst I feel like relations with hospitals are improving there is very much a sense that once we move to hospital for whatever reason the hospital stops talking to us - even though I am resuming care once a client is home I am yet to have a hospital provide me with a discharge summary or clinical information relevant to the care. I have had clients get told by paediatricians that a PPM isn't a real form of follow up and only their hospital staff can do x, y or z. That being said I have admitting rights in a nsw hospital and have experienced how collaborative agreements can work really really well and absolutely benefit the women and the staff. I just wish that it was the norm."

4. "Biggest barrier to women access is financial. And access to midwives. Previously gp referral but counting down the months till that is gone"

5. "The only way to fix the problem is for all women to have access to homebirth with a private midwife that is covered by Medicare. Families must be given the option to start their childbearing journey with a planned homebirth that is 100% subsidised. It is also extremely important that hospital and the medical association truly (maternity, obstetrics, GPs and NICU/SCN) know how PPEMs work. We have heard some terrible things come out of these departments, not just about us but also about the women choosing to homebirth. Also GPs who refuse to refer to us because they have been told by their insurance company (the same as ours) that they will be liable."

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

6. "When my clients & I end up transferring into hospital for one reason or another, often healthcare professionals (mostly midwives & OB's), on our arrivals, treat us with disrespect, and appear judgemental in us having to transfer in. Yet, in my eyes, that shows diligence, good risk management, and safe, appropriate care provision. We know & appreciate which circumstances warrant that transfer & as skilled healthcare professionals who care for our clients, their babies and families, we should be appreciated & respected by those in the hospital, when that transfer comes. I battle on a weekly - fortnightly basis, having to justify the privately practicing home-birth midwife that I am, the skills and knowledge that I hold, and that those under my care are safe, well looked after, respected & supported in their pregnancy, labour, birth & postpartum choices. I shouldn't have to always feel like I need to justify myself to GP's, fellow Midwives, Hospital Managers & to Clients Family and Friends too. People should be 100% respected for the choices that they make, and that us as Private Midwives are respected and supported in the people we are, and the maternity care model that we provide. Research tells us that PPM Care and the Continuity within that is The Best for Women / Birthing People & their Families. So, why doesn't everyone accept that, and show support for us who are willing, skilled & passionate about providing this service?! Thank you for all that you are doing in this space, to allow us & our clients voices to be heard. I hope that this will bring about change moving forward, and that there will be more support for us Midwives committed to delivering this wonderful model of maternity care."

7. "Many of my clients have experienced prior trauma in hospital settings, usually from fragmented care, but also from hospital homebirth programs due to midwives having to follow hospital policy."

At this time, homebirths are largely unaffordable for most women and Medicare rebates a very small portion of midwifery fees. Medicare rebates are also small in amount - approx. \$50 for antenatal appts and \$70 for postnatal appts, which make midwives feel undervalued as primary care givers."

8. "Having worked in private practice for over 30 years I have witnessed the scary increase in intervention in childbirth, combined with midwives who no longer witness undisturbed birth on a regular basis. I was speaking to one midwife recently - in her 6 years of experience in birth unit, she had only seen 5 births with no intervention! Since Jan this year, I have seen 3 normal births, without intervention (out of 3). Money is often a barrier to women seeking homebirth, as it is expensive. However, this cannot be solved with hospital programs, as these programs are often just 'hospital birth at home' and most of the women are 'risked out' of the program. This is largely due to inexperience with normal birth and a lack of understanding of normal physiology by hospital staff."

Nearly every woman not having her first baby, who seeks my care, has had some kind of intervention which led to birth trauma. Women report being bullied, coerced and yelled at, in order for the practitioner to get her to consent to a procedure. Women are not being given informed consent. Informed consent is giving ALL the risks and benefits of a procedure, not just the ones that align with the practitioners' ideals. As a private midwife transferring a woman into hospital, I always try to be courteous, and offer a detailed handover, however I am frequently met with a dismissal. I find the staff tend not to believe what I am saying, and assume I am either lying or underestimating the issue. For example: I have rung ahead to request a theatre be available for a client I am transferring from a homebirth situation, as time was a relevant factor in this emergency - as usual, they would not believe me, and insisted on making their own assessment. This led to a delay in treatment and the woman spent longer in hospital than was necessary. (they decided after their assessment that she did require theatre)

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

I have also noticed a large increase in the free birth community. Women have been so traumatised by the system, that they no longer trust any health professionals.

This is also scary, as there are some very rare, but life-threatening complexities in childbirth, that can lead to poor outcomes for mother and/or baby. Having a trained professional present can be the difference between life and death.

Having said that, it is the WOMAN'S choice to give birth where and with whom she chooses. Women will choose to birth where they feel safe. If hospitals do not mend their ways, then women will not birth there, as it is a dangerous, and understaffed place.

I could write pages and pages of experiences where I have been yelled at, dismissed, locked out of theatre, complained about, and abused verbally for standing up for women. I have witnessed staff being rude to women and rough with babies because the woman dared to make a different choice (and birth at home), when transferred to hospital.

Women are belittled for making choices outside the hospital protocols. For example, choosing to birth at home after a previous C-section, or perhaps not having a group B strep swab, maybe they want to go past 42 weeks, or not have an induction of labour for a 'big/small' baby. Midwives who support these women in their informed choice, are treated as dangerous practitioners, even though it is the woman's choice to make.

Not treating women as individuals with agency to make their own decisions, and bullying them with hospital policies and unnecessary, not evidenced based care, is causing a huge amount of trauma in birth. Women no longer feel safe in childbirth, and when they are traumatized by an event that should be a natural process, this can lead to anxiety, depression, and PTSD.”

9. “GP's in our area refusing to write referrals for private midwives.

The attitude that when we transfer to hospital that we are lying about time lengths ie how long someone has been pushing for. Or when we say baby's heartbeat was fine at home, it is all too often met with disbelief or rolling of the eyes etc.

Women are still viewed as being irresponsible for planning or having had a homebirth by obstetricians, paediatricians and the police: I have to attend court in June as a witness in which the mother is being accused of abuse. Her having had a home birth is in their eyes proof that she was an unfit mother all along!”

10. “Ridiculously tight restrictions on public funded homebirth models that very few women can comply with e.g. BMI, age, previous ppH due to IOL.

Women are still not fully supported to choose their place of birth despite the ACM Guidelines having the capacity to support these women by way of ROU.”

11. “cost for women
lack of insurance for PPMs
hostile professional environment, fear of reporting and poor support from. hospital maternity staff in general

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Hostile and uneducated GPs

Forms that PPMs provide to hospital on transfer are not kept as a record of women's notes.

therefore notes can be erroneous

hospital staff not believing PPM account of labour etc

difficult for women to obtain GP referral

lack of evidenced based care in hospital"

12. "Birth trauma is real! As a previously hospital based midwife I was traumatised on a daily basis with what was going in the hospital. The bullying of women and the fear based tactics used to coerce women into unnecessary interventions and csections. This has to stop! Women should not be treated this way in the day and age. Women have been giving birth naturally for centuries. What is different now?? I have had also experiences with transferring to Sydney based hospitals (I am now based regionally) where the hostility towards private midwives is despicable. We are all on the same page of providing the best care for the women so why do we need to be treated like we are from Mars! Private midwives should be respected and women should be given choices. Informed decision and evidence based medicine is not being practiced in hospitals. It is coercion and bullying that is profound in the hospital setting."

13. "Cost is a barrier to women accessing homebirth. Women are fearful of transfers to the hospital system as they don't believe their choices will be supported."

14. "Women's lack of access comes from cost.

The fear of transfer is massive for the midwife in regards to how they will be received."

15. "Finances are a barrier to women accessing homebirth. There is no Medicare funding for intrapartum care at home and no private health funds cover homebirth (unlike private obstetrics).

Women having to get a referral from a dr to access homebirth is also a huge barrier with many gps refusing to give out referrals due to their personal opinion on homebirth or lack of understanding and unwillingness to find out about how it works. This creates a power situation and makes drs the gate keepers of women's choices. This requirement needs to be removed.

Having to complete 5000 clinical hours is a huge barrier for midwives who want to become endorsed and work in homebirth. At the very least for midwives who want to go into private practice these 5000 hours should be able to be completed fully in a homebirth practice. Currently non endorsed midwives can't provide antenatal and postnatal care in private practice, despite being registered midwives and trained to provide this care, due to their being no insurance that covers them to do so. MIGA only insures endorsed midwives. So currently newly graduated midwives can only work in private practice as a second midwife at births and this is only due to the fact that there is no insurance cover for homebirth, We desperately need this changed so we can educate the next generation of midwives.

On transfer to hospital I have experienced both the birthing woman and myself as her care provider being treated very poorly. From being told it was a bad idea to plan a homebirth, things being done to the woman without consent, very poor communication and bedside manner, clinicians personal opinions on the woman's choices being shared with the woman, myself being ignored and dismissed despite having a wealth of information I could share as her care provider.

There is a wealth of research based information that PROVES that continuity of midwifery care creates better outcomes both clinically and emotionally for women and their babies. There is also plenty of

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

research that PROVES that homebirth with a midwife is safe if not safer, when we consider birth trauma, than hospital birth.

It's well overdue time to give women the funding they deserve to make the choices that are right for them and their family. In doing so we will create strong, healthy, mothers and strong, healthy babies and families”

16. “GP's refusing to give women referrals and or telling them how dangerous it is.

Finding back up midwives to satisfy legislative law.

The coercion that is blatant when women are transferred from home to hospital around any decisions from, time in labour , work. Not being allowed to try and get up off the bed to allow baby to descend with positions , episiotomies that are forced onto women even when they say no, babies cords being cut and babies being removed from their mothers chest in the name of good practice for the baby, bullying around choices with Vit k, or she decision to go home even when they have a private midwife to support their care at home , being told their babies will die if they go home .

Being told to stop talking to the women I have transferred into hospital for safety as the midwife in the room is The only one to talk .

Having medical records withheld from me even though women are being transferred back into my care after their discharge home”

Birth Trauma and Homebirth: Survey Results - Women

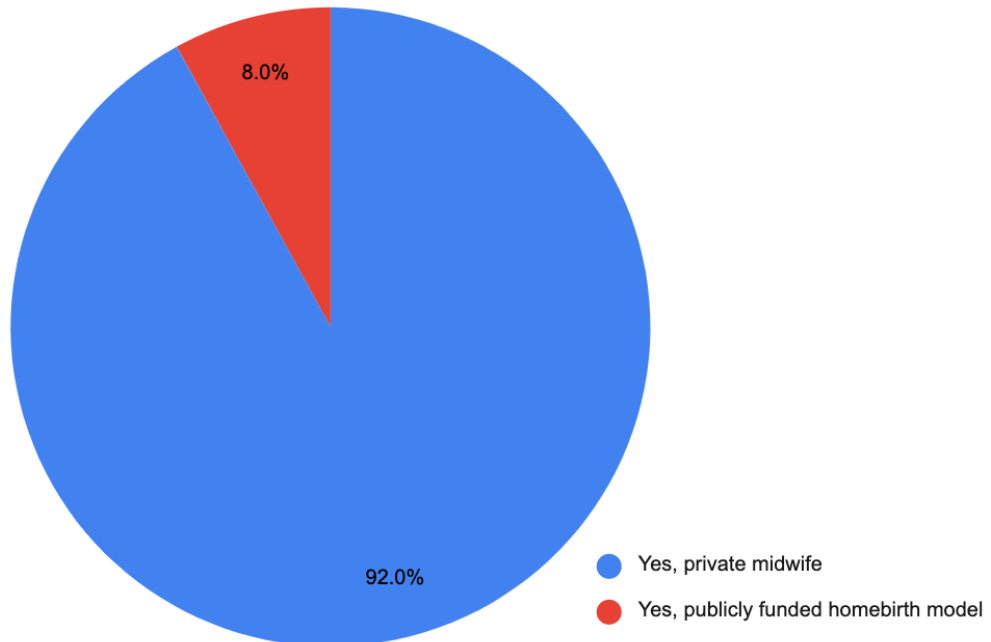
By Homebirth NSW, March 2024

Ahead of the fifth hearing for the NSW Senate Inquiry into Birth Trauma, Homebirth NSW surveyed their local and online homebirthing communities across February and March for recent information related to women’s experiences and/or knowledge of birth trauma and how that related to their decisions to homebirth, as well as questions about their experiences accessing and planning homebirths with a Privately Practising Midwife (PPM) in NSW. We received 255 responses to our survey, bearing in mind that not all women chose to answer every question.

We would like to flag that there are likely many women who wanted a homebirth but were unable to access care for one who did not complete this survey, based on the assumption that they weren’t the desired audience, so we believe the responses to the question “Did you want a homebirth but were unable to access care for one?” are likely a poor representation of the women in the “Yes” category.

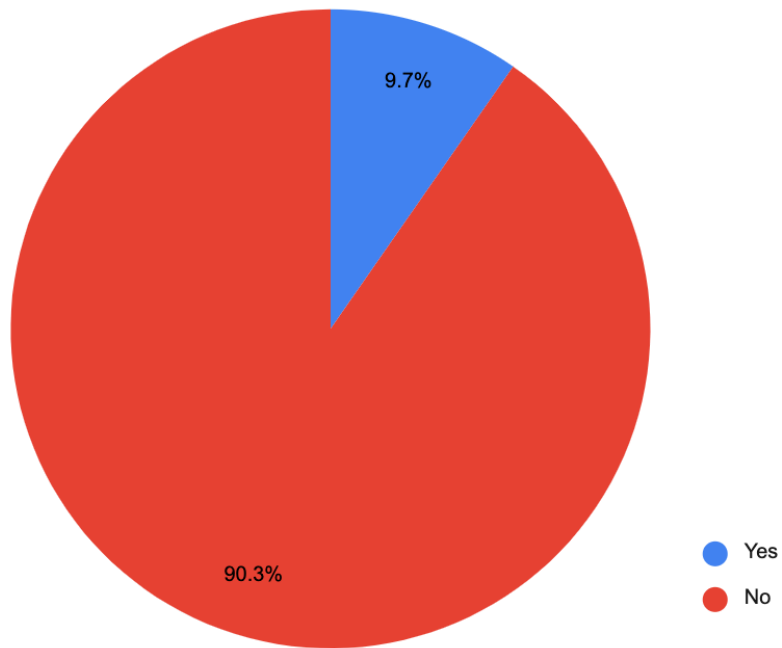
The results are summarised below. An appendix (Appendix A) to this report provides the comments received from women, for which a thematic analysis is given within this report.

Have you had or are you planning a homebirth (including homebirth transfer) in NSW?

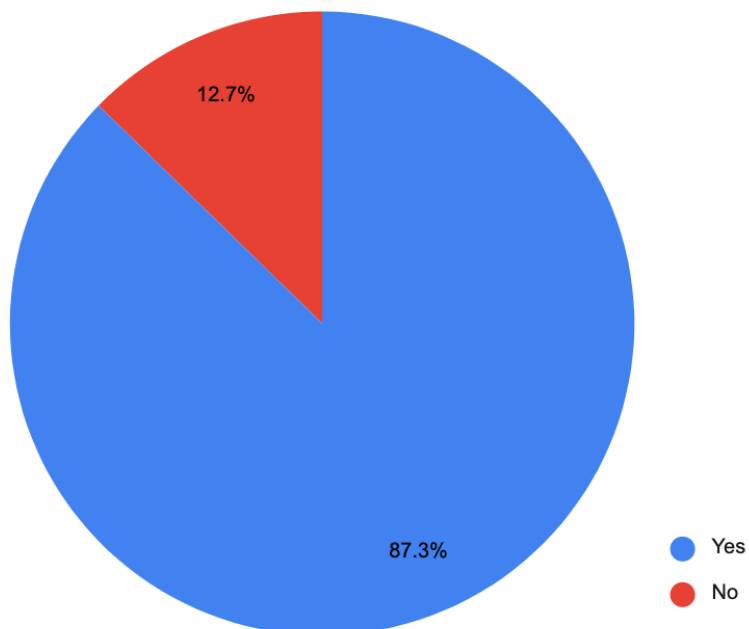


Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Did you want a homebirth but were unable to access care for one?

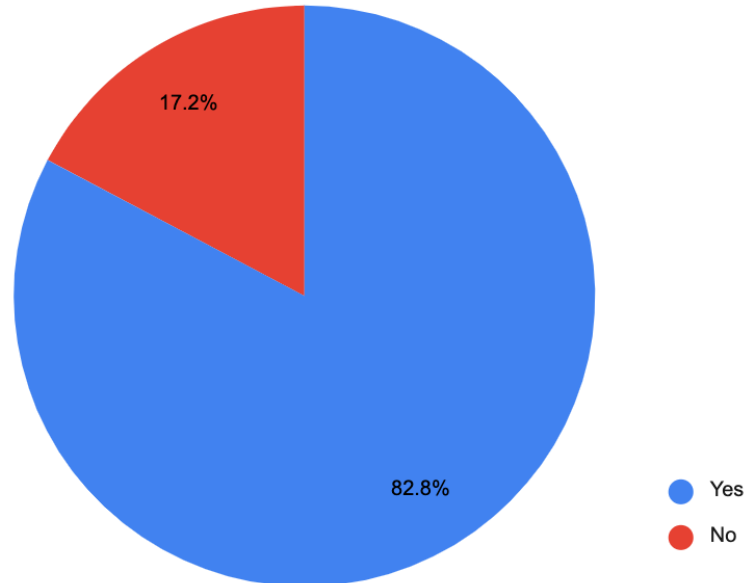


Did you feel you had to plan a homebirth in order to secure continuity of midwifery care?

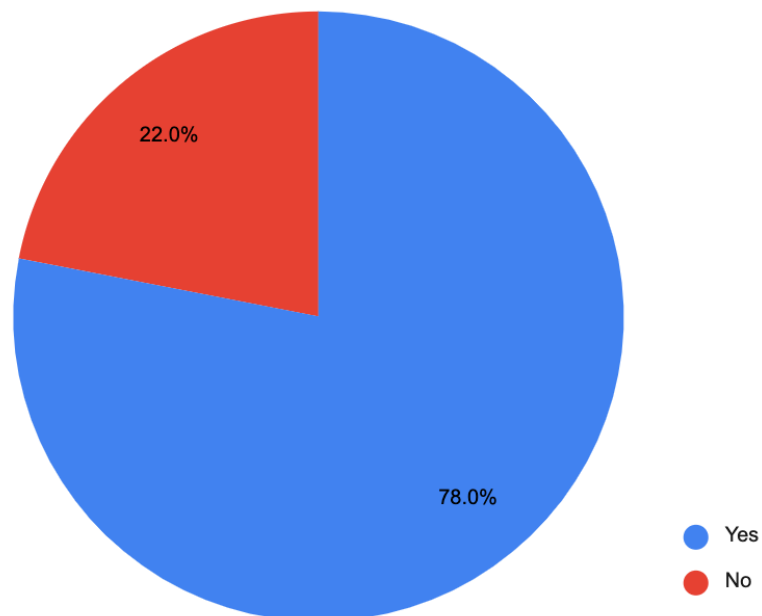


Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

If your planned homebirth was not your first baby, did you plan a homebirth with subsequent baby/ies after experiencing a prior traumatic birth, or birth involving poor treatment, coercion, or obstetric violence?

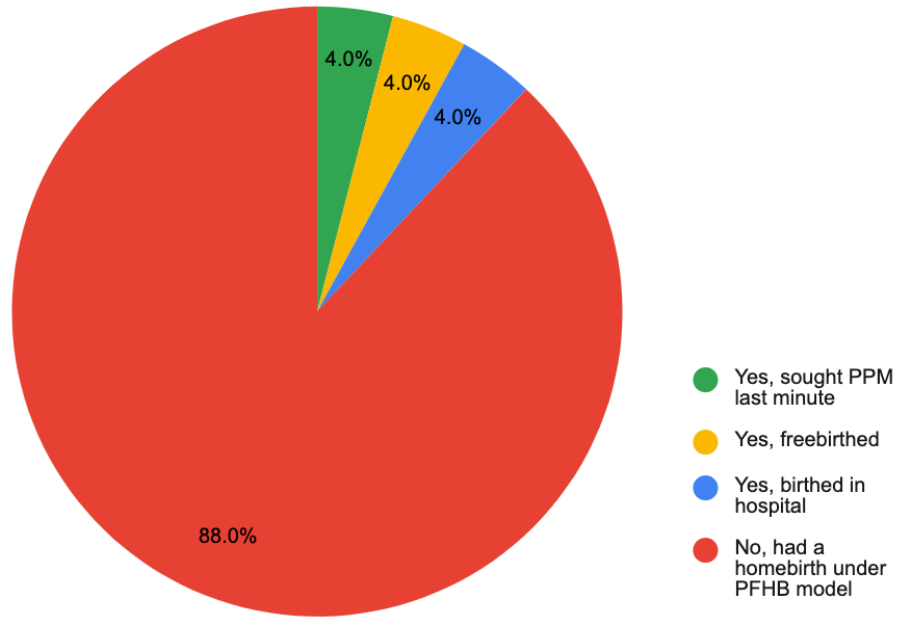


If your planned homebirth was for your first baby, did you plan a homebirth after hearing about birth trauma in hospital environments?

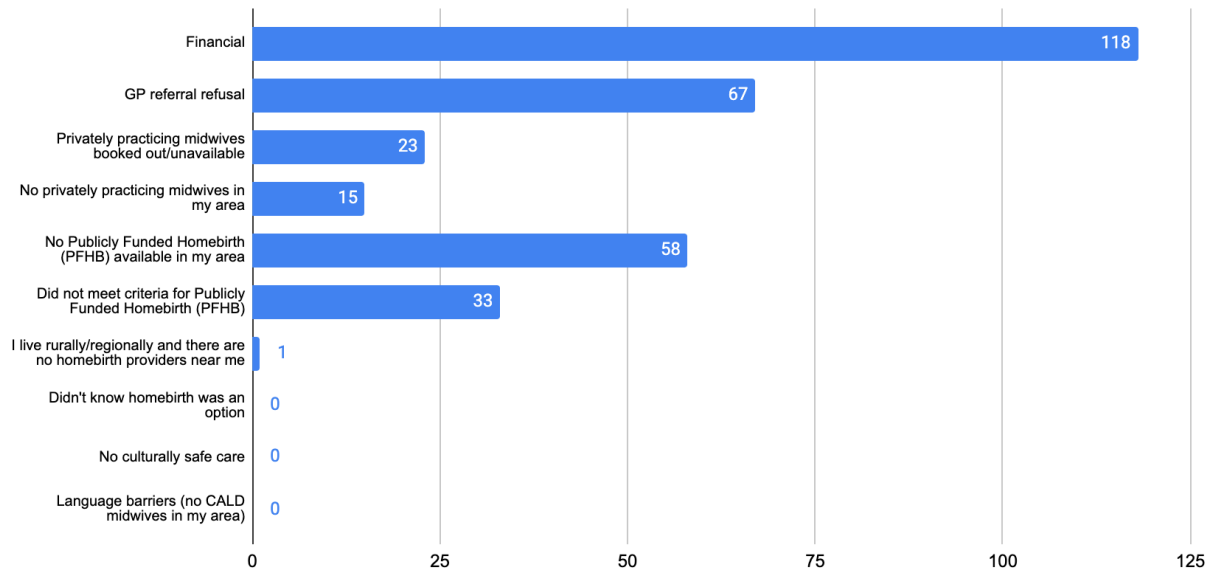


Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

For those who planned a homebirth under Publicly Funded Homebirth (PFHB) programs through their local hospital, were you risked out of homebirth before you could labour?



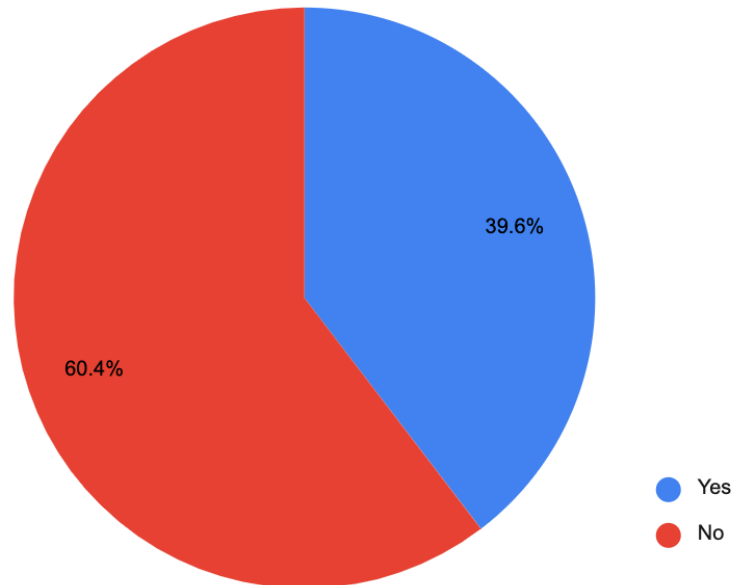
Did you experience any of the following issues in accessing care for a homebirth?



Note: respondents were able to select multiple answers

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

For those that dealt with the hospital throughout their planned homebirth journey (either as a transfer, or for additional monitoring/screening/appointments in pregnancy or postpartum), did you feel your decision to homebirth was respected?



Women were also asked to provide comments relating to their experiences with the system throughout their planned homebirth journey, or experiences of homebirthing in general.

We received 110 comments that were then able to be separated in three categories: women's experiences of transferring to hospital from a planned homebirth, women's experiences of engaging with the system when planning a homebirth, and overall commentary from women regarding their homebirth experiences.

A brief thematic analysis of the comments received in each of these categories is provided over the next few pages.

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Women's experiences of transferring to hospital from a planned homebirth:

Negative Attitudes and Judgments:

Many women encountered negative attitudes and judgment from hospital staff regarding their decision to have a homebirth, describing feeling dismissed, disrespected, and belittled by healthcare professionals who questioned their decision or expressed scepticism about homebirth. Some experienced derogatory comments, being labelled "hippies" or "silly", or condescending behaviour, which added to feelings of vulnerability and distress. There was a perception of bias against homebirths as inherently unsafe.

Lack of Understanding and Empathy:

Hospital staff often lacked understanding and empathy about the reasons for choosing homebirth and the preferences of individuals who transferred from homebirth to hospital care. There was a disconnect between the women who chose homebirth and the attitudes of hospital staff, leading to feelings of frustration and alienation. Several women reported that their choices as parents were not respected by hospital staff.

Advocacy and Support from Midwives:

Private midwives played a crucial role in advocating for individuals who transferred from homebirth to hospital care. They provided continuity of care and emotional support throughout the transfer process, advocating for the preferences and well-being of their clients.

Impact of Hospital Policies and Regulations:

Hospital policies and regulations sometimes influenced the care provided to individuals who transferred from homebirth to hospital. Some women felt coerced into interventions or pressured to conform to hospital protocols that conflicted with their birth preferences. The rigidity of hospital policies limited the options available to women and contributed to feelings of frustration and helplessness.

Trauma and poor outcomes:

However, others experienced trauma or negative outcomes due to their interactions with hospital staff or the care received during the transfer process. Negative encounters with healthcare providers left lasting emotional scars and impacted their perception of childbirth and healthcare systems.

Respect and Support for Choice:

Some women felt respected and supported in their choice to have a homebirth, even when they required a transfer to the hospital. They appreciated healthcare providers who acknowledged their autonomy and preferences regarding birth. Some women described feeling empowered by their homebirth experiences, even when they required a hospital transfer, and this generally overlapped with respect and support from the hospital system.

Overall, the themes highlighted the complex interplay between individual choices, healthcare provider attitudes, and institutional factors in shaping women's experiences of homebirth transfers. They underscore the importance of respectful, empathetic, and patient-centred care during childbirth, regardless of the birth setting.

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Women's experiences of engaging with the system when planning a homebirth:

Judgement and Criticism:

Many women expressed feeling judged and criticised by healthcare professionals for their decision to plan a homebirth. This judgement ranged from subtle disapproval to outright dismissal of their choice, with some being made to feel stupid or irresponsible.

Lack of Respect for Autonomy:

Several respondents mentioned that their decision for a homebirth was not respected, and they felt pressured to comply with hospital or medical system norms regarding birthing choices. Some felt that their autonomy was disregarded, and their preferences were not taken seriously.

Coercion and Fear Tactics:

There were instances where healthcare professionals attempted to coerce women into changing their birth plans by using fear tactics or presenting skewed information about the risks associated with homebirth. This created a sense of anxiety and distrust in the medical system.

Racial and Ethnic Bias:

Some women perceived racial or ethnic bias in their interactions with healthcare providers, feeling that they were mistreated or discriminated against based on their ethnicity. This contributed to their decision to opt for a homebirth as a means to avoid potential racism during the birthing process.

Positive Experiences with Homebirth:

Despite facing challenges and negative attitudes from the medical system, several women emphasised the positive experiences they had with homebirth and the supportive care provided by private midwives. Homebirth was described as empowering, trauma-free, and conducive to a positive birthing experience.

Resistance and Advocacy:

Despite facing resistance from healthcare providers, many women remained steadfast in their decision to pursue a homebirth. They advocated for their birthing choices and sought out supportive care providers who respected their autonomy and preferences.

These themes collectively highlight the challenges faced by women planning a homebirth when interacting with the hospital and medical system. Despite encountering resistance and judgment, many found empowerment and support through alternative care options like private midwifery care.

Birth Trauma and Homebirth Survey Results by Homebirth NSW - March 2024

Overall Commentary from women regarding their homebirth experiences:

Empowerment and Control:

Many women expressed a desire for greater autonomy and control over their birthing experience, citing reasons such as avoiding coercion into medical interventions, having continuity of midwifery care, and feeling respected in their decision-making process.

Trauma and Dissatisfaction with Hospital Birth:

Several women shared experiences of trauma, coercion, and dissatisfaction with hospital births, including feeling bullied, unsupported, or disrespected by medical professionals. This dissatisfaction often led them to seek alternative birthing options like homebirth.

Financial Barriers:

Access to homebirth services was often limited by financial constraints. While some women were able to afford private midwives, others expressed frustration at the lack of government funding for homebirth services, which forced them to either incur significant costs or forego their preferred birthing option.

Continuity of Midwifery Care:

Many women highlighted the importance of continuity of midwifery care throughout pregnancy, birth, and postpartum. They expressed a preference for having a dedicated midwife who would provide personalised support and guidance.

Challenges with Publicly Funded Programs:

Women who sought homebirth through publicly funded programs reported challenges such as limited availability, risk assessment criteria, and late confirmation of homebirth plans, which led to feelings of uncertainty and frustration.

Desire for Change in the System:

There was a widespread desire among respondents for improvements in the current maternity care system, including increased access to midwifery care, greater support for homebirth options, and a shift away from medicalised approaches to childbirth.

Positive Homebirth Experiences:

Despite the challenges, many women expressed immense satisfaction with their homebirth experiences, describing them as empowering, healing, and transformative. They emphasised the importance of feeling safe, supported, and respected during the birthing process.

Overall, these responses highlight the various personal, financial, and systemic factors that influence women's decisions regarding homebirth. They also underscore the need for more comprehensive and accessible maternity care options that prioritise women's preferences, autonomy, and well-being.

Original Research Article

Cost-effectiveness of public caseload midwifery compared to standard care in an Australian setting: a pragmatic analysis to inform service delivery

EMILY J. CALLANDER^{1,2}, VALERIE SLAVIN^{1,3,4}, JENNY GAMBLE^{1,3},
DEBRA K. CREEDY^{1,3}, and HAZEL BRITAIN^{1,3,4}

¹Transforming Maternity Care Collaborative, 68 University Dr, Meadowbrook, QLD 4131, Australia, ²School of Public Health and Preventive Medicine, Monash University, 553 St Kilda Rd, Melbourne, VIC 3004, Australia, ³School of Nursing and Midwifery, Griffith University, 68 University Dr, Meadowbrook, QLD 4131, Australia, and ⁴Women, Newborn and Children's, Gold Coast University Hospital, 1 Hospital Blvd, Southport, QLD 4215, Australia

Address reprint requests to: Emily J. Callander, School of Public Health and Preventive Medicine, Monash University, 553 St Kilda Rd, Melbourne, VIC 3004, Australia. Tel: +61 4 29 057 011; E-mail: emily.callander@monash.edu

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Abstract

Background: Decision-makers need quantifiable data on costs and outcomes to determine the optimal mix of antenatal models of care to offer. This study aimed to examine the cost utility of a publicly funded Midwifery Group Practice (MGP) caseload model of care compared to other models of care and demonstrate the feasibility of conducting such an analysis to inform service decision-making.

Objective: To provide a methodological framework to determine the value of public midwifery in different settings.

Methods: Incremental costs and incremental utility (health gains measured in quality-adjusted life years (QALYs)) of public MGP caseload were compared to other models of care currently offered at a large tertiary hospital in Australia. Patient Reported Outcomes Measurement Information System Global Short Form scores were converted into utility values by mapping to the EuroQol 5 dimensions and then converting to QALYs. Costs were assessed from a health system funder's point of view.

Results: There were 85 women in the public MGP caseload care group and 72 received other models of care. Unadjusted total mean cost for mothers' and babies' health service use from study entry to 12 months post-partum was \$27 618 for MGP caseload care and \$33 608 for other models of care. After adjusting for clinical and demographic differences between groups, total costs were 22% higher (cost ratio: 1.218, $P = 0.04$) for other models of maternity care. When considering costs to all funders, public MGP caseload care cost \$5208 less than other models of care. There was no significant difference in QALY between the two groups (difference: 0.010, 95% CI: $-0.038, 0.018$).

Conclusion: Public MGP caseload care costs 22% less than other models of care, after accounting for differences in baseline characteristics between groups. There were no significant differences in QALYs. Public MGP caseload care produced comparable health outcomes, with some indication that outcomes may be better for lower cost per woman.

Key words: Midwifery Group Practice, caseload, cost-effectiveness, maternity models, incremental costs, incremental utility, maternal outcomes, quality-adjusted life years

Introduction

'Midwifery Group Practice (MGP) caseload care' is a maternity service model in which women receive continuity of care from a known midwife throughout pregnancy, during birth and across the early parenting journey (usually to 6 weeks post-partum). Compelling Cochrane meta-analysis evidence demonstrates that continuity of midwifery care produces significant physical benefits for mothers and babies, with no identified adverse effects compared to fragmented, medical-led models of care [1]. Midwives working in MGP models of care aim to develop a trusting, supportive, long-term relationship between the midwife and a woman, some of whom experience mental health risks, social vulnerability and disadvantage [1].

Despite demonstrated benefits of this model of care, publicly funded MGP caseload care is only available to a small percentage of women, often with low obstetric risk, and in services that have chosen to implement the model. Data from Australia suggest that public MGP caseload is slowly increasing but still only available to a small proportion of women (8–19%) [2, 3]. Providing evidence on likely costs and outcomes may encourage more public healthcare providers to implement this model as a part of routine service provision and facilitate the scale up of this model of care already being offered to some women. Given the large-scale randomized controlled trial evidence of the efficacy of MGP caseload [4, 5], decision-makers also require local-level evidence to demonstrate costs and outcomes in their own settings. This is due to variation in what models of care are currently offered (the main comparator groups), as well as large variations in health service use and costs associated with delivering maternity care between service providers [6].

This study examines the cost utility of a publicly funded MGP caseload model of care compared to other models of care currently offered at a large urban tertiary referral hospital, the Gold Coast University Hospital (GCUH). A cost-utility analysis compares the incremental costs and incremental utility (health gains measured in quality-adjusted life years (QALYs)) between two options. These two groups represent the main decision options for GCUH—whether to offer public MGP caseload to more women or continue with currently provided models of antenatal care. This analysis will assist decision-makers to determine the optimal mix of models of care to offer. This study also provides a methodological framework for others seeking to determine the value of public midwifery in their own settings.

Methods

Australian healthcare context

Within Australia, maternity care is provided through either the public or private system, or a combination of both. Within the public system, women receive antenatal care through hospital outpatient clinics by public hospital-employed midwives and obstetricians; women give birth in the public hospital birth suite or birth centre; and postnatal care is provided, usually at home, by public hospital midwives. This care is funded by federal and state governments, with no payable out-of-pocket fees. Women alternatively have the choice to engage a private obstetrician or a private midwife to provide their antenatal care. This is funded by the federal government through Medicare and out-of-pocket fees. If a woman engages a private obstetrician she then has the choice to give birth in a public or private hospital (usually a private hospital) where the obstetrician has visiting rights, and the hospital stay is funded by the woman's private health insurance and procedures funded by Medicare and out-of-pocket fees [7]. If a

woman engages a private midwife then she will give birth in the public hospital where the midwife has visiting rights, with the hospital stay funded by federal and state governments.

Setting

The GCUH is a publicly funded health service in Australia, annually providing care for over 5000 women giving birth. Currently, 14% of women receive public MGP caseload care, with an organization goal of having 50% of women receiving public MGP caseload care by 2021/22. Although expansion of public MGP caseload midwifery care is already planned to help manage the expected growth in demand, the current analysis is even more pertinent given the recent accelerated decline in demand for births in private facilities, which is particularly pronounced in the Gold Coast region [8]. This decline in demand for births in private facilities and increase in demand for births in public facilities may be due to the rise in out-of-pocket fees for private care [8, 9]. Expanding the provision of public MGP caseload as a model of care is part of the response to managing this; however, evidence is still required by decision-makers on the cost and outcomes of this model.

Study design

Participants already recruited in the **Models Meeting Needs Over Time (MoMeNT)** study, a longitudinal cohort study to evaluate the effectiveness of public MGP caseload care on maternal physical, mental and social well-being, were invited to participate in the health economic analysis study. The MoMeNT study is fully described elsewhere [10]. In summary, a main aim was to compare perinatal outcomes of women according to model of care.

Patient population

Inclusion criteria were women aged 18 years or more, 27 weeks gestation or less and able to complete online surveys in English. Women experiencing a serious mental illness were excluded. Participants were recruited between August 2017 and April 2018.

Recruitment

The MoMeNT study included 309 childbearing women. At booking, all women consented to the health economic phase. A later decision to include babies in the analysis required a re-consenting process. From the original cohort, 46 were lost to follow-up and 263 were eligible to re-consent. Of the 263 eligible women, 170 completed maternal consent forms and 173 baby consent forms (three sets of twins).

Intervention and comparator groups

MGP at GCUH involves one primary, named midwife funded by the public hospital who cares for a caseload of around 40 women per year. The midwife works within a small team (MGP) with other two or three midwives who provide support and backup, with collaboration of hospital doctors if required. Women receiving MGP care may have a range of medical, obstetric or social needs, generally termed an 'all risk model'. Pregnancy care is provided in the woman's home, in community clinics and in the hospital, with labour and birth occurring either in the birth centre (a designated area adjacent to the hospital birth suite) or in the hospital birth suite (for women at higher risk of intrapartum complications). Postnatal care is provided by the primary midwife and may continue up to 6 weeks following birth, dependent on need.

Collectively, all other models of care at GCUH are comparators and include general practitioner (GP) shared care, combined care, public hospital maternity care and public hospital high-risk maternity care, as classified according to the Maternity Care Classification System relative to local care provision (MaCCS) [19] (Box 1). Women receiving private midwifery care ($n=10$) were excluded from the analysis. Midwives in the comparator group provide core (works in one clinical area) or rotating care (rotates to more than one clinical area) within discrete antenatal, birthing, maternity inpatient and universal postnatal home visiting services. Birthing and maternity inpatient services are covered under shift-based care dictated by organizational need. Notably, pregnancy care may be delivered by several different caregivers (midwives, doctors and allied health), and labour and birth care is provided by a practitioner not usually known to the woman. Further, post-partum care generally consists of two follow-up visits in the home by midwives who may not be known to the woman.

Health-related quality of life

Women’s health-related quality of life (HRQoL) was assessed using the Patient Reported Outcomes Measurement Information System (PROMIS®) Global Short Form (GSF) (PROMIS GSF [11]) at study entry, 36 weeks gestation, 6 weeks post-partum, 6 months post-partum and 12 months post-partum. The health states were then converted into utility values by mapping to the EuroQol 5 dimensions (EQ-5D) survey [12]. QALYs were calculated using the area under the curve approach. QALY is a measure of the quality of life experienced during a 1-year time period and has an upper limit of ‘1’. A year of life lived in perfect health would thus be assigned a QALY of 1; anything less than ‘1’ (assuming the person was alive for that year) signifies that the year was spent in a state of less than perfect health. Lower values equate to worse health. A recent validation study examining the internal structure of the PROMIS GSF established its suitability for use in an Australian childbearing sample [10]. Internal consistency reliabilities of the physical and mental health subscales were adequate ($\alpha=0.76$ and 0.75 , respectively) [10].

Cost

Costs were assessed from a health system funder’s point of view, including costs to Medicare, public hospital funders and women through out-of-pocket fees. The main costs of the intervention are midwives’ time to provide care. Under Australia’s activity-based funding model, all midwives’ time with women antenatally, during labour and birth, and postnatally are recorded as activities in the outpatient or inpatient setting. Electronic hospital records were utilized to capture mothers’ inpatient occasions of service, Emergency Department (ED) use, outpatient occasion of service from date of conception to 12 months post birth. Baby’s inpatient occasion of service, ED use and outpatient occasion of service data were obtained from date of birth to 12 months post birth. A follow-up time period of 12 months post-partum was considered appropriate as the decision-making question related to provision of care in Women and Newborn clinics and, thus, care would extend until this time period. All occasions of care during this time period were included. Costs were assigned from the National Hospital Costs Data Collection for the 2017/18 financial year (latest year available) [13]. Medicare Benefits Schedule claims records were requested for all Medicare-funded services. These data contained actual costs of each episode of care to Medicare and individuals through out-of-pocket costs. All costs were converted to 2019/20 Australian dollars using consumer price index [14]. Discounting was not considered useful due to the short duration of the study (1 year and 3 months).

Box 1 Other models of care and description of maternity care provided at GCUH

Model of care ^a	Description
Private midwifery care	Antenatal, intrapartum and postnatal care is provided by private midwives who have formal collaborative arrangements and visiting access arrangements to the hospital. Intrapartum care may take place in the hospital or the home. Postnatal care may continue up to 6 weeks.
Shared care	Antenatal care is provided by the GP in collaboration with the public hospital. Intrapartum and early postnatal care is provided by the public hospital midwives and doctors. Postnatal care (around two visits) is generally provided following discharge by public hospital midwives in conjunction with GPs.
Combined care	Antenatal care is provided by a private midwife (with a formal collaborative arrangement with the hospital) or a private obstetrician, in collaboration with the public hospital. Intrapartum and early postnatal care is provided by the public hospital midwives and doctors. Postnatal care is generally provided following discharge by public hospital midwives (around two visits) or by private midwives (up to 6 weeks).
Public hospital maternity care	Antenatal care is provided in the hospital or in community clinics by hospital midwives and/or doctors. Intrapartum and early postnatal care is provided by the public hospital midwives and doctors. Postnatal care (around two visits) is generally provided following discharge home by public hospital midwives.
Public hospital high-risk care	Antenatal care is provided to women with complex medical, obstetric and/or social needs by obstetricians, and maternal-foetal medicine specialists in collaboration with midwives. Intrapartum and early postnatal care is provided by the public hospital midwives and doctors. Postnatal care (around two visits) is generally provided following discharge home by public hospital midwives.

^aModel of care reflecting the MaCCS [18].

Statistical analysis

Cost-utility analysis was undertaken according to the original allocated model of care. Baseline demographic characteristics were compared for women receiving public MGP caseload and other models of care. A generalized linear model was used to assess differences in costs between the two groups, adjusting for mother’s age, parity, plurality, mother’s education attainment, if the mother’s main language was not English and private health insurance coverage.

Table 1 Baseline characteristics of women receiving public caseload midwifery care, and other models of care ($n = 168$)

	MGP caseload n (%)	Other models n (%)	P^a
Multiparous	37 (43.5)	29 (40.3)	0.68
Multiple pregnancy	0 (0)	6 (8.33)	0.007
Education attainment— more than Year 12	79 (92.7)	63 (87.5)	0.25
Language other than English	8 (12.5)	6 (8.33)	0.81
Private health insurance	50 (58.8)	48 (66.7)	0.31
Age (years), mean (SD)	30.46 (4.39)	31.00 (5.01)	0.73 ^b

^aChi-square test for categorical variables and t -tests for continuous variable (age).

^b $n = 166$.

A negative binomial distribution and log link function were specified to account for skewed cost data. An ordinary least-squares model was used to identify the least-square means in HRQoL, adjusting for the same characteristics and baseline utility. All analyses were undertaken in SAS V9.4.

Results

There were 85 eligible women in the MGP caseload group and 72 in the group receiving other models of care. There were a higher percentage of women in the public MGP caseload group who were multiparous, had an education attainment of more than Year 12 and whose main language was not English, compared to women in other models; however, these differences were not significant (Table 1).

Unadjusted total mean cost for mother and baby's health service use from study entry to 12 months post-partum was \$27 618.38 for public MGP caseload and \$33 608.13 for other models of care. This was mostly associated with differences in costs to public hospital funders for inpatient services (Table 2). Disaggregated costs to other funders are shown in Table 2, generally demonstrating lower costs for MGP caseload compared to other models, with the exception of patient's out-of-pocket costs for mother's health service use and public hospital funders for baby's outpatient use. After adjusting for clinical and demographic differences between groups, total costs were 22% higher (cost ratio: 1.218, $P = 0.01$) for other models of care compared to public MGP caseload. Costs also decreased with mothers' increasing age and were lower for multiparous mothers (Supplementary Table SA).

The total QALYs from study entry to 12 months post-partum was 0.98 (SD = 0.10) for public MGP caseload and 0.94 (SD = 0.12) for other models of care (Table 3). Differences in utility values at different time points are shown in Table 3, generally demonstrating that women receiving MGP caseload reported better quality of life compared to other models, with the exception of the 6-week post-partum time point. Women in the MGP caseload group did have better quality of life at baseline (0.77 compared to 0.74). After adjusting for clinical and demographic differences and baseline utility values between groups, there was no significant difference in QALYs for MGP caseload compared to other models ($\beta_{\text{caseload}} = 0.010$, SE = 0.014, $P = 0.21$) (Table 4).

When considering costs to all funders, MGP caseload cost \$5208 (95% CI: -4252 , -6353) less than other models of care (Table 5). There was no significant difference in QALY gain (0.010, 95% CI:

Table 2 Costs by funder per mother and baby in the public MGP caseload midwifery and other model groups from study entry to 12 months post-partum

Costs	MGP caseload Mean (SD) (\$AUS)	Other models Mean (SD) (\$AUS)
<i>Mother's health service use</i>		
Public hospital funders—inpatient	10 170.44 (6972.79)	15 108.47 (19 311.31)
Public hospital funders—ED	594.85 (1007.03)	941.19 (1960.55)
Public hospital funders—outpatient	5267.35 (2362.74)	4813.78 (3595.53)
Medicare	589.07 (415.29)	702.05 (494.29)
Patient's out-of-pocket	37.27 (121.40)	66.92 (157.28)
<i>Baby's health service use</i>		
Public hospital funders—inpatient	5475.84 (2766.93)	6805.51 (6430.60)
Public hospital funders—ED	896.00 (1279.45)	1018.24 (1895.02)
Public hospital funders—outpatient	3964.22 (2425.73)	3383.01 (2983.12)
Medicare	589.07 (415.29)	702.05 (494.29)
Patient's out-of-pocket	37.27 (121.40)	66.92 (157.28)
TOTAL costs	27 618.38 (11 396.79)	33 608.13 (29 172.04)

Table 3 Difference in HRQoL in the public MGP caseload and other model groups from study entry to 12 months post-partum

Time point	MGP caseload Mean (SD)	Other models of care Mean (SD)
Baseline	0.78 (0.07)	0.74 (0.08)
36 weeks gestation	0.61 (0.15)	0.59 (0.15)
6 weeks post-partum	0.59 (0.12)	0.61 (0.15)
6 months post-partum	0.80 (0.07)	0.79 (0.09)
12 months post-partum	0.80 (0.08)	0.79 (0.08)
QALY gain over time period	0.98 (0.10)	0.94 (0.12)

Table 4 Generalized linear model of mothers' total QALYs gained from study entry to 12 months post-partum, adjusting for clinical and demographic characteristics

	Coefficient (SE)	P -value
Intercept	0.371 (0.097)	<0.01
Other models of care	-0.010 (0.014)	0.49
Age	-0.002 (0.002)	0.14
Multiparous	0.001 (0.014)	0.94
Plurality	0.025 (0.040)	0.53
Education attainment—more than Year 12	-0.069 (0.024)	<0.01
Language other than English	0.026 (0.026)	0.31
Private health insurance	0.007 (0.015)	0.64
Baseline utility	0.819 (0.093)	<0.01

-0.038 , 0.018) over the study period. When considered on a cost-minimization basis, MGP caseload would result in cost savings for all funders, whilst still producing the same health outcomes. When

Table 5 Differences in adjusted mean costs and effects, incremental cost-effectiveness ratios of public MGP caseload compared to other models

	MGP caseload (A)		Other models of care (B)		Difference (A–B)	
	Cost (AU\$)	QALYs	Cost (AU\$)	QALYs	Cost (AU\$)	QALYs
Total costs to all funders						
Least-squares means	23 884	0.918	29 092	0.908	–5208	0.010
95% CI	18 219–31 310	0.868–0.967	22 471–37 663	0.860–0.956	–4252 to –6353	–0.038 to 0.018
Total costs to public hospital funders only						
Least-squares means	22 207	0.918	27 030	0.908	–4823	0.010
95% CI	16 781–29 387	0.868–0.967	20 684–35 324	0.860–0.956	–3903 to –5940	–0.038 to 0.018

only considering costs to public hospital funders, MGP caseload costs \$4823 (95% CI: –3903, –5940) less than other models of care, which also resulted in MGP caseload costing less to public hospital funders, whilst still producing the same health outcomes.

Discussion

Statement of principal findings

This study demonstrated that publicly funded MGP caseload costs 22% less than other models of care, after accounting for differences in baseline characteristics between groups. This is largely driven by lower inpatient costs for women. Whilst women receiving MGP caseload care on average had high QALYs over the time of the study, there was no significant difference between the two groups. Continuing to offer only other models of care costs all funders \$5208 more per woman or only public hospital funders \$4823 more per woman than if publicly funded MGP caseload care was offered.

Interpretation within the context of the wider literature

This novel analysis is one of the first to demonstrate the cost utility of a publicly funded MGP caseload midwifery model of care compared to other models of care. There is a very small body of evidence that identifies variation in costs for different models of maternity care. These results were of a similar magnitude to those found in earlier studies comparing women receiving either caseload midwifery or standard public maternity care [15–17]. An additional study with First Peoples women found that costs were \$703 less per woman receiving caseload midwifery care compared to standard public maternity care [18] (all reported costs were nominal and not adjusted for inflation). The findings of these previous studies are limited, because they did not consider differences in health outcomes produced through a cost-effectiveness or cost-utility analysis. Consideration of health outcomes should be considered alongside differences in costs to ensure efficiency and effectiveness, with health gains maximized at a given level of cost.

Implications for policy, practice and research

The body of evidence regarding the safety and efficacy of MGP caseload care is well established [1]. As such, there is a growing need to assess the real-world outcomes produced by caseload midwifery. The delivery of maternity care is diverse. Antenatal care can be delivered through the public and private sectors, with different types of health professionals (general practitioners, obstetricians or midwives) involved, and in different roles. The setting of care (hospital, community or home) and structure of the care (for example, when antenatal care starts and when postnatal care finishes) can also vary [19, 20]. Furthermore, models of care are not fixed, with new models being developed and their implementation refined [19]. As such,

what constitutes the *status quo* or ‘standard care’ can vary considerably across sites. This makes the applicability of results from clinical trial environments less reliable for local-level decision-makers when exploring whether MGP caseload care will alter health outcomes and costs compared to the care currently delivered within their settings.

Strengths and limitations

The current analysis not only produced evidence around the potential cost-effectiveness of public MGP caseload care compared to other models of care, but also provided a data collection and analysis framework that could be utilized in other settings to produce relevant evidence for decision-making. Outcome measures were based upon the PROMIS GSF [11], which has been validated in the Australian maternity setting [10]. This short 10-item scale can be administered as a part of routine care [10]. Cost data were based exclusively upon routinely collected administrative data. Our study collected both hospital-based and Medicare data, which covered out-of-hospital services. However, our analysis indicated that main differences in cost were driven by hospital-based care and, thus, collection of Medicare data may not be essential—particularly if decision-making around delivery of models of care is made at the hospital level.

The current study did have a number of limitations that need to be considered. The cohort design does not allow causation to be attributed as it could in a randomized controlled trial. As such, results must be seen as associations. The sample was relatively small (96 in public MGP caseload midwifery group and 72 receiving other models of care), which may limit generalizability to other settings. However, we argue that there is a need for local-level data to be produced to inform decision-making based on real-world evidence, accounting for local service and population characteristics.

Conclusions

We were able to demonstrate that public MGP caseload midwifery produces significant cost savings compared to other models of care. These cost savings are mostly driven by women’s inpatient service use and, thus, mostly accrue to public hospital funders. We demonstrated that continuing to offer other models of care cost public hospital funders around \$5000 more per woman than public MGP caseload midwifery. Measuring the cost-effectiveness of different models of care at the local level is feasible and essential for producing real-world evidence to guide decision-making around the most efficient use of health resources in maternity care.

Supplementary material

Supplementary material is available at *International Journal for Quality in Health Care* online.

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Contributorship

E.C. designed the economic evaluation, undertook the analysis and drafted the manuscript. V.S. led the overall study, including participant recruitment. All authors contributed to the interpretation of results and editing the final version of the manuscript.

Ethics and other permissions

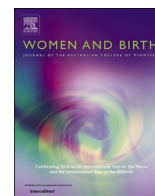
Local ethics approval was obtained from the Gold Coast Hospital and Health Service Human Research Ethics Committee (HREC/17/QGC/127) and Griffith University HREC (GU Ref No: 2017/625), and approval from Services Australia (formerly the Department of Human Services) External Request Evaluation Committee (RMS0193) was also obtained.

Data sharing statement

Our ethics approval prohibits the sharing of data of this study.

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Getting kicked off the program: Women's experiences of antenatal exclusion from publicly-funded homebirth in Australia

Rebecca Coddington^{*}, Deborah Fox, Vanessa Scarf, Christine Catling

Centre for Midwifery, Child and Family Health, University of Technology Sydney, Australia

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ABSTRACT

Problem: Eligibility criteria for publicly-funded homebirth models are strict and, as such, many women who initially plan a homebirth later become excluded.

Background: Fifteen publicly-funded homebirth programs are operating in Australia, offering eligible women the opportunity to give birth at home at no cost, with the care of a hospital-employed midwife.

Aim: To explore the experiences of women who planned a publicly-funded homebirth and were later excluded due to pregnancy complications or risk factors.

Methods: A qualitative descriptive approach was taken. Recruitment was via social media sites specifically related to homebirth in Australia. Data collection involved semi-structured telephone interviews. Transcripts were thematically analysed.

Findings: Thirteen women participated. They were anxious about 'Jumping through hoops' to maintain their low-risk status. After being 'Kicked off the program', women carefully 'negotiated the system' in order to get the birth they wanted in hospital. Some women felt bullied and coerced into complying with hospital protocols that did not account for their individual needs. Maintaining the midwife-woman relationship was a protective factor, decreasing negative experiences.

Discussion: Women plan a homebirth to avoid the medicalised hospital environment and to gain access to continuity of midwifery care. To provide maternity care that is acceptable to women, hospital institutions need to design services that enable continuity of the midwife-woman relationship and assess risk on an individual basis.

Conclusion: Exclusion from publicly-funded homebirth has the potential to negatively impact women who may feel a sense of loss, uncertainty or emotional distress related to their planned place of birth.

Statement of significance

Problem or issue

Strict eligibility criteria for publicly-funded homebirth models mean that many women planning a homebirth are later excluded. Little is known about women's experience of antenatal exclusion from these models.

What is already known?

Publicly-funded homebirth provides access to homebirth midwifery care at no expense to the woman and the model has been positively evaluated by childbearing women and the midwives who work in them. Women who plan a homebirth do so to avoid the medicalised hospital environment and to access

midwifery continuity of carer.

What this paper adds?

Antenatal exclusion from a publicly-funded homebirth program can be distressing and women may wish to continue their plans to give birth at home. Women feel coerced and bullied into following hospital protocols that are not tailored to their individual circumstances. Maintaining the midwife-mother relationship acts as a protective factor, ameliorating some of the negative effects caused by changing a woman's planned place of birth.

^{*} Correspondence to: PO Box 123, Broadway, NSW 2007, Australia.

E-mail address: Rebecca.Coddington@uts.edu.au (R. Coddington).

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Introduction

A body of international evidence shows that in high-income settings, planned homebirth for women at low-risk of complications in labour is safe when they are attended by professional midwives who are well integrated with back up facilities for medical referral and transfer [1–6]. Furthermore, homebirth is not only safe for women with uncomplicated pregnancies, it also significantly increases their chance of achieving a normal birth, with lower rates of caesarean section and obstetric interventions seen in women who planned homebirth when compared with matched cohorts of women who planned hospital births [6,7]. Despite this evidence, in Australia there are significant barriers for women who wish to access homebirth, with only 0.3% of all births occurring at home in 2019 [8].

Currently there are two ways women can access homebirth with the care of a midwife; via engaging a privately practising midwife or via a publicly-funded homebirth program. To date, the majority of homebirth care in Australia has been provided by privately practising midwives, but changes in the past decade to the way private midwifery practice is insured and regulated has seen a reduction in the number of midwives offering homebirth [9,10]. Conversely, the number of publicly-funded homebirth models is increasing. The first publicly-funded homebirth program commenced over 20 years ago in Western Australia [11]. Since that time, a small number of services have been implemented in other states and territories, most since 2004 [9].

Currently, 15 publicly-funded homebirth programs are operating or under development in Australia in seven states and territories including New South Wales, Victoria, Western Australia, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory [12]. This model of care offers women the opportunity to be cared for by midwives who are well integrated into a public hospital system that will provide back up if necessary. As midwives remain employees of the hospital, usually as part of an existing midwifery continuity of care program, they are covered by the hospital's professional indemnity insurance and have access to regular workplace leave entitlements [9]. This also allows women to access homebirth midwifery care at no cost, as this is covered by Medicare, Australia's universal healthcare system. Whilst this model of care increases access to homebirth by eliminating out-of-pocket expenses for women, one of the key differences between the two models is that privately practising midwives have more flexibility around which women they care for [13], whereas midwives working in publicly-funded homebirth models must work within specific eligibility criteria set by the hospital.

Eligibility criteria for access to publicly-funded homebirth models tend to be strict, though not all services follow the same policies and protocols [9,14]. Despite the body of international evidence supporting the safety of homebirth for low-risk women, homebirth remains a contentious choice, with peak professional bodies representing maternity care providers in Australia taking different standpoints on whether homebirth should be available at all [15]. As a result of this tension, and to ensure homebirth is safe for both women and babies, strict guidelines for transfer to hospital-based care are in place [9].

The publicly-funded homebirth model is available to women in Australia experiencing uncomplicated or 'low-risk' pregnancies, who live within a defined distance or travel time to the hospital [14]. 'Low-risk' generally refers to a woman who fulfils the criteria of Category A in the National Midwifery Guidelines for Consultation and Referral [16]. In 2013, a review of maternal and neonatal outcomes achieved in Australian publicly-funded homebirth programs showed a 90% normal vaginal birth rate and low stillbirth and early neonatal mortality rate (1.7 per 1000 births when excluding deaths of babies with known fetal anomalies) [17]. Feedback on the model has been positive from both women and midwives [18–20]. However, the small number of services available (currently 15 services out of more than 250 public maternity hospitals in Australia) means that the number of women able to access this model of care is limited.

For those women who do live within the catchment of a hospital offering this model, fulfilling the eligibility criteria for publicly-funded homebirth is a dynamic process that continues throughout pregnancy. Further to the initial eligibility criteria women must meet to be able to book into the program, the screening tests that most women undergo during pregnancy have implications for their intended place of birth and, in many cases, their model of care and caregiver. In some cases, women who decline such screening are automatically excluded from planned homebirth with the service. As such, many women who were planning to birth at home in a publicly-funded homebirth model are later excluded due to risk factors or complications and are allocated to another model of care and/or caregiver within the public health system.

To date, there is little qualitative research exploring Australian women's experiences of antenatal exclusion from planned publicly-funded homebirth. A recent scoping review by Blums et al. [14] found that there is limited publicly available information regarding inclusion and exclusion criteria for many publicly-funded homebirth programs which is likely to limit women's awareness of and access to these programs. The same authors conducted a survey of 830 women concerning their perceptions of the inclusion and exclusion criteria for publicly-funded homebirth programs in Australia [21]. They found that over half of the participants disagreed or strongly disagreed that obstetric related criteria should be used to prevent women birthing at home and that women wanted their individual perceptions of risk and safety to be central when decisions about transferring to hospital-based care were being made [21]. Previous research into publicly-funded homebirth in Australia has focused on the outcomes and experiences of women who are booked into a program at the onset of labour [17,18, 20,22], the experiences of midwives working in the model [19,22–24] and the cost of the model [25].

The aim of this study was to explore the experiences of women who were booked for a homebirth in a publicly-funded program and were later excluded due to the development of risk factors. More needs to be known about the experiences of women who are excluded from publicly-funded homebirth programs during pregnancy to ensure that, for women seeking to give birth at home, the service is accessible, acceptable and woman centred. The data for this study were collected between October 2018 and August 2019, prior to the Covid-19 pandemic, therefore the participating women's perspectives included here are not influenced by impacts to health services during the pandemic.

Methods

Design

A qualitative descriptive approach was taken [26,27], using semi-structured one-to-one telephone interviews, to understand women's experiences of exclusion from planned publicly-funded homebirth during pregnancy. As there is a significant lack of evidence on this topic, the research undertaken was exploratory in nature and carried out within an interpretive research framework. This allows the researcher to gain as much insight as possible into the experience of participants.

Sample

Participation in the study was open to women over the age of 18 years who had the experience of booking into a publicly-funded homebirth program in Australia within the past five years, and were subsequently excluded from the program due to the development of pregnancy complications and/or risk factors. Women who were never accepted into a publicly-funded homebirth program due to pregnancy risk factors at booking were excluded from the study.

Flyers advertising the study were shared on Facebook social media sites specifically relating to homebirth in Australia. Interested participants were invited to contact the Chief Investigator (RC) via email or

telephone. After receiving an explanation of the process and giving verbal consent, participants who decided to proceed were asked for their contact details. A written information sheet and consent form was then emailed to participants with a request for them to sign, scan and return the form by email. Telephone interviews were then arranged to take place at a time convenient for the participants.

Ethical considerations

Approval to conduct this study was sought and obtained from the relevant university's Human Research Ethics Committee in 2018 (approval no. ETH-18-2191). In order to consider the psychological safety for participants, a distress protocol was devised to ensure any women who were dissatisfied and upset regarding their experiences of being denied the birthplace of their choosing were cared for appropriately. It was anticipated that participants may have also been disappointed in their birth and maternity carer due to the exclusion from the homebirth program. The interviewer was familiar with the protocol and how to counsel any participants should they display any audible signs of distress. All participants were assured that their data would be anonymised and that any identifying details would be deleted. It was stressed that in any publication arising from the data, they would not be identifiable.

Reflexivity

Reflexivity refers to active engagement with one's own self-awareness to identify the impact of our personal values and positions on the research process and type of data collected [28]. All qualitative research is contextual, occurring within a specific time and place between two or more people [29]. The credibility of qualitative research findings is enhanced by clearly describing the context and intersecting relationships between the participant and researcher [29]. In this study, reflexivity was a continual and ongoing process. In order to remain sensitive to whatever the data presented, we employed a number of reflexive techniques including memo writing immediately following interviews, continual conversation amongst co-authors regarding the development of findings, and a general awareness and willingness to challenge our own personal biases about homebirth.

Each of the four authors of this study are registered midwives and have significant research backgrounds related to homebirth with PhD's focused on varying aspects of the topic. The first author, whom led the study and conducted the majority of data collection and analysis, also gave birth to her own children at home and has attended homebirths as a second midwife, meaning she has both insider and outsider positioning on this topic. All authors share a belief that women have a fundamental right to choose their place of birth and are strongly supportive of women being given options for midwifery care outside of mainstream medical models.

Data collection

Semi-structured telephone interviews were conducted by the first and second authors (RC and DF) between October 2018 and August 2019. Telephone interviews provide a rich source of data for qualitative analysis [30] and may even prove advantageous when discussing sensitive information, due to the anonymity provided by not being face-to-face with the participant [31]. Telephone interviews also allowed for data to be collected from diverse geographical locations across Australia, potentially resulting in a broader range of experiences being included.

A semi-structured interview technique was used. Care was taken to use open-ended questions and a funnelling interview technique was employed, beginning with more general questions and then narrowing down to specific topics of interest [32]. Interviews were audio-recorded and transcribed verbatim by a professional transcription service.

Transcripts were then de-identified and participants were given a pseudonym. Transcripts were stored in a secure cloud-based storage system at the University of Technology Sydney. After 15 years data will be destroyed, in accordance with the Australian Code for the Responsible Conduct of Research (NHMRC 2018).

Data analysis

Transcripts were thematically analysed using the methods of Braun and Clarke [33]. The first seven transcripts were coded by the fourth author (CC) to identify patterns in the data and develop initial codes. Codes were derived directly from the data and the research team then met to discuss and develop the data into agreed codes and early themes. The remaining transcripts were then analysed by the first author (RC) and themes were discussed and further refined by the whole team as the qualitative findings were synthesised.

Findings

There were 13 participants in this study from four states and territories of Australia: New South Wales, Western Australia, Northern Territory and Victoria. Interviews typically lasted between 45 and 60 minutes. Data saturation was reached after the first 10 interviews, however a further three interviews were conducted to confirm saturation of concepts had been reached.

Four main themes were constructed from the data. These were 'Jumping through hoops', 'Getting kicked off the program', 'Negotiating the hospital system: coercion and compromise' and 'Bridging the gap: the importance of the midwife-woman relationship after exclusion'.

Jumping through hoops

For women booked into this model, screening and assessment was ongoing throughout their pregnancies, as it is for most women, the difference being that a change in risk status could mean a change in planned place of birth. Participants felt stressed by waiting for results and having to continuously keep within the strict eligibility criteria set by the homebirth program. They referred to this process as 'ticking the boxes', 'making checkpoints' or 'jumping through hoops', as one woman described:

We sort of jumped through all the hoops throughout the entire pregnancy. They warned us that it's trickier with the first birth... I was sort of doing everything I could to make sure I passed (Greta).

Some women reported that the midwife advised them not to get too attached to the idea of a homebirth until they had 'passed the tests':

I think from the very beginning, I remember just talking to one of the midwives about all the different steps that you have to pass along the way. There was a little bit of 'we don't want to talk about homebirth too much at the very start, in case you don't get on [the program]' (Rita).

Women commonly described not being aware of how strict the eligibility criteria were when they first booked into the homebirth program. However, over the course of their pregnancy they became cognisant of how crucial it was to pass every test to prove their low-risk status, otherwise they faced exclusion from the program:

I think that is one of the biggest issues I have with [the publicly-funded homebirth model] now. Like I feel really bad because again, I absolutely love my midwife, but I would never go with the program again just because of that. There's just so many hurdles and so many tick boxes that you don't really realise, especially as a first-time mum (Cindy).

Some women happily accepted this, yet others found it anxiety provoking and it turned them off using the homebirth program and led them to seek alternative options for their care.

Getting kicked off the program

After jumping through many hoops, women expressed their shock at being told they had veered away from a low-risk classification and were no longer eligible to plan a birth at home, as Kirralee described:

I met with [the obstetrician] and he did all of these measurements, and all that kind of stuff. He felt my belly and he was like, "You've definitely got a big baby in there." I was still trying to stay positive. I shrugged it off [thinking] the baby is not going to be so big that I'm not going to be able to give birth to him! He was like, "Yeah, you're not going to be able to do it at home." I was devastated. I was so upset. Then he started talking about the induction (Kirralee).

For some women, their homebirth plans were in place throughout their entire pregnancy, until their pregnancy went beyond their due date. One woman described the disappointment she experienced after reaching full term, having the birth pool set up at home prepared for birth and then being excluded from the program at 41 weeks gestation. She referred to this as being 'timed out':

There's like a bunch of risk factors and things, or check points that you have to reach along the way to stay in the program. I made it through pretty much everything. Then had the last two appointments at home and had the [birth] pool set up, and... I got timed out by going 10 days overdue (Rita).

For many women, being told they could no longer have a publicly-funded homebirth was met with a sense of disbelief and the feeling that care providers were exaggerating the risks. Sometimes they felt that care provider's decisions were not balanced or that they were not taking in an assessment of them as a whole woman:

You went from feeling like nothing can stop you, and you are going to pass all the tests and have this beautiful homebirth that you have wanted for such a long time, to suddenly being in this risk category you never knew existed (Kirralee).

The need to pass numerous checkpoints throughout the pregnancy meant that women were always in doubt about whether they would actually give birth at home through the publicly-funded program. They were aware that with each screening test there was a possibility that their plans would have to change. This provoked a constant sense of anxiety. One woman described the midwife telling her she had 'failed' the Glucose Tolerance Test and knowing immediately that this meant she was no longer eligible for homebirth:

I was disappointed. I remember my midwife rang me and said "You failed that quite terribly" and the first thing I said to her was 'Oh, no more homebirth' (Aminah).

Another woman explained her decision to engage a privately practising midwife after having an elevated blood sugar reading in early pregnancy and being told she was no longer eligible for a publicly-funded homebirth:

I was quite upset... I said, "Is there anything I can do? Because I really want to have a homebirth." And they said, "Well, you could get the blood sugar test, again, just to check that the result was reliable." And I did that. The [second] test was in a normal range. But, by that stage, because I had been upset about being kicked off the homebirth program, and because it had become so clear to me how easy it was to not be allowed within that system, to have a homebirth, I had already decided to go with a private midwife (Marion).

Marion's experience was reflective of several women who decided to seek care elsewhere as they felt that their status in the publicly-funded homebirth model was precarious. Many of these women decided to pursue homebirth with a private midwife instead.

Some felt they had no choice but to freebirth without any health care professional present, in order to plan for the birth they wanted, as Rachel

recounted:

In the end I just felt like it wasn't worth it. The amount of hassle, trying to convince some person who doesn't know me that I'm allowed to do what I want with my body just wasn't worth it (Rachel).

Rachel went on to describe how for herself, and other women she knew, the choice to freebirth was often because of poor access to homebirth services:

Having freebirthed myself now I know of a lot of women, locally and around Australia who are freebirthing and a lot of them would like to have a midwife but they just can't because of where they're living or whatever the situation is... I would like to have another baby and I would like to have a midwife at the next birth (Rachel).

Getting 'kicked off' the program was distressing for some women as they had to mentally prepare for a different place of birth. This experience tended to be easier for women who were in agreement that a hospital birth was now the safest plan for them and/or their baby. For those who were unconvinced by their care provider's advice, the restrictions regarding where they could give birth were more difficult to accept.

Negotiating the hospital system: coercion and compromise

Following exclusion from publicly-funded homebirth, women felt they needed to carefully negotiate 'the system' in order to get the birth they wanted in hospital. The hospital was seen as a rigid place where women's individual needs were not considered. Often women's initial motivation for a homebirth was to avoid the standard hospital care provided, and to their mind, avoid the risk of unnecessary interventions. There was an understanding that the hospital system was governed by policies which were often 'risk averse'. Participants described how information regarding potential risks were weighted towards the worst-case scenario if interventions were not consented to, rather than care providers explaining all the risks and benefits involved. This often led to a sense of mistrust regarding the advice being provided by health professionals and women wanting a more balanced explanation:

[The obstetrician] told me about the risks that he wanted me to know about, but not really about any risks that I associated with induction. It was more just about the risk if I don't get induced (Cindy).

For some women, negotiating the system meant fighting hard for what they wanted, even amidst immense pressure to accept interventions. Several women described feeling bullied, as Natalia described:

We really genuinely feel like the doctor who was on at that particular point, there was this quite bullying behaviour... I was pretty strong in saying, "I'm not interested in making any decisions or taking any action towards induction tonight." She literally, without exaggeration, slammed her folder down and walked out. I didn't see her again. So that was her response to me choosing what to do with my body (Natalia).

The policies of the hospital dictated the advice given to women, which was seen as inflexible, and not tailored to their individual needs. One woman described this as being a 'Victim to criteria' (Rita).

Women noted that obstetricians were particularly challenged when discussing their options following the development of risk factors and attempted to coerce women into certain decisions. Many women stated that they were told by obstetricians that their baby could die, should they not follow their advice. On reflection, women felt the risks were being exaggerated in order to coerce them into accepting interventions:

I did a lot of research about my pregnancy, about everything. And I was very firm on the facts, and on everything that I needed to know. [The obstetrician] really tried to scare me into the induction... He was just like

‘the longer you wait’... He pretty much quite bluntly said to me, ‘Your baby’s gonna die if you don’t get induced’ (Cindy).

It was clear that many women felt pressured to comply with interventions they were not convinced were necessary and, at times, the care provided was not appropriately individualised or woman-centred.

Bridging the gap: the importance of the midwife-woman relationship after exclusion

Due to the diverse nature of each publicly-funded homebirth program’s operating procedures, levels of continuity of care experienced by women following being excluded from the program were varied. For women who stayed in the hospital system, some were able to maintain continuity with their midwife and simply changed the planned place of birth to hospital. Others, however, lost their relationship with their known midwife and became part of a fragmented model, receiving standard midwifery care or care in the doctor’s clinic. Women had a strong preference for maintaining care with their known midwife:

If I had been told I had to leave MGP [continuity of care model] and go to the hospital, that would have been far more traumatic. The fact that I was able to have this journey of having to reorient myself from having a homebirth to a hospital birth [was difficult] but keeping the same midwives made it a much more gentle experience (Kate).

Once they had developed risk factors, many women wanted their known midwife’s support to negotiate the next steps in their journey:

I guess the bigger issue for me was, although I was really, really sad about not having the homebirth. It was more, “Okay, so what’s happening now to my midwives?” I wanted her to be there with me whether I was at home or in the hospital (Cindy).

Women who were excluded from publicly-funded homebirth often found themselves outside of their comfort zone, needing to readjust their expectations for their birth. When midwives were able to act as a mediator between the woman and the hospital, they supported women to effectively negotiate their changing expectations. Several women described how their midwife advocated for them, ‘bridging the gap’ between the birth they wanted, and the birth they were experiencing:

[The midwife] came in and we had a good chat... she was able to advocate for us so that I was able to have a water birth [in hospital], because we were planning a water birth at home. Initially they’d said that I wouldn’t be able to have a water birth... [but] she was able to advocate for us and get that, and I think for us that helped to bridge the gap between what we’d wanted and what was unfolding (Natalia).

Women appreciated the advocacy midwives provided to not rush an intervention that was not urgently needed, as this woman described before her induction of labour:

Even the night before [my induction] when we were at the hospital getting the [CTG] monitor on we had a different obstetrician sort of waltz in and he wanted to start everything straight away. Even then [our midwife] really stood up for us and was like, ‘I think we can wait, at least until the morning. Let’s do an examination and see where you’re at and let’s just hold you off’, sort of thing... so again, I still don’t actually know how much she put herself in possible trouble just to be there for me (Cindy).

Some women felt they weren’t well prepared for the possibility of being excluded from having a publicly-funded homebirth and that the communication wasn’t handled well by their midwife, as Rita described:

I really enjoyed the MGP. On reflection, once we did kind of get kicked off, I didn’t think it was handled that well. There wasn’t that bit of compassion or just understanding [of the impact on me]. And I thought we were really reasonable. I wasn’t in tears or, you know, blaming anyone or angry. It was just, [my reaction] was not even noticed in some ways (Rita).

When midwives demonstrated that they understood and empathised with the woman’s disappointment about not being able to birth at home, it helped women to feel supported and that their feelings were validated. Midwives also ‘bridged the gap’ between hospital and home by rearranging the hospital space, so it was more home-like and conducive to optimising physiological processes:

Two out of the three midwives [in the MGP team] I was dealing with regularly were both homebirth midwives, they’d had homebirths themselves and I think they just really understood the disappointment I felt not being able to and they did everything they could to be able to help allay my fears... That was really, really reassuring and she just spoke to me about some other ways that women she knew had made the birthing suite a bit more personal to make it a pleasant experience (Kate).

The need for women to ‘jump through hoops’ throughout pregnancy led to an ongoing sense of anxiety due to the uncertainty around their planned place of birth. Women who felt the risk factors they developed were a valid reason to discontinue their plans for homebirth found it much easier to adapt to making a new plan for birth. Maintaining their relationship with their midwife was a protective factor, supporting women to manage changing expectations and ameliorating their sense that they were being coerced into complying with strict protocols that did not account for their individual needs.

Discussion

Homebirth remains a contentious issue in Australia with maternity care providers’ peak professional bodies taking differing stances on whether homebirth should be available to women who seek it [15]. Women’s access to publicly-funded homebirth is governed by strict eligibility criteria, including the geographical location of their home and whether their pregnancy is deemed as being at low-risk of complications. Previous research by Catling-Paull et al. [18] found that women appreciated the safety-net of the publicly-funded homebirth model and the seamless interaction between hospital and home. Our findings indicate that whilst this is true for some women, others were significantly affected by being excluded from publicly-funded homebirth and did not always feel adequately supported by care providers when risk factors or complications arose. It was evident that women planned to give birth at home because they believed this was the best and safest place for them to give birth. When women were told those plans needed to change, some had trouble accepting this advice and mourned the loss not only of their planned place of birth, but also the loss of the midwife-woman relationship.

A survey by Sassine et al. [34] exploring Australian women’s reasons for planning a homebirth indicated that women’s primary motivations were to avoid the medicalised hospital environment and to gain access to continuity of midwifery care [34]. Nearly one third of the 1681 women surveyed revealed that their desire to have a homebirth was related to a previous hospital birth experience that was traumatic (n = 32%) which in 6% of cases lead to a diagnosis of post-traumatic stress disorder [34]. A past traumatic birth experience has previously been linked to women’s decisions to freebirth or use an unregulated birth worker [13,35]. More explicitly, women have reported their experiences of psychological birth trauma in hospital to be related to a prioritisation of the care provider’s agenda over their own needs and a sense of being told ‘lies and threats’, combined with an experience of ‘violation’ [36]. Similarly, in our study, women recalled the stress they felt when negotiating the hospital system as they tried to navigate advice from health professionals which they felt was coercive and bullying. This led some women to exit the publicly-funded homebirth model and seek care with a private midwife or to birth at home unassisted.

Given the strict eligibility criteria to access publicly-funded homebirth programs, it is apparent that many women who initially book in for a homebirth will later be ‘risked out’. Sassine et al.’s [34] survey of women who planned a homebirth in Australia indicated that 60% of

women in the study had at least one risk factor that would have excluded them from a publicly-funded homebirth program. Our findings revealed that some women felt coerced and mistrustful of the hospital system. They described needing to spend considerable time and energy working out how to negotiate the hospital system to meet their needs. Often, women's perceptions of risk to themselves did not correlate with the inclusion criteria related to the homebirth service. Lane and Reiger [37] argue that institutions' attempts to 'organise' risks and manage uncertainties often align with neo-liberal philosophies and, in particular, the medical discipline. Consumer and midwifery organisations continuously lobby for more care options and choices for women. Conversely, the medical discipline-heavy hierarchy of the hospital system (with its emphasis on risk, budget, and efficiency) clearly delineates women as having either 'low' or 'high' obstetric risks, disregarding philosophical attitudes or risk perceptions of the women themselves. It was evident in our study that participants felt at the mercy of the hospital system, sometimes coerced into care options that they did not want, and that their views on their 'risk' status were not heard.

Hunter et al. proposed that 'the quality of relationships is fundamental to the quality of maternity care' [38]. Our findings demonstrated that when women were able to maintain their relationship with their known midwife, it ameliorated the impact of having to change their planned place of birth. Women were reassured that their known midwife understood what was important to them and would advocate for their needs in the hospital setting. This is aligned with research on the midwife-woman relationship in continuity models [39–41] and previous research on women's experiences of transfer to hospital during labour after planning a homebirth [22,42]. Research by Fox et al. [22,42] pertaining to women's experiences of intrapartum transfer from planned homebirth showed that women felt reassured during the antenatal period when they were prepared for the possibility of intrapartum transfer to hospital. Feeling connected to a hospital during pregnancy helped women feel more prepared for an intrapartum transfer as they had some knowledge of the destination hospital in the event of a transfer [18,22,42]. This integration of care is an advantage of publicly-funded homebirth programs. Coddington et al. [23] also described midwives' sense of reassurance in the event of transfer when working in publicly-funded homebirth models. Our findings, however, indicate that some women did not feel adequately prepared for antenatal transfer or exclusion from the model and, at times, did not feel that their midwife understood the emotional impact this might have on them.

Publicly-funded homebirth programs have the potential to make planned homebirth accessible to women who are not financially able to pay out-of-pocket for a privately practising midwife. Long ago, the World Health Organization stated that for equity, maternity services needed to be accessible, acceptable, and available [43]. Over 40 years later, in Australia, a high-income country, many women are still unable to access the maternity carer and birthplace of their choice. More work needs to be undertaken to ensure that when women book into a homebirth service and then have their planned birthplace changed due to ineligibility, they are assessed on a case-by-case basis and receive woman-centred, evidence-based care that is tailored to their needs [44]. Given the current COVID-19 pandemic, many women are considering homebirth as a more appealing and safer option than hospital to give birth [45]. More publicly-funded homebirth services need to be developed to meet consumer demand, but we need to ensure that these services are offering a safe and satisfying pregnancy and birth experience for all women.

Strengths and limitations

As previously stated, the data for this study were collected prior to the COVID-19 pandemic, therefore the women's perspectives included do not incorporate impacts to health services during the pandemic. We see this as a strength as it allows for analysis of this topic separate from impacts of the pandemic on women's birth choices – a topic which has

since been addressed by other researchers. The sample size was appropriate for an in-depth qualitative study and data saturation was reached with a number of differing viewpoints expressed by participants. Another strength of the study was that we recruited nationally, and participants came from four states out of the six which were operating publicly-funded homebirth programs at the time of data collection. However, given the lack of homogeneity of services offered in different states and territories throughout Australia, it is possible that the experiences of women in the states we were not successful in recruiting from are different from those who participated.

Conclusion

Publicly-funded homebirth has the potential to increase rates of normal birth and make women's choices to plan a homebirth more broadly accessible, including for those women who cannot access private midwifery care. However, women's experiences of exclusion from the program need to be considered. Our study indicates that women can be excluded from accessing publicly-funded homebirth care at any point during their pregnancy, leading to an ongoing sense of anxiety and the need to potentially make significant adjustments regarding their plans for birth late in the third trimester.

Exclusion from publicly-funded homebirth can negatively impact pregnant women who may feel a sense of loss, uncertainty or emotional distress related to their planned place of birth. Whilst some women are able to continue care with their known midwife and plan a hospital birth, others who wish to continue their plans for a homebirth may feel they are left no choice but to urgently seek the services of a privately practising midwife or to freebirth, unattended by any healthcare professionals. When women are enabled to maintain continuity with their known midwife, their disappointment about changing their planned place of birth may be reduced and they benefit from their midwife's advocacy in the hospital environment.

Further research should focus on the communication and interaction between women and their care providers when exclusion from homebirth and antenatal transfer to hospital-based care is recommended. Service providers need to be supported to develop integrated systems that support women's needs and meet the expectations of the maternity care system and those who work within it.

CRediT authorship contribution statement

Rebecca Coddington: Conceptualisation, Methodology, Investigation, Data Curation, Formal analysis, Writing - Original draft preparation, Writing - Reviewing and Editing. **Deborah Fox:** Conceptualisation, Data curation, Formal analysis, Writing - Original draft preparation, Writing - Reviewing and Editing. **Vanessa Scarf:** Formal analysis, Writing- Reviewing and Editing. **Christine Catling:** Formal analysis, Writing- Original draft preparation. Writing - Reviewing and Editing, Supervision.

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Ethical statement

None declared.

Conflict of interest

None declared.

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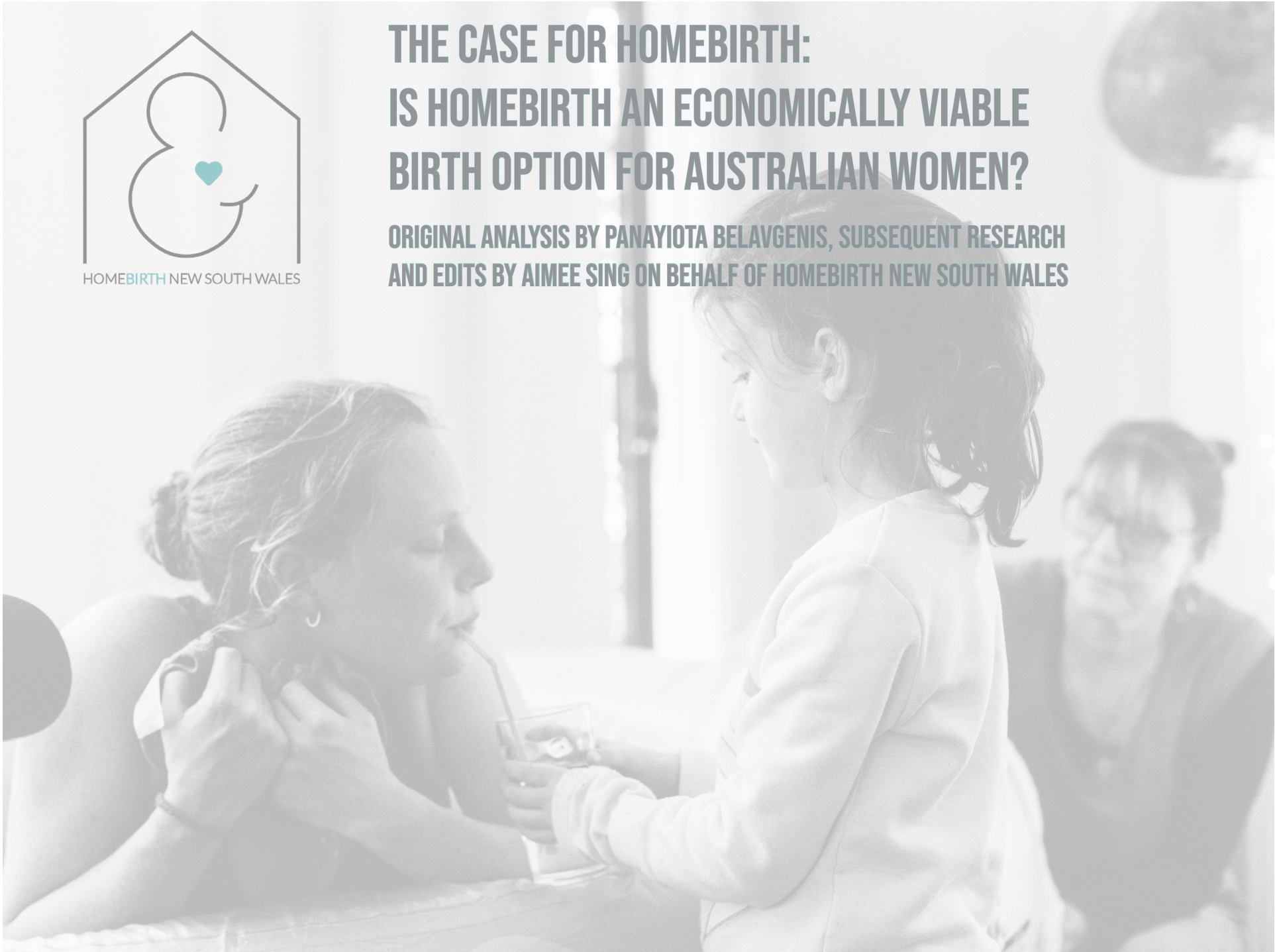
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HOME**BIRTH** NEW SOUTH WALES

THE CASE FOR HOMEBIRTH: IS HOMEBIRTH AN ECONOMICALLY VIABLE BIRTH OPTION FOR AUSTRALIAN WOMEN?

**ORIGINAL ANALYSIS BY PANAYIOTA BELAVGENIS, SUBSEQUENT RESEARCH
AND EDITS BY AIMEE SING ON BEHALF OF HOMEBIRTH NEW SOUTH WALES**



ABSTRACT

BACKGROUND:

As time progresses, less women are giving birth naturally. While some surgical and assisted births are necessary, and some are elected by the mother, many are due to unnecessary and undesired hospital interventions. We theorise that homebirth can provide not only an optimal environment for birth to unfold naturally, but can also reduce financial investments of women, healthcare services and government, when made more accessible. Our aim was to summarise the impacts of birth interventions on women, and determine the financial costs associated with antenatal, intrapartum and postnatal care when provided by different care providers under different settings.

METHODS:

Information about intervention rates, health risks and some financial costs were obtained through a review of the available scientific literature.

RESULTS:

By combining datasets from recent research, we were able to calculate the costs of different interventions for women and the public purse, and obtain an overall estimate of the cost-savings (i.e. \$390,508,568 savings to public purse) that could be made by redirecting a substantial percentage of the population of birthing women to birth at home, rather than in a hospital set-

CONCLUSION:

We propose that with an increase in the financial support provided for homebirth through Medicare rebate, there is the potential for large economic savings for women, healthcare services and the government. This would occur via redirecting some of the patient load into private care whilst also reducing the likelihood of unnecessary (and financially costly) birth interventions which hold the potential for ongoing financial costs through the access of mental health services, urogynaecological services, physiotherapists and other ongoing care requirements.

INTRODUCTION

Normal birth is defined as giving birth without interventions such as an epidural, spinal analgesia, forceps, vacuum extraction, caesarean section, episiotomy, induction, augmentation or caesarean section (Homer et al., 2019, Reitsma et al., 2020). While around 66% of births in Australia occur vaginally, 19% are instrumental (forceps and vacuum extraction), 22% include an episiotomy, 36% involve the use of regional analgesia (epidural or spinal), 31% are induced and a further 31% are augmented with synthetic hormones during labour (Australia's mothers and babies report, 2016). Even if a woman has laboured and birthed her baby without intervention, the birth of the placenta (third stage) is almost always achieved after an injection of Syntocinon, a synthetic hormone used to augment labour which has recently been linked with perinatal depression and anxiety (Kroll-Desrosiers et al., 2017). While it is difficult to tease out the rate of 'normal birth' from these statistics, published estimates vary from ~1-10% of Australian births. Normal childbirth provides an optimal start for the mother-baby dyad and consequently supporting normal birth can have far-reaching effects on health and wellness of mother and baby (Kroll-Desrosiers et al., 2017; Peters et al., 2017), and also potentially holds large economic impacts for healthcare services and consequently the government.

The promotion and support of normal birth and consequently safety for mothers and babies occurs most when the woman is cared for continuously by a known midwife (Sandall et al., 2016). While some hospitals offer caseload programs, where women are under the care of a team of midwives, the truest form of continuity of care is afforded through the provision of Homebirth services, particularly those services provided by a Privately Practising Midwife (PPM). Furthermore, the access to commonly used and often unnecessary hospital interventions is limited in a homebirth, thus further promoting the option of normal birth (Homer et al., 2019; Reitsma et al., 2020). Accordingly, homebirth results in significantly higher rates of normal vaginal birth, lower rates of intervention, severe perineal trauma and haemorrhage, and no difference in infant mortality, when compared to birth in other settings (Scarf et al., 2018; Homer et al., 2019; Reitsma et al., 2020). However, homebirth is currently the least accessible birth option in Australia, accessed by only 0.3% of women; that's less than the 0.4% of women who birth before arriving at a hospital or birth centre (Australia's mothers and babies report, 2016).

In Australia, Homebirth is only accessible via few publicly funded (and severely restrictive) homebirth programs or through significant financial investment by the mother to employ two PPMs (as required by the NMBA guidelines), of which there are few. The Australian government has neglected to fund homebirths through the Medicare system despite multiple campaigns and petitions requesting this, and only small rebates exist for antenatal and postnatal care (Medicare, 2019). While publicly funded homebirth (PFHB) programs do exist, these are few (16 in Australia) and far between (none in Queensland or Tasmania). Additionally, PFHB programs are typically not well publicised, are restrictive and inconsistent in their entry criteria based on the mother's location, birth history and pregnancy testing, much of which mothers are unable to opt out of, and provide instability in care, with women often reporting that they have been 'kicked off' the PFHB program due to changes in their care or care provider.

This study aims to identify intervention rates and summarise the financial costs of pregnancy, birth and postnatal care undertaken with different care providers in different settings.

METHODS

An initial search into academic journals yielded some information about birth interventions and the effects that these can have on babies, but less information on the effects endured by women and the long-term effects and financial implications these interventions, different models of care and different birth settings hold for women, families, communities, healthcare services and the government. Accordingly, government websites related to Australian based health care (e.g. Medicare), maternity care, pregnancy and postpartum were relied on for sourcing the majority of this information. Even so, there was a limited amount of accessible information regarding the costs of birth, particularly compared in different settings, and thus some investigative research was undertaken by contacting a local hospital (Bankstown Hospital) and speaking with women who had recently birthed within the different systems.

RESULTS & DISCUSSIONS

ACCESSIBILITY TO HOMEBIRTH SERVICES

Unfortunately, homebirth is typically limited in accessibility, being a valid option only for those who live near enough to, and fit the exclusion criteria of, Publicly Funded Homebirth Programs, or who have the financial capacity and access to employ a Privately Practising Midwife (PPM). Homebirth with a PPM is further restricted for many women because of Medicare and Professional Indemnity Insurance issues encountered by PPMs.

MEDICARE

There are a number of issues regarding access to homebirth, particularly surrounding the support to, and eligibility of, midwives in private practice. An eligible midwife is a qualified midwife who meets the requirements of the NMBA and renders a Medicare rebatable service in collaboration with a GP, health-care service or healthcare practitioner. Eligible midwives are required to be registered with the Australian Health Practitioners Regulation Agency (AHPRA), have the equivalent of three years full time post-registration experience as a midwife, demonstrate continued competence in the provision of pregnancy, labour, birth and postnatal care to women and infants, and have successfully completed the appropriate programs' of study. **While an eligible midwife can provide Medicare rebatable antenatal and postnatal care, there is not yet an item number provided for intrapartum care, meaning that this part of a woman's care (the most costly in terms of invoicing) is non-rebatable. In this way, homebirth is only accessible by women who have the financial means to pay for a PPM, unless they are able to obtain access to a PFHB program.**

PROFESSIONAL INDEMNITY INSURANCE

All healthcare providers are required to hold professional indemnity insurance in order to provide healthcare services (Health Practitioner Regulation national law NSW – section 129). No insurer has provided a PII product for PPMs for many years, and thus PPMs and homebirth with a PPM was set to become illegal. Due to substantial lobbying and campaigning, an exemption was provided for PPMs so that they did not have to hold PII to attend homebirths, but this exemption has never been followed up with an appropriate solution. The exemption has lapsed and been reinstated after public outrage several times, yet Australia's PPMs remain uninsured today, with the newly reinstated exemption set to lapse on 31st December, 2021. Multiple politicians have said they are committed to finding a solution to this issue, but as yet, none has been provided. While the homebirth community was relieved that the exemption was extended, so that homebirth with a PPM could remain a valid birthing option in Australia, PPMs still remain uninsured which puts themselves, their businesses and their families at risk.

INTERVENTIONS

Rates of intervention differ between women, care providers and birth settings (Scarf et al., 2018; Homer et al., 2019), not only during birth, but antenatally and postnatally too. Given all interventions hold risk, it is imperative that the mother is at the centre of her care choices, choosing which interventions she undergoes to ensure the optimum health and well-being of herself and her baby, regardless of care provider and setting. Homebirth is one model of care that can provide full autonomy and control to the woman throughout her antenatal, intrapartum and postnatal care without compromising safety for the baby, and increasing the chances of normal birth for the mother (Scarf et al., 2018; Homer et al., 2017; Homer et al., 2019)

Induction refers to the artificial commencement of labour, while augmentation is the artificial speeding up of labour. Common reasons for induction include the pregnancy going past the due date, pre-term or pre-labour rupture of the membranes, and concerns about the health of the baby or mother (Smith, Armour and Dahlen, 2017), though there is speculation that induction is often undertaken for the convenience of clinicians, the woman and/or her family. Augmentation typically occurs when labour has slowed due to inefficient or poor uterine contractions (WHO, 2014). Induction and augmentation of labour in Australia is typically undertaken using Syntocinon, though the use of this drug holds risks for both mother and baby (Boie et al., 2018) and has been linked with perinatal anxiety and depression (Kroll-Desrosiers et al., 2017; Peters et al., 2017). In Australia, labour is induced in 31% of mothers, and augmentation after spontaneous labour onset occurs in a further 31% of mothers (Australia's mothers and babies report, 2016). Accordingly, ~62% of mothers receive Syntocinon prior to or during their labour, with even more women receiving Syntocinon for the management of the third stage of labour (estimates suggest around 95-99% of all births). Given the administration of synthetic Oxytocin during the peripartum stage increases the risk of postpartum depressive and anxiety disorders by 32-36% (Kroll-Desrosiers et al., 2017), and holds additional risks for mothers and babies (Boie et al., 2018), it is imperative that induction of labour only occurs when absolutely medically necessary. During a homebirth, Syntocinon is unavailable for the induction or augmentation of labour, and is only kept on hand for the management of third stage should that be medically necessary, thus reducing the risk of this intervention in the homebirth setting. A recent study reported that while 16.5% of low-risk mothers received augmentation during their planned hospital births, only 3.4% received it when planning a homebirth (Homer et al., 2019).

CAESAREAN SECTION

Caesarean section rates are on the rise in Australia, currently sitting at 34% (Australia's mothers and babies report, 2016) which is significantly higher than that of the OECD average (OECD, 2015) and the World Health Organisation's recommendation of 10-15% (WHO, 2015). Many caesareans are scheduled, 'elective' caesareans due to a previous caesarean (ACSQHC, 2014) or for non-medical purposes, while many others occur because of the 'cascade of interventions' where a woman has one intervention leading to another and so on, ending in caesarean section. Despite the continuous rise in interventions, particularly caesarean sections, over the past decade, the rates of perinatal death have not declined (WHO, 2015), though there has been an associated increase in adverse outcomes for long-term childhood illnesses (Peters et al., 2018). This increase in long-term childhood illnesses further burdens our healthcare system, leading to more financial effects and economic disadvantages. The rates of caesarean section are significantly lower in planned home vs. hospital births, being 2.4% vs. 7.8% in low-risk, Australian women (Homer et al., 2019).

INSTRUMENTAL DELIVERY

Instrumental delivery refers to the use of instruments such as forceps and ventouse to assist a woman to give birth vaginally. There are several reasons forceps or ventouse may be used, but the main ones are concerns about baby's wellbeing during the birth, baby does not descend as expected or the mother has been instructed not to, or cannot, push during the second stage of labour (RCOG, 2012). Instrumental birth holds risks for both mother and baby. In the baby, these risks typically include bruising, cuts or cephalohematoma and associated jaundice, though rarely it can also result in spinal injury, skull fracture, haemorrhage and facial nerve palsy (RANZCOG, 2016). In the mother, risks include excessive bleeding, postpartum haemorrhage, severe perineal trauma (4% for ventouse, 8-12% for forceps), urinary tract, pelvic floor and anal sphincter injury (RANZCOG, 2016). In Australia, ~11% of births occur with ventouse assistance and 8% with forceps assistance (Australia's mothers and babies report, 2016). Instrumental delivery results in severe perineal trauma in 7.2% of cases (Australia's mothers and babies report, 2016) which holds significant implications for postnatal maternal health and well-being physically and psychologically. Low-risk, Australian women planning a homebirth have significantly lower rates of forceps and ventouse usage compared to those planning a hospital birth (Homer et al., 2019).

Episiotomy involves the cutting of a woman's vagina to aid in vaginal delivery, with the main aim of preventing rupture of perineal and vaginal tissues (i.e. tearing). While episiotomy can assist in the delivery of the baby in difficult situations, ~22% of births in Australia involve an episiotomy (Australia's mothers and babies report, 2016), and in many instances (26%) women report neither being informed nor consulted about the procedure (Thompson and Miller, 2014). The likelihood of receiving an episiotomy is higher in planned hospital and birth centre births compared to planned homebirths (Scarf et al., 2018, Homer et al., 2019). Episiotomy can hold significant implications for women with regards to postpartum healing, wound infection and long-term mental health.

INFORMED CONSENT

One of the main reasons many women choose to birth outside the system, at home, is to maintain bodily autonomy and a sense of control (Jackson et al. (2020), Dahlen and Schmied, 2012). Indeed, studies suggest that in many instances in the hospital setting, women are not consulted or informed about differing procedures they are being offered or exposed to, with somewhere between 2% (for epidural analgesia) and 34% (for episiotomy) reporting that they were not consulted about the procedure they experienced (Thompson and Miller, 2014). The lack of consent afforded to women at any time of their life, but particularly in such a vulnerable time as giving birth, holds the potential for severe, long-lasting implications regarding the woman's mental health. Indeed, women's experiences of birth trauma are known to result in mental health issues including post-traumatic stress disorder (PTSD) and postnatal depression/anxiety (White et al., 2006; Beck, 2004).

MENTAL HEALTH

Besides immediate risks of interventions to mother and baby, there are potentially long-term risks posed to the mother's mental health, which hold the potential for increased financial costs. McCauley et al. (2011) explains, “[p]re-existing mental illness, a history of significant life events such as physical or sexual abuse, experience of postnatal depression (PND), or issues relating to grief and loss may all place women at risk of antenatal depression and/or PND . . . The process of childbirth itself involves many psychological and emotional changes that may influence existing mental health problems to relapse or recur, including psychotic symptoms . . .” Studies suggest that the occurrence of birth complications increases the odds of a woman developing PND by 174% compared to having no complications (Myers and Johns, 2019). In homebirth situations, women are less likely to have medical interventions and overall, less likely to have labour complications (McIntyre and Boxell, 2012), which supports homebirth as a potential method for reducing postnatal mental health complications. Besides important individual and familial effects, the reduction of mental health disorders also alleviates the financial load encountered by healthcare services and government. On average, 1/3 of Australian women leave their births with some sort of birth trauma, and 1/10 have resultant post-traumatic stress disorder (Simpson et al., 2018). It is imperative that women feel autonomous and are in control of interventions that occur during their pregnancy, birth and postnatal periods, not only to themselves, but also to their babies.

COSTS

FINANCIAL IMPACTS ON WOMEN

While there seems to be minimal literature providing insight into the costs that women encounter when giving birth, the department of social services, overseen by the Australian Government, has funded a website that provides cost comparisons of public/private hospitals, birth centres and homebirths. This website, Birth Choices Raising Children Network, compares the costs associated with differing birth locations. They describe the associated costs as being the least expensive and mostly Medicare covered for birth in a public hospital, birth centre or Publicly Funded Homebirth (PFHB) program followed by birth in homebirth with a Privately Practising Midwife, or a private hospital birth with a private obstetrician (Table 1). These results suggest that while homebirth costs the individual woman substantially more than a public hospital birth, it is typically comparable to birth with a private obstetrician in a private hospital (Table 1). However, it is important to acknowledge that the number of interventions received tends to increase in a hospital setting when compared to a birth centre or at home (Scarf et al., 2018, Homer et al., 2019; Reitsma et al. 2020). Accordingly, the costs of birth for the woman choosing to birth in a private hospital with a private obstetrician, and the costs to the public purse for all other birth options, tends to increase when women choose to birth through either private or public hospital systems (Tracy and Tracy, 2003).

Birth location	Cost of antenatal, birth and postnatal care	Notes
Hospital (public)	\$0 - \$1,500	Medicare covered
Hospital (private)	\$2,500 - \$30,000	\$2,500 - \$20,000 if you have private health insurance, \$9,000 - \$30,000 without. Cost varies dependent on the care needs of mother and baby
Birth Centre	\$0 - \$1,500	Medicare covered
Homebirth (publicly funded)	\$0 - \$1,500	Medicare covered
Homebirth (PPM)	\$3,500 - \$6,000	Medicare rebates for antenatal/postnatal care only, no intrapartum Medicare item number

Table 1: The costs of pregnancy, birth and postnatal care encountered *by women* under different models of care, with differing birth locations, from Birth Choices Raising Children Network

Note: PPMs can also be employed to provide care within the hospital setting. In a public hospital, the fee would remain as listed for Homebirth (PPM) with some potential deductions for intrapartum care, however in a private hospital the fee would accumulate based on both the PPMs fees and those of the Obstetrician with whom they collaborate.

An Australian study conducted by Tracy and Tracy (2003) compared the costings associated with differing interventions during childbirth. They did this using the Australian Refined Diagnosis-Related Group (AR-DRG) codes from the Australian Institute of Health and Welfare, based on data from 1996/1997 (Table 2). They reported significant increases in the costs associated with birth, and consequently encountered by the public purse when interventions occurred, including a 21% increase in the cost of birth when induction alone was involved, and up to a 159.3% increase in cost when a caesarean section was required (Table 2). While these costings take into consideration the cost to the public purse for each event for each woman, they don't account for the ongoing costs associated with birth trauma both physically and psychologically, and they are also now outdated.

Birth type	AR-DRG code	Costs	Cost ratio	Percentage increase in cost
Straightforward vaginal birth	060D	\$1717	1	NA
Induction only	-	\$2077	1.21	21%
Instrumental delivery	060B	\$2306	1.3	34%
Epidural only	-	\$2455	1.43	43%
Epidural and induction	-	\$2644	1.54	54%
Caesarean section	-	\$4452	2.5	159.3%

Table 2: The costs of different types of birth absorbed by *healthcare services* and consequently government, as calculated and detailed by Tracy and Tracy (2003).

Note: PPMs can also be employed to provide care within the hospital setting. In a public hospital, the fee would remain as listed for Homebirth (PPM) with some potential deductions for intrapartum care, however in a private hospital the fee would accumulate based on both the PPMs fees and those of the Obstetrician with whom they collaborate.

Preliminary comparisons suggest that the cost ratios associated with labour and birth models of care are consistent across different countries and also over time, where the cost ratios calculated based on data obtained from 1989 and reported in Clarke et al. (1991) were closely comparable with those observed in Australian data from 1996/1997 (Tracy and Tracy, 2003). A further Australian study by Levett et al. (2018) reported the costs associated with the same AR-DRG codes reported by Tracy and Tracy (2003). This again allowed comparison of cost ratios over time, revealing that the cost ratios and percentage increase in costs remain very similar across the two datasets (Table 3).

Year of data from AR-DRG	Birth type	AR-DRG code	Costs	Cost ratio	Percentage increase in cost
1996-1997	Straightforward vaginal birth	060D	\$1717	1	NA
2013-2014		060C	\$4832	1	NA
1996-1997	Instrumental delivery	060B	\$2306	1.3	34%
2013-2014		060B	\$6423	1.3	33%
1996-1997	Caesarean section	O01B/C	\$4452	2.5	159%
2013-2014		O01B	\$11645	2.4	141%

Note: Tracy and Tracy (2003) costs were based on births occurring in 1996/1997 and Levett et al. (2018) costs were based on data from 2013-2014.

Based on the consistencies in cost ratios, we estimated the current day impact of interventions on the costs of birth, similar to that reported by Tracy and Tracy (2003) so that we could compare these costs with those encountered by the public purse in a homebirth setting in the current day. Accordingly, a straightforward vaginal birth costs the public purse approximately \$4832 per woman compared to substantial increases in these costs with increasing interventions (Table 4). A cost to the public purse of \$4832 is almost comparable to the costs encumbered by women (\$3500-\$6000) when hiring a PPM for their antenatal, intrapartum and postnatal care (Table 1). Given birth at home results in significant reductions in the rates of induction, instrumental delivery, analgesia and caesarean section (Scarf et al., 2018, Homer et al., 2019; Reitsma et al. 2020), and that continuity of care with a midwife reduces interventions and improves outcomes for mothers and babies (Sandall et al., 2016), birth at home would be associated with reduced primary and secondary costs. When comparing the costs associated with different care providers in different birth places for low-risk women, Tracy and Tracy (2003) reported substantial savings in the public system compared to the private, with private obstetricians having the highest cost overall. These costings would have increased substantially over the last 16 years.

Birth type	Costs	Cost ratio	Percentage increase in cost
Straightforward vaginal birth	\$4832	1	NA
Induction only	\$5846	1.21	21%
Instrumental delivery	\$6281	1.3	34%
Epidural only	\$6909	1.43	43%
Epidural and induction	\$7441	1.54	54%
Caesarean section	\$11645	2.4	141%

Table 4: Present day ESTIMATES of costs of different types of birth absorbed by *healthcare services* and consequently government as calculated using data reported by Tracy and Tracy (2003) and Levett et al. (2018) and adjusting current day values with prior determined cost ratios for data not published.

Note, Tracy and Tracy (2003) costs were based on births occurring in 1996/1997 and Levett et al. (2018) costs were based on data from 2013-2014. These are estimates of current day costings based on the cost ratios obtained in previous research and applied to current day costings for those data that were otherwise not yet published.

OVERALL FINANCIAL IMPLICATIONS OF USING DIFFERENT MODELS OF CARE

In Australia in 2016 there were a total of 311,104 births (AIHW, 2016). Approximately 26% of all births in Australia occurred in private hospitals (80,887 women), and 0.3% (905) occurred at home. While some of the women birthing at home would be doing so through PFHB programs, at a cost to the public purse, it is unknown how many women actually achieve this method of birth. If we factor in that all homebirths occurred at a cost to the woman, the overall number of women birthing at a cost to the public purse is ~229,312. Given 91% of these births were at term (AIHW, 2016), we need to factor in that at least 9% of the births would not be able to occur at home, even if that was the original plan, which is approximately 27,999 births all up. Some of these likely occurred in private hospitals also, which complicates these calculations, however if we say that all of these women gave birth at a cost to the public purse then we have 201,313 women.

If we do very basic, preliminary calculations of what would occur if all of these women were birthing at home instead of the hospital, based on the costings data that was provided by Levett et al. (2018), the rate of interventions data from Homer et al., (2019), and the population data from the AIHW (2016), we observe a saving of \$390,508,568 based on changes in the intervention rates and consequent costs alone (Table 5). These savings would only increase further if the flow-on effects of minimising birth interventions were calculated, through savings to the public purse (and the individual women) of postnatal care, mental health care, physiotherapy, urogynaecological care and others.

Birth type	Costs	% of women ^a	Number of women	Total cost to public purse
Homebirth				
Straightforward vaginal birth	\$4832	95.2	191,650	\$926,052,800
Induction only	\$5846	3.4	6,845	\$40,013,777
Instrumental delivery*	\$6281	2	4,026	\$25,288,939
Epidural only	\$6909	3.3	6,643	\$45,898,760
Caesarean section	\$11645	2.4	4,832	\$56,262,957
Total cost to public purse if homebirth were funded by government = \$1,093,517,118				
Hospital birth				
Straightforward vaginal birth	\$4832	78.6	158,232	\$764,577,111
Induction only	\$5846	16.5	33,217	\$194,184,507
Instrumental delivery*	\$6281	11.9	23,956	\$150,469,187
Epidural only	\$6909	13.8	27,781	\$191,940,269
Caesarean section	\$11645	7.8	15,702	\$182,854,611
Total cost to public purse = \$1,484,025,685				

Table 5: Cost analysis of different birth types coupled with statistics of births in Australia taken from AIHW, 2016 and Homer et al., 2019 with costs based on data from Tracy and Tracy (2003) and Levett et al. (2018) as described in Table 4. This data was based on a total birthing population able to have a homebirth of 201,313 women which was calculated by the total number of Australian births minus those birthing in private hospital and home, and having premature births, as described in the text.

^a Percentage rates of interventions as described in Homer et al., 2019.

*Instrumental delivery includes both forceps and ventouse extraction, where rates at home and in hospital are provided in Homer et al., 2019.

CONCLUSION

The transition from a maternity system which predominantly funnels women's care into the hospital system, where women experience high rates of intervention at a cost to the public purse, to a maternity system selecting homebirth as a valid care model, would provide significant financial savings to the public purse (up to **\$390,508,568**). Furthermore, the reduction in interventions experienced by women birthing at home as compared to within the hospital system would further reduce the secondary costs encountered by women and the public, through minimising required mental health, physiotherapy, urogynaecological and other post-partum care. Additionally, neonatal morbidity and mortality is no different between home and hospital birth settings (Scarf et al., 2018), but women do report improved rates of birth satisfaction when receiving continuity of midwifery care (Sandall et al., 2016), which is highly likely to lead to reductions in the rates of birth trauma, post-traumatic stress disorder and maternal suicide rates post-partum. However, the choice of place of birth and care provider should always sit with the woman, as that is where the greatest rates of birth satisfaction and safety are observed.

In conclusion, it is imperative that further consideration of the public funding of homebirth for Australian women be considered in future policy and legislative decisions, and also in Medicare Benefit Schedule reviews. The redirection of birthing women to models of care that reduce intervention rates and consequent costs to their physical and psychological health and welfare has the potential to provide enormous financial savings to the public purse, and also has substantial flow on effects into the community with regard to improved psychological health and welfare. We support that the choice of place of birth and care provider should always remain with the woman, as that is where the greatest rates of birth.



HOME**BIRTH** NEW SOUTH WALES

CONTACT

AIMEE SING-PRESIDENT

PRESIDENT@HOMEBIRTHNSW.ORG.AU

ORIGINAL ANALYSIS

PANAYIOTA BELAVGENIS

SUBSEQUENT RESEARCH AND EDITS

AIMEE SING



HOMEBIRTH

HOSPITAL

**REFERRAL REFUSAL:
AN INVESTIGATION INTO THE REASONS
FOR AUSTRALIAN GPs
REFUSING REFERRAL TO PRIVATELY
PRACTISING MIDWIVES**



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INTRODUCTION

Upon realising they are pregnant, 90.1% of Australian women will first consult a General Practitioner (GP) with the remainder of women consulting an Obstetrician (OB), midwife (Adams et al., 2017) or seeking no consultation at all. This statistic suggests that Australian GPs are the gatekeepers to maternity care, being most commonly approached to connect women with their potential pregnancy care providers and inform them of their birthing options (Stevens et al., 2014). The most easily accessible and affordable maternity care available in Australia occurs via public hospital, where women are cared for by OBs and/or midwives (Adams et al., 2017). Australian women can also receive care from midwives through publicly funded birthing centres or homebirth programs, though these are restrictive and rare, or with Privately Practising Midwives (PPMs), though the Government funding and private health insurance rebates for this model are very low (Adams et al., 2017) and accordingly monetary cost to women is high.

Pregnancy and birth care options outside the hospital system are increasing in popularity (AIHW, 2018), in many instances due to less chance of birth interventions and therefore greater potential for bodily autonomy (Scarf et al., 2018). With 99.3% of all births in Australia taking place in a hospital or birthing centre, and 0.4% occurring prior to arrival at their chosen place of care, homebirths only account for approximately 0.3% of all births (AIHW, 2018). However, 74.3% of Australian women who choose homebirth for a subsequent pregnancy have previously given birth, many of these occurring in a hospital setting (AIHW, 2010). This high statistic raises the question, “Why are women seeking birth outside the hospital for subsequent pregnancies?” For many women, birth trauma received within a hospital setting is a factor (Holten et al., 2018), with 1/3 of Australian women reporting birth trauma (Boorman et al., 2014) and somewhere between 1/5 and 1/8 of women leaving birth with post traumatic stress disorder (Schwab, Marth and Bergant, 2012; Dekel, Stuebe and Dishy, 2017). Women report they birth outside the system in order to avoid hospital interventions, perceiving risk to be higher in the hospital than at home (Jackson et al., 2012; Jackson 2014). Furthermore, women who’ve chosen to birth at home after a previous hospital birth report that they experienced lack of autonomy during their hospital births leading to unwanted interventions, and were consequently seeking empowerment, self-education and awareness in their subsequent birth experience (Holten et al., 2018). So why do these women choose care with a PPM over other options?

Research supports that midwife-led continuity of care increases rates of spontaneous vaginal birth and reduces the use of regional analgesia, potential for preterm birth and foetal loss, improving maternal morbidity, neonatal mortality and women's satisfaction with their pregnancy and birth (Sandall et al., 2016). With the knowledge that only 8% of Australian women obtain continuity of care (Dawson et al., 2016), employing a PPM is one way to ensure this continuity. Beyond this, many women choose a PPM as they desire a care provider who shares the same childbirth philosophy, who understands the woman and her needs, and can offer a strong, trustworthy, genuine relationship at a time where she is particularly vulnerable (Davison et al., 2015). Despite the literature supporting midwife-led care as improving safety, patient satisfaction and maternal morbidity, the Australian Medical Association (AMA) state that, "Midwife-led care should not become the standard" (AMA, 2018). Furthermore, the Royal Australian College of General Practitioners (RACGP) note that their GPs recognise the importance of making informed choices and therefore can offer patients a tailored pregnancy experience, however only in adherence to the integrated pregnancy care model involving themselves and obstetricians alongside midwives (RACGP, 2018). Indeed, the medical community favour OBs and GPs over PPMs based on the perception that they provide 'adequate' pregnancy care that apparently PPMs cannot (Haertsch et al., 1998). Accordingly, the current Medicare Benefit Schedule (MBS) guidelines follow this recommendation, requiring that if women are to receive Medicare rebates for their antenatal and postnatal care with a PPM they must obtain a referral from their GP showing a collaborative agreement between the midwife and GP (DOH, 2013; RWH, 2018), though collaboration in the reverse (GP to midwife) is not mandated.

In 2014, Stevens and others reported that of 93 GPs surveyed in South Australia, 43% were not being notified of the periodic changes within the available models for pregnancy, birth and postnatal care. Given the majority of pregnant women seek information firstly from their GP, this indicates that women's access to knowledge of all available options when engaging their GP is somewhat up to chance. If GPs are unaware of the pregnancy, birth and postnatal care options available to women, and yet somehow a woman decides she wants to receive care from one of the minority options, her likelihood of obtaining a referral to this model of care is low. This is even more likely given the disdain held for the midwifery profession and the statements released by the AMA (2018) and RACGP (2018). It is important to note here that a GP referral to any model of care does not constitute endorsement of that model, but rather support for the woman's choice, referring on both care and responsibility to the referred party. Despite this, there have been multiple reports of women being refused a referral from their GP to seek antenatal and postnatal care with a PPM. Consequently, this study aims to determine how widespread this issue is, understand the main reasons provided for referral refusal, explore how GPs are interpreting the collaborative guidelines and report on the main impacts caused to women by GP referral refusal to PPMs in Australia.

METHODOLOGY

ONLINE SURVEY

To determine the lived experiences of PPM referral refusal by Australian women, we released a survey on September 18th, 2018 via Homebirth Access Sydney's social media channels, namely Facebook. The survey was directed towards Australian women who had experienced PPM referral refusal and consisted of the following questions:

1. Were you denied a referral to a Privately Practising Midwife by your GP?
2. When?
3. Suburb of where the GP is located
4. How long were you a patient of this practice/GP at the time of the referral refusal?
5. What were the reasons you were given for why your GP refused to refer you to a Privately Practising Midwife?
6. What were some of the impacts of the refusal to refer you to a Privately Practising Midwife?
7. What is your GP's/practice name and/or contact details?
8. Do you have any more information you would like to add?

INTERVIEWS AND EFFORTS FOR COLLABORATION WITH GPs

Based on the quantitative and qualitative observations obtained from the survey responses, we planned to conduct interviews with the GPs of the women surveyed. The interviews consisted of questions related to the GPs history with referring to PPMs as follows:

- What is your history with referring to PPMs?
- Why do you choose to refer/not refer to PPMs for antenatal and postnatal care?
- If you choose not to refer due to insurance limitations, who is your insurer?
- If you choose not to refer due to potential litigation, please describe that situation.
- If you are not comfortable referring, why?

Furthermore, we spoke with our own GPs to obtain information about their views on the referral refusal issue, most of who were known to refer their patients to PPMs as required.

RESULTS

SURVEY FINDINGS

Our survey remained open for 66 days, and during this time we received 57 responses. The primary reason provided to women by their GPs for refusing to refer to a PPM was that they favoured OB or GP led care (27%; Figure 1). This was followed by the GP believing care with a PPM to be unsafe (23%), their insurance would not cover them to refer to a PPM (20%) or they were bound by practice policy dictating they couldn't refer (9%; Figure 1). Of the remaining 21% of respondents, 13% said there were no midwives available, 4% said their GP wouldn't refer as they weren't confident in homebirth and 5% said they were unsure why their GP refused to refer (Figure 1).

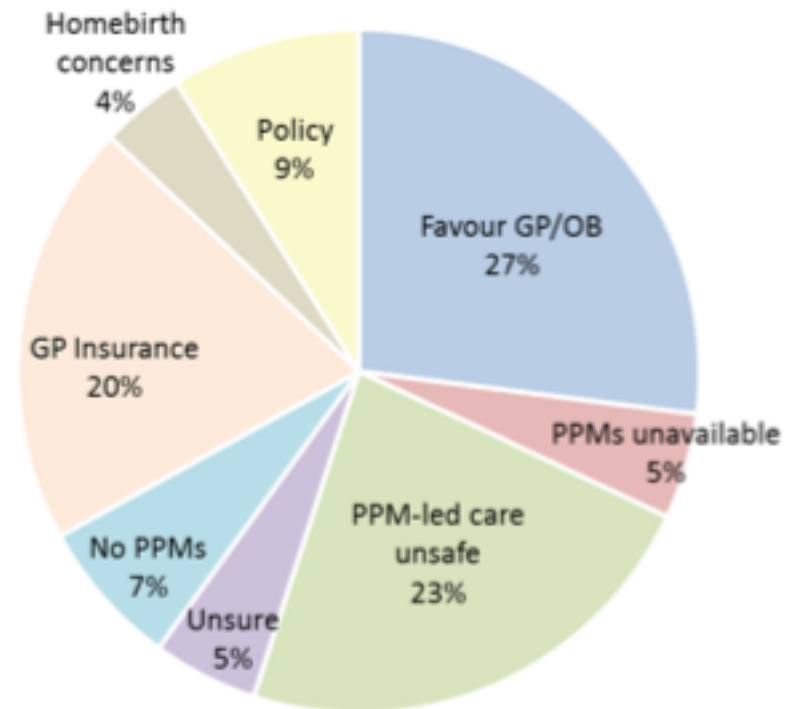


Figure 1: Reasons GPs refused to refer their patients to a Privately Practising Midwife.

Of the 57 responses received in the survey, 47 said they were refused a referral (82% of respondents) while only 10 said they gained a referral from their GP (18%; Figure 2). The majority of referral refusals occurred in NSW (18), Victoria (13) and Western Australia (8), with less occurring in Queensland (3), Tasmania (2), Australian Capital Territory (1) and South Australia (1; Figure 3).

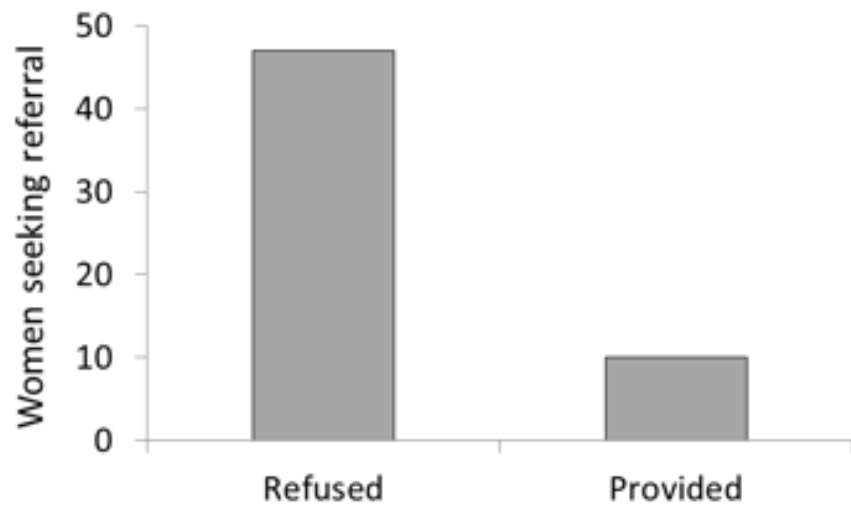


Figure 2: Number of women who were refused vs. provided referrals to a PPM after asking their GP.



Figure 3: Number of women who were refused a referral to a PPM in each state.

Finally, 50% of the women who responded said they had been a client of their GP for 1-5 years, 21% for more than 5 years, 19% for less than one year and 10% said they were a new patient (Figure 4). Accordingly, the women being refused referrals, and having to seek referrals from other GPs, were overwhelmingly (71%) a patient of that GP for at least 1 year prior to asking and being refused a referral to a PPM (Figure 4). Of the 41 respondents who answered to the personal impact of the referral refusal, 44% said they “Felt emotional distress”, 36% had to find a different GP to make the referral, 6.5% said they were unable to access a private midwife, 5% said they hired a midwife but couldn’t claim any costs through Medicare, 4% said they were unable to have a homebirth and a final 4% said they decided to birth at home without a midwife in attendance.

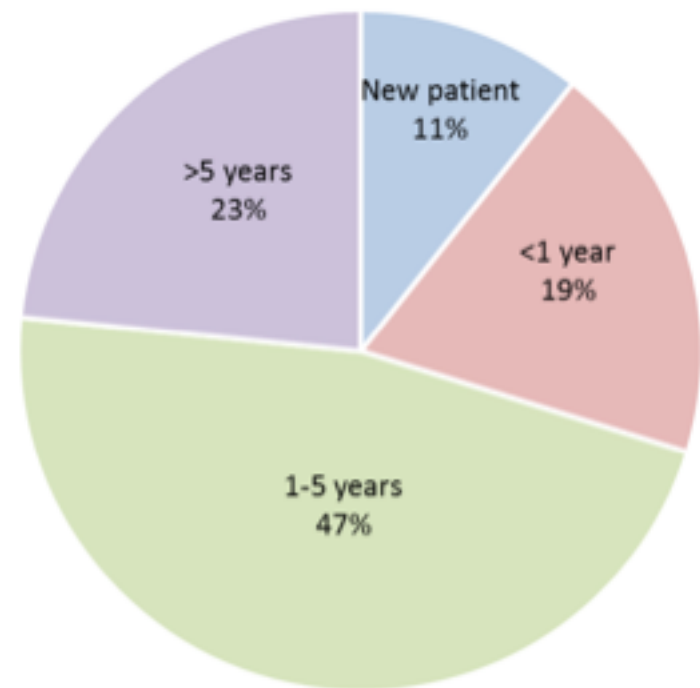


Figure 4: Length of time women had been patients of the GP who refused their referral to a PPM.

Respondents also had the opportunity to provide further details of the impact the referral refusal had on them in the 'other' text box. Some of the responses were as follows:

“I told this GP that unless there is a legitimate medical reason to intervene I will not feel safe going into hospital as my first experience was traumatic and resulted in PTSD that I am still accessing treatment for 3.5yrs later. I gave her many statistics and facts about the safety of HBAC/VBAC but felt unheard and dismissed.”

-ID: 14334770

“Feel unable to go back to that clinic now even though I've gone there for years. Felt dismissed and judged.”

-ID: 14335512

“I had to lie about my reason for referral.”

-ID: 14335489

At the end of the survey respondents also had the opportunity to provide additional information. Some of these responses were as follows:

“I stopped going to this GP immediately. She later sent me a letter to say our ‘trust had been broken’ and she did not want to see me as a patient anymore.”-ID: 14337581

“She spoke to me as if I’d asked her to do something illegal. It wasn’t a positive way to begin my birth journey.”-ID: 14341166

“Every time I went in for other matters then pregnancy or before I found a midwife he constantly pushed me to see an OB to get checked even though I was having my 3rd baby and was having a very healthy pregnancy. Every apt was a fight that midwives know what they are doing and that I had zero intention of seeing an OB.”-ID: 14349884

“I asked if there was another GP within the clinic who would do the referral for me and I was told that there was not.”-ID: 14335489

“I know how important it is that women get these referrals. I had my baby unassisted at home... It was a half an hour labour. Very fast. It was really important that I had midwifery care - Continuity of care, with a midwife who knew my history. I was on the phone to her during my labour. She knew my concerns. She worked with me throughout the pregnancy. It was extremely frustrating - I felt strangled. I felt like I was suffocating. It was the care I needed, and not to be able to access it was frustrating.”-Women X

GP INTERVIEW FINDINGS

Unfortunately, despite contacting many of the GP's that women had listed as not supporting their choice to obtain a referral to a PPM, these GPs either avoided our calls, did not return our calls or noted that they were unavailable for comment. Through discussing this situation with our own personal GP's who were known to refer, we obtained varied responses. Mostly, these responses included some combination of:

1. The Medicare Benefit Schedule guidelines are unclear, and so open to interpretation.
2. It is unclear whether these GP's insurers will cover them to refer to PPMs
3. It is a personal choice who a GP refers to, and if they don't feel comfortable referring to a PPM, they are not bound to do so, and
4. Fear of litigation if something were to go wrong during the care provided by a PPM. Despite a referral noting that antenatal and postnatal care would be provided by the PPM, in instances of investigation the GPs felt that they could be held accountable, as they are still considered the most qualified person to provide 'adequate' care (as noted earlier in the RACGP guidelines).



Figure 1: Published Repsonse by Doctor Hans Peter Dietz

A number of women had contacted HAS both directly and through the survey tool to advise us that a particular practice in the Blue Mountains had a policy limiting their GPs from referring to PPMs. We were aware that a local PPM had been trying to engage this practice for the past five months to provide an in-service, as many of her clients were being refused referrals, yet she had had no success. Consequently, we tried multiple times to contact this practice beginning on the 7th February, 2018 in a hope that we could collaborate with them and obtain further information about their understanding of collaborative arrangements with PPMs. Unfortunately our calls and emails were ignored or unreturned, we were provided erroneous email addresses and twelve emails from local women, including patients, were ignored despite being received. Once we addressed the issue with our local MP, who had personal contact inside the practice, we received an email from the practice manager explaining that they would not provide these referrals as their GPs did not have obstetric qualifications, don't have insurance to attend homebirths and accordingly can't provide referrals to women in case something goes wrong at the birth. Despite continued efforts to explain why this reasoning wasn't in line with current expectations, recommendations and guidelines, we were told they would contact their insurer. After a further five months of no contact, and in an effort to hold off local women from conducting a protest, an article was released in the Blue Mountains Gazette in which a HAS representative and GPs from the practice were able to provide input (BMG, 2018). This article received severe and personalised backlash from both the GPs at the local practice and a local OB/gynaecologist, beginning an onslaught of letters to the editor from local women and a GP. Unfortunately, the referral refusal with this practice remains, and any potential for collaboration with the practice is likely destroyed.

Mums-to-be miss out of midwife referral

B.C Lewis

Local News



A group of Mid Mountains mothers is furious that a local doctor's surgery is refusing to refer expectant mothers to midwifery services covered by Medicare.

Aimee Sing, a consumer advocate with Homebirth Access Sydney and part of the Blue Mountains homebirth community, claims Hazelbrook General Practice has been refusing to refer women to privately practising midwives (PPMs) for their Medicare rebatable antenatal and postnatal care for the past 15 months. At least 10 women have been affected.



A protest in Sydney in May this year: The Mothers for Midwives March was "protesting situations like the need for PPMs to get referrals from GPs" said Dr Sing, who is second left in the second row at the bottom. Photo: Jerusha Sutton Photography

Under Department of Health guidelines for privately practising midwives, a collaborative arrangement with a medical practitioner and a midwife requires a written referral.

"HGP has recently implemented a blanket policy which stipulates that GPs working within the practice are not allowed to provide referrals to women seeking the care of a PPM," Dr Sing said.

"This blanket policy is not evidence-based, does not provide personalised care, is discriminatory against PPMs and is limiting women's pregnancy, birth and postnatal care options," she said.

But the practice said there is some confusion over the referrals, leading to them being "targeted by a local home birth supporter" and "singled out for criticism by doula Aimee Sing".

"This criticism seems to come from a misunderstanding of the legislation. The Medicare initiative requires home birth midwives

to forge meaningful relationships with other local obstetric services," Dr Sarah Horniblow said in a statement to the *Gazette*.

"The intention is to make home birth safe and well supported for our mothers and babies. We absolutely support this initiative."

And Dr Linda McQueen added "We're just not in a position to assist with those obstetric emergencies if things were to go wrong".

Dr Horniblow said they were not interested in providing "token referrals". The practice is encouraging their "obstetric colleagues at referral hospitals to enter into dialogue with the home birth midwives and to support safe collaboration".

But Dr Sing said there was no confusion. "The Department of Health note that eligible midwives can treat their own patients in collaboration with other maternity care providers including GPs, GP obstetricians and specialist obstetricians".

"Since GP referrals to PPMs only cover antenatal and postnatal care, they do not require any action by the GP during the referred woman's birth. Nowhere in any regulation, legislation or guideline does it state that the referring GP would be expected to attend a homebirth, or to provide obstetric or emergency care to a woman during her birth."

Dr Sing said they had made multiple attempts to contact the practice manager – through a local midwife, consumer advocates, clients of the practice, and they had even sought help from Blue Mountains MP, Trish Doyle's office.

The *Gazette* spoke to one mother who had two previous home births but was then refused a referral by the practice for a third. The mother said the clinic told her they were no longer able to give referrals "because our insurance doesn't cover it".

A spokeswoman from Ms Doyle's office said they were just trying to open up dialogue between the mothers and the clinic, but had to date not been successful. "We have an interest in making sure women have access to choices, they said they were trying to get clarification from their insurers."

Figure 1: Original Article in the Blue Mountains Gazette

DISCUSSION

WHY WOMEN ARE REFUSED GP REFERRALS TO OBTAIN CARE WITH A PPM

The reasons for GP referral refusal are mixed, however the top 3 reasons were that: a) the GP preferred pregnancy care to be undertaken by an OB or GP rather than a midwife, b) they believed care with a PPM to be unsafe, or c) they believed their insurance would not cover them to refer to a PPM (Figure 1). We discuss each of these topics separately.

a) GPs prefer pregnancy care to be undertaken by an OB or GP

Studies, policies and statements from various medical organisations have all supported the basis for this first finding, that GPs prefer pregnancy care to be undertaken by a GP or OB than a midwife. RACGP noted that pregnancy care can involve midwives, but only alongside OBs or GPs (RACGP, 2018), the AMA stated that “Midwife-led care should not become the standard” (AMA, 2018), and a study reported that the medical community favours OBs and GPs over PPMs for providing ‘adequate’ pregnancy care (Haertsch et al., 1998). Indeed, one of our GP interviews yielded that the GP believed that the medical community held greater respect for those in the ‘medical profession’, suggesting that midwives are always considered in these circles as being ‘less than’ other care professionals. This predisposition towards supporting OBs and GPs ahead of midwives has led to the Medicare guidelines that require women to obtain GP referrals to their PPM if they desire to obtain rebates for their care. Not only does this result in negative effects and experiences for women seeking referrals, but it also continues to degrade midwifery as a profession, removing the autonomy of midwives and further fuelling the belief that midwives are unable to provide autonomous, complete pregnancy care to women.

b) GPs believe care with a PPM to be unsafe

There are many studies supporting the safety of midwife-led continuity of antenatal, birth and postnatal care for mothers and babies (Sandall et al., 2016; Tracy et al., 2013; McLachlan et al., 2012). Despite these, there is still a deep-set belief that midwifery-led care is unsafe, and this is quite likely worsened by statements from organisations such as the AMA pushing women away from midwife-led care, and pushing GPs away from referring women to such care (AMA, 2018). It is becoming increasingly important that visible, highly regarded organisations like the AMA and RACGP provide statements and guidelines that are evidence-based rather than biased towards personal experiences, predilections and personal preferences. In the words of a GP who wrote in to the Blue Mountains Gazette in response to an article published on referral refusal (BMG, 2018), “GPs need to look at the evidence and re-think their traditional antipathy to women who choose the option of birthing at home.” Beyond this, we believe this should extend to the midwives who provide women this option of care, and even further, to those who simply seek antenatal and postnatal care with a PPM.

c) The GPs insurance would not cover them to refer to a PPM

We are yet to be provided with the name of a single insurer who refuses to support GPs to provide referrals to women, perhaps because there is truly no desire to collaborate with us to sort through this issue. One of the main issues causing contention in this debate is whether birth at home is safe, but the referrals being provided to women seeking care with PPMs are ONLY for antenatal and postnatal care. Accordingly, GP referrals do not cover the intrapartum care provided by a PPM to the women, and accordingly they do not indicate an endorsement for homebirth by the referring GP. This is an aspect that was raised multiple times with the Blue Mountains GP practice when discussing this issue, as one of their main concerns was that their GPs were unable to provide intrapartum, obstetric care to women, despite this care not ever being assumed or expected. Nowhere in any guideline is it inferred that a referring GP would be expected to provide intrapartum care to a woman. It is extremely important that this aspect of referral is made clear to referring GPs as any concern around homebirth complicates the referral process and reduces the likelihood of referral. Furthermore, the guidelines within the regulatory documents (e.g. DOH, 2013) need to be clarified so that GPs can feel confident that they aren't precluded from referring to PPMs if they desire, and so that they are aware that they are only referring for antenatal and postnatal care.

HOW WIDESPREAD IS GP REFERRAL REFUSAL IN AUSTRALIA?

GP referral refusal occurs Australia wide, with the largest number of refusals occurring in New South Wales (18), Victoria (13) and Western Australia (8; Figure 3). Large discrepancies were observed between states, and while part of this may have been due to increased survey infiltration in states nearer to our organisation (HAS is based in Sydney, NSW), it is more likely explained by differences in collaboration observed between states. We were made aware that many of the PPMs in Queensland and South Australia have collaborative agreements set up with local OBs, so women seeking care with these particular PPMs don't have to ask for a referral. The lack of survey responses from the Northern Territory is because there are no PPMs able to work in the Northern Territory due to the current political climate. The only way midwifery care at home can be received is through the hospital, thus women don't seek referrals from their GPs or OBs.

HOW DOES GP REFERRAL REFUSAL IMPACT WOMEN?

Given 50% of respondents had been a patient of their GP for at least 1 year prior to being refused a referral (Figure 4), and the majority of these women expressed they felt emotional distress and/or had to find an alternative GP to make the referral, this suggests a breakdown of relationship with one of their main care providers. If the woman was one of the many who received a referral from a different GP, it is questionable whether this promotes safety for women and babies given all of the collaborative information throughout the woman's pregnancy, birth and postpartum would be forwarded to a GP who otherwise has no knowledge of the woman's medical history. From a safety standpoint based on continuity of care alone, it is arguable that regardless of the GP's stance towards PPMs, they should refer their patient to whoever the woman desires so that they can continue to provide that woman and her baby care. One woman surveyed noted she addressed the GPs concerns directly, yet they were unwilling to discuss the situation. Another noted that she lied to her GP in order to obtain the referral, which does not show mutual collaboration, decreasing safety further.

The majority of women noted that the largest impact they experienced from referral refusal was one of emotional distress, but further, some women responded that they were unable to obtain care from a PPM. There is evidence to suggest that freebirth is becoming more common in Australia than it once was (Newman, 2008; Dahlen et al., 2011). Oftentimes women birthing outside the system is attributed to a general dissatisfaction with the birthing options offered (Dahlen et al., 2011) as well as the perception that hospital actually presents more risk to the mother and baby than does birthing at home (Jackson et al., 2012; Jackson, 2014). In these instances, a mother who is experiencing emotional distress at the beginning of their pregnancy journey, and is being told they will not obtain a referral to their chosen care provider, who they believe presents less risk than hospital, may choose the option to freebirth and seek no antenatal and postnatal care at all. Indeed, 4% of the women surveyed noted that they chose to freebirth after being refused a referral from their GP. While there is little research on the impacts of pregnancy, birth and postpartum without medical care, informed women who choose this from a place of empowerment are almost certainly more likely to have better outcomes than those who are forced to due to lack of acceptable birthing options (Turton, 2007).

It is not only GP referral refusal that limits accessibility to pregnancy and postnatal care options in Australia, 5% of women surveyed reported they were unable to access a PPM. There are fewer PPMs available due to an ever decreasing pool of practising PPMs, restrictions in the areas they cover, in part due to the requirement of a second midwife attending all homebirths (NMBA, 2017), restrictions in the women PPMs are able to support due to ever tightening guidelines and regulations (ACM, 2014) and fear of litigation and/or reporting, and further, PPMs are inundated with paperwork, with regular audits being undertaken. While decreasing access to PPMs may not seem like an issue, survey respondents detailed the various ways this affected them, with one respondent noting they felt 'strangled' by the limitations on access to PPM care that they had experienced.

HOW DO GPs INTERPRET THE COLLABORATIVE GUIDELINES? ARE THESE PART OF THE ISSUE WITH REFERRAL REFUSAL?

A large part of this project was hinged on the ability to interview and speak with GPs who had chosen to refuse referrals to women, but unfortunately none of these would speak with us. The only contact with any GP refusing referral that we received was unnecessarily negative. Based on this encounter and the few GPs interviewed who do choose to refer to PPMs, we report that it is a combination of fear of litigation, lack of clarity in referral guidelines and lack of transparency with governing bodies and insurers that is driving GPs to refuse PPM referrals to women.

CONCLUSION

GP referral refusal impacts women Australia-wide with most women being refused due to GPs preferring pregnancy care with a GP/OB, GPs believing midwife-led care to be unsafe, or GPs being in fear of litigation and/or lack of insurance coverage. We suggest that clarification in guidelines for GPs, transparency from insurers, further information provided to GPs on the benefits of midwife-led continuity of care, and building collaborative PPM-GP relationships may alleviate some of the referral refusal observed in this study. We believe that the information provided here, including the negative emotional impacts being sustained by women and the potential for them to choose not to seek antenatal and/or post-natal care at all, warrant further investigation. We hope that these sorts of investigations will contribute to changes in thinking, policies and guidelines, with the potential to positively affect Australian women's pregnancy care options and thus, women and babies safety.

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CONTACT

JODIE POWELL-PRESIDENT

INFO@HOMEBIRTHSYDNEY.ORG.AU

AIMEE SING-EDITOR

EDITOR@HOMEBIRTHSYDNEY.ORG.AU

MADI ASTOLFI

RESEARCHER

STATISTICS ON HOMEBIRTH SAFETY

These are some of the statistics in support of the safety of homebirth with a privately practising midwife in attendance:

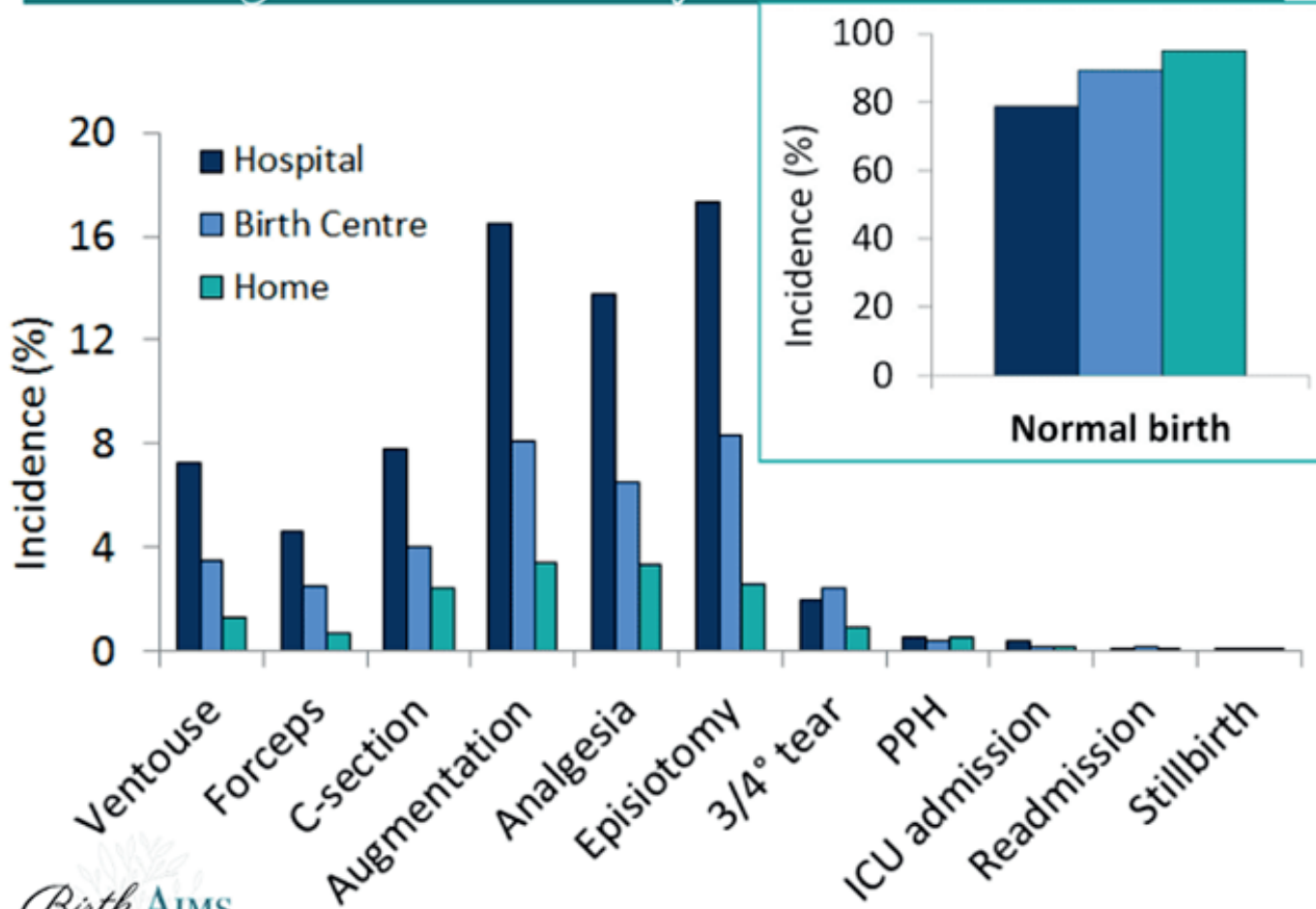
- Women are significantly more likely to have a normal vaginal birth compared to birth in hospital^{1 3 5}
- Women experience lower rates of perineal trauma^{3 5 6}, haemorrhages^{3 6}, caesarean section^{5 6}, instrumental births^{5 6}, epidural analgesia⁵, episiotomy^{5 6}, induction of labour⁶, oxytocin augmentation^{5 6}, and maternal infection⁵
- Women are more likely to have higher rates of satisfaction and lower rates of birth trauma with their birth experience^{4 6}
- Women and babies benefit from higher rates of breastfeeding^{6 7}, both short and long term
- And all of this with no difference in the likelihood of perinatal or neonatal mortality or morbidity compared to birth in hospital^{1 2 6}

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STATISTICS ON HOMEBIRTH SAFETY

Why does birthplace matter?



Birth AIMS

Homer et al. (2019) BMJ Open (9) 1-12

WHY HOMEBIRTH?



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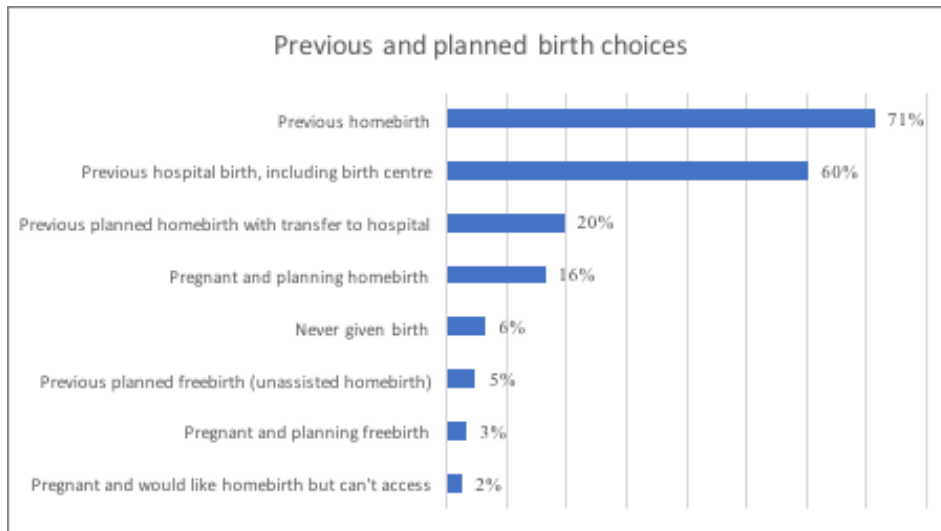
INTRODUCTION

Homebirth Access Sydney ran a survey in 2018 to investigate women's reasons for choosing homebirth and their experiences, including barriers they faced accessing private midwifery care.

Women were invited to complete the survey online via the Homebirth Access Sydney Facebook page <https://www.facebook.com/Homebirth.Access.Sydney/>

A total of 255 women answered the survey. They were largely:

- living in New South Wales (51%), followed by Victoria (20%), Queensland (16%) and the remainder spread amongst the other states and territories plus one overseas
- mostly between 20-40 years of age (82%)
- mothers who had previously given birth (at home or hospital) or were pregnant and planning a homebirth

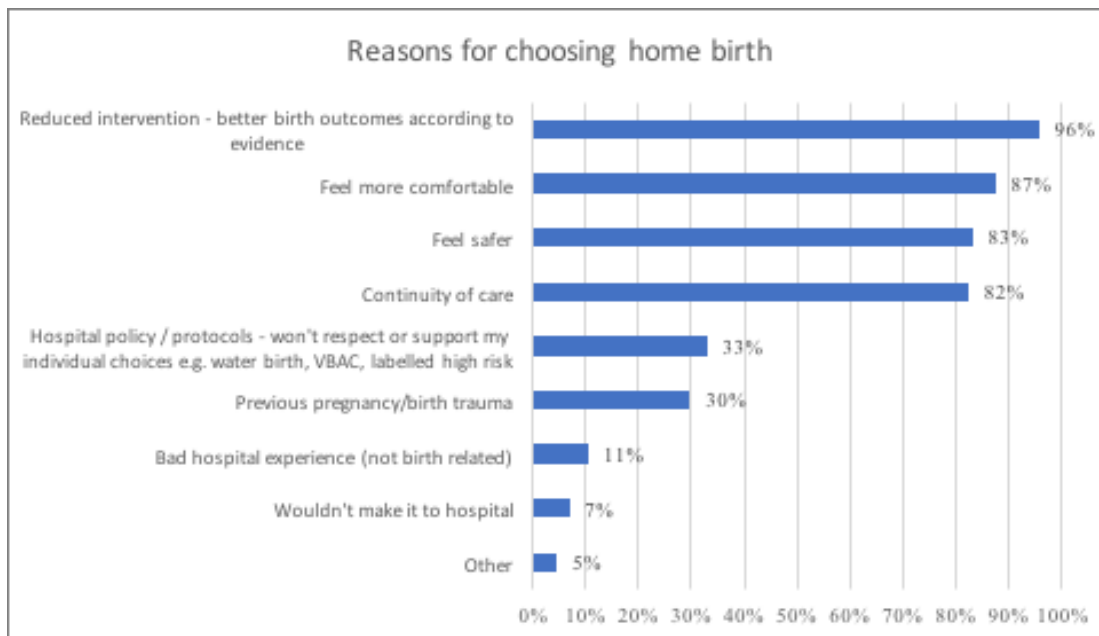


REASONS FOR CHOOSING HOMEBIRTH

Women were asked to say why they chose homebirth. They could select all that applied from a list of options and could also select 'other' to give different reasons or more information.

The top reasons women gave for choosing to give birth at home related to avoiding interventions / achieving a normal, physiological birth, feeling safer and more comfortable at home and wanting continuity of midwifery care.

There were also significant proportions of women who felt their preferences would not be met in hospital and who had experience trauma in a previous hospital birth.



A selection of the other responses given were:

“At the hospital I felt bullied and there is so much scaremongering”

“I wanted evidence-based care and to be listened to and have my rights to informed consent and bodily autonomy respected”

“I am 43 and have had IVF. I would be classified as high risk with a hospital and have every intervention under the sun. I don’t want this.”

“I was born at home. Everyone in my family has had homebirths. Tradition.”

“As a midwife in a public hospital I see how many issues are caused by our treatment of women and as I had low risk pregnancy, I knew the safest place was not the hospital!”

We can see the push and pull factors driving women’s choice to birth at home.

On the one hand, women are drawn to homebirth with a sense that:

- They deserve respectful, individualised care from a known midwife, and that this isn’t on offer through the hospital system
- Birth is a normal, family event that unfolds most easily in the privacy and comfort of home
- That birth should not (usually) require medical intervention or management in a hospital setting.

Women also hear stories or have direct experiences of feeling disempowered, coerced and alienated by the hospital maternity system. This pushes them to research their options, where they realise the benefits of homebirth.

HOME BIRTH AFTER CAESAREAN

A good proportion of women choose homebirth because they feel the hospital maternity system doesn't support their wishes in 'higher risk' circumstances, including vaginal birth after caesarean (VBAC).

Almost a fifth of women in our survey (49 women or 19%) planned a homebirth after caesarean (HBAC). The majority gave birth at home (88%).

The women who transferred to hospital, were evenly split between those who gave birth vaginally (6%) and those who had a repeat caesarean (6%).

This compares to a 15.5% successful VBAC rate nationally



94% successful VBAC rate under PPM care



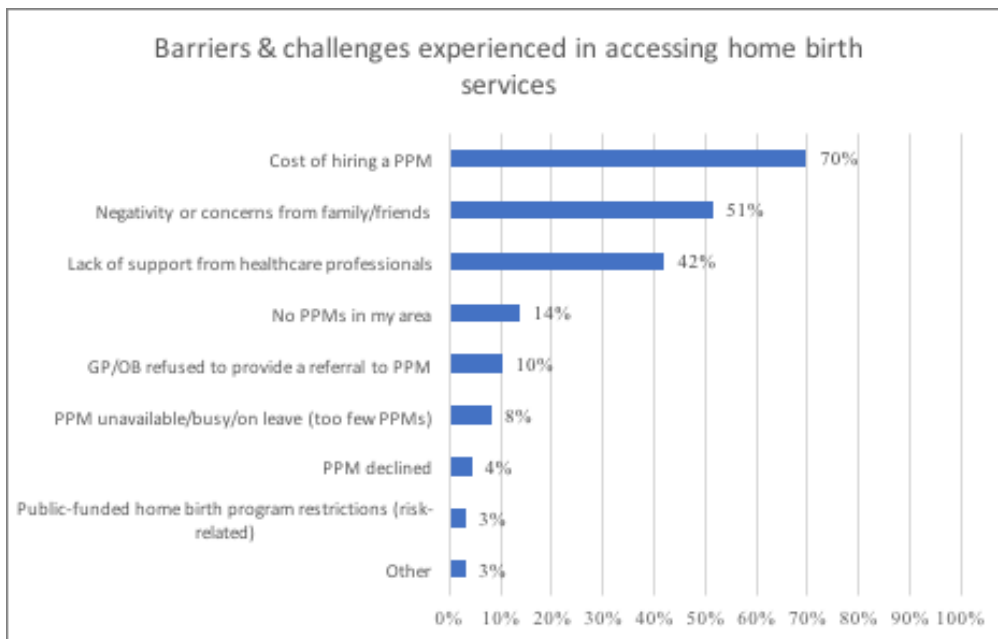
15.5% successful VBAC rate in hospital care

¹ <http://theconversation.com/explainer-vaginal-birth-after-caesarean-48328>

BARRIERS TO HOMEBIRTH

The primary barrier to accessing home birth services is the cost, with 70% of women participating in the survey finding the cost of hiring a Privately Practising Midwife (PPM) difficult to manage.

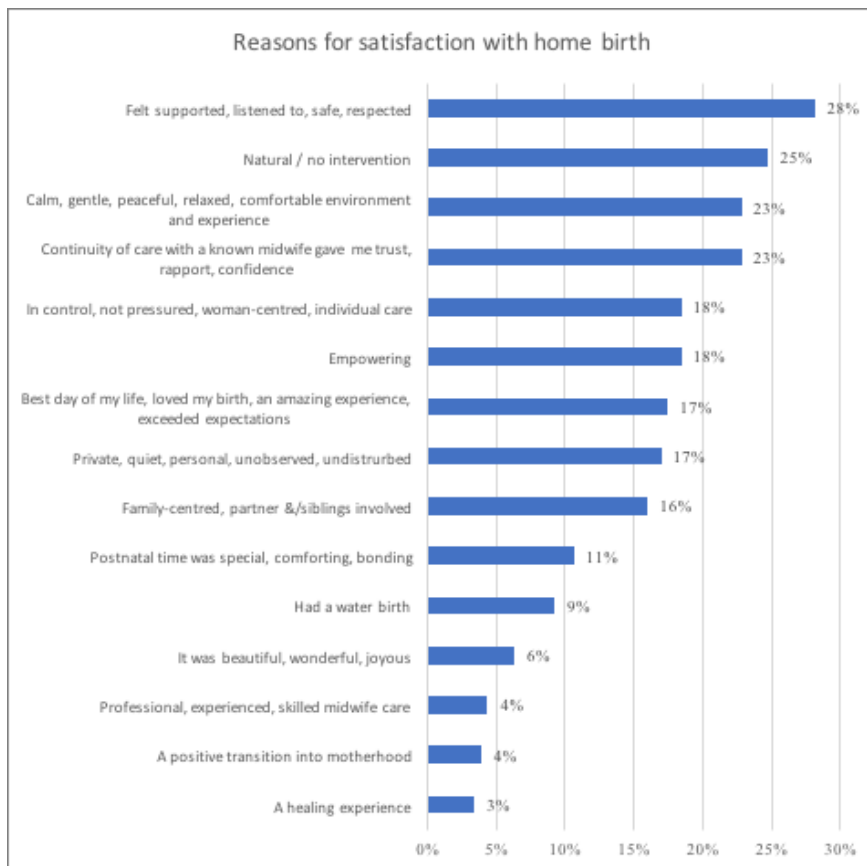
Negativity and a lack of support from family/friends and also from healthcare professionals is also widely experienced (by 51% and 42% of women respectively). This points to a need to educate the community and health providers about the evidence on the safety of home birth. For some women (10%), lack of support for their choice to birth at home resulted in their doctor refusing to provide a referral to a PPM. Other barriers related to unavailability of PPMs, with 14% having no PPM in their area and 8% unable to find a PPM that could support them for their expected due date.



SATISFACTION WITH HOMEBIRTH

The vast majority of women answering our survey (81%) were satisfied with their experience of giving birth at home.

They were asked to highlight why they were happy with their home birth experience and reasons given are presented below.



A selection of direct quotes are included below to illustrate the strength of sentiment expressed by the women:

- “I was trusted, I believed in myself, the birth experience was the most amazing experience of my life and I will never forget cuddling up with my baby and husband in our bed on the first night.”
“I had the most peaceful and perfect birth in my own space in my own time with known care providers and my family present. No interventions, no pressure. I hope I never have to birth any other way.”
- “My two homebirths were the best days of my life. I was thoroughly supported in all of my decisions and was made responsible for all of those decisions. Therefore, I was EMPOWERED. I did it. My babies and I did it, without the fear mongering. I feel stronger in myself and my mothering for it.”
- “I also think it helped my 3 year old son to be present for his brother’s birth. There has been no jealousy. I’m beyond proud of myself for birthing at home and so happy for my babies that they entered the world gently.”
- “I wanted a calm peaceful uninterrupted birth and my midwife, birthing partner and sister were all in my loungeroom while I laboured and my son was born. It is literally the highlight of my life and still brings tears to my eyes thinking about the joyful experience.”

“I got the birth I had been visualising, without intervention, drugs or time limits. And, because of all of that there was no stress, no issues and the birth was incredible. But, what made it incredible was the passionate and highly trained midwives who supported us every step of the way. That would never have happened if we birth in a hospital.”

“Exceeded all expectations for a satisfying birth experience. I did not have to be concerned about organising care for other children and they were able to participate in the whole birthing experience. No worry about other professionals barging into room. ‘Normalizing’ birth for other children.”

“Absolutely, it was the best experience of my life. I was extremely well supported by my midwife, husband and doula. My wishes were listened to. I was informed every step of the way. I felt safe at home. My experience gave me confidence to trust in myself and my intuition, making me a better mother. My experience showed me what a female body is capable of and made me feel as though I can accomplish absolutely anything in life. My experience made me pity all the women who don’t have my experience as they will never understand what a huge impact a fantastic birth can have on your life.”

“So much yes! I was able to have an intimate birth without people walking in and out. My birth plan was respected and I wasn’t questioned in regards to my choices. I was able to have the birth I dreamed of which was an undisturbed water birth. I couldn’t have had this in a hospital with routine VE’s and continuous monitoring as was with my previous births.
Yes, it was everything I’d hoped for. Very empowering and respectful, I felt listened to, unhurried and had a wonderful post birth rest on my own sofa.”



Homebirth Access Sydney

CONTACT

JODIE POWELL-PRESIDENT

INFO@HOMEBIRTHSYDNEY.ORG.AU

AIMEE SING-EDITOR

EDITOR@HOMEBIRTHSYDNEY.ORG.AU

KATHRYN BELL

RESEARCHER

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Why do women choose homebirth in Australia? A national survey

Heather Sassine^a, Elaine Burns^b, Simone Ormsby^b, Hannah G. Dahlen^{b,*}

^a School of Nursing and Midwifery, Locked Bag 1797, Penrith South, NSW 2751, Australia

^b Western Sydney University, School of Nursing and Midwifery, Locked Bag 1797, Penrith South, NSW 2751, Australia



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ABSTRACT

Background: In Australia there have been regulatory and insurance changes negatively affecting homebirth.

Aim: The aim of this study is to explore the characteristics, needs and experiences of women choosing to have a homebirth in Australia.

Methods: A national survey was conducted and promoted through social media networks to women who have planned a homebirth in Australia. Data were analysed to generate descriptive statistics.

Findings: 1681 surveys were analysed. The majority of women indicated a preference to give birth at home with a registered midwife. However, if a midwife was not available, half of the respondents indicated they would give birth without a registered midwife (freebirth) or find an unregistered birthworker. A further 30% said they would plan a hospital or birth centre birth. In choosing homebirth, women disclosed that they wanted to avoid specific medical interventions and the medicalised hospital environment. Nearly 60% of women reported at least one risk factor that would have excluded them from a publicly funded homebirth programme. Many women described their previous hospital experience as traumatic (32%) and in some cases, leading to a diagnosis of post-traumatic stress disorder (PTSD, 6%). Only 5% of women who reported on their homebirth experience considered it to be traumatic (PTSD, 1%). The majority of these were associated with how they were treated when transferred to hospital in labour. **Conclusion:** There is an urgent need to expand homebirth options in Australia and humanise mainstream maternity care. A potential rise in freebirth may be the consequences of inaction.

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Statement of significance

Problem or issue

In recent years there have been changes to Australia's Maternity system with little understanding of how these changes are affecting the choices of women who want to homebirth.

What is already known?

Homebirth with a registered midwife is difficult to access in Australia due to cost, lack of insurance, distance and changes to regulatory requirements for midwives. There

has been a decrease in registered midwives providing home birth services and an increase in the number of women choosing freebirth.

What this paper adds?

Lack of support for homebirth in Australia, may lead women who desire a homebirth or who have had a previous traumatic hospital birth towards freebirth options. This scenario raises many health concerns for mothers, infants and the maternity system.

Introduction

Homebirth with a registered midwife is as safe as hospital birth for healthy, low-risk women [1–3]. Despite this only 0.3% of women in Australia [4] access this option. Homebirth can be accessed through publicly funded models [5] or via privately practising midwives (PPMs). Various social, political and medical issues limit

* Corresponding author.

E-mail addresses: heather@heathersassine.com (H. Sassine), e.burns@westernsydney.edu.au (E. Burns), simone.ormsby@westernsydney.edu.au (S. Ormsby), h.dahlen@westernsydney.edu.au (H.G. Dahlen).

access to both these options [6]. Homebirth services offered by PPMs in Australia can be difficult to access in many areas, and are often costly and remain uninsured [6,7]. There are only 14 publicly funded homebirth programmes (where women do not need to pay for the care) throughout Australia and acceptance into a programme is contingent on women meeting strict, low-risk medical criteria [8,9]. It has been suggested that the reported increase in women choosing to give birth at home, without support, or with an unregistered birthworker (sometimes termed freebirth or unattended birth), is associated with a lack of access to non-medicalised birth options such as midwifery models of care [6,10].

The choice to give birth at home with a PPM has become increasingly complex since regulatory, funding and insurance changes were implemented in response to the Maternity Services Review [11]. As part of the national maternity reforms, the Commonwealth Government made affordable insurance available for antenatal and postnatal care and birth in hospital, but not for birth at home. An insurance exemption, for intrapartum care at home, was made available to PPMs in 2010 to allow time for stakeholders to find an insurance product to cover the birth component. Multiple extensions to this exemption have been made with the current exemption expiring in December 2021 [12]. Key stakeholders continue to struggle to find a workable solution to the lack of insurance products available for birth at home [13].

Research indicates that women choose homebirth for many positive reasons, such as continuous care from a known midwife, belief in the natural process, the desire to have family present and a desire for a comfortable, familiar and private environment [14]. Avoidance of medical intervention and previous negative experiences are also commonly cited influences, particularly among women who have had a previous hospital birth [14]. Studies have shown that medical intervention in childbirth is associated with dissatisfaction with the childbirth experience and that this can have an impact on the development of post-traumatic stress symptoms/disorder [15].

The aim of this study is to understand the characteristics, needs and experiences of women choosing to have a homebirth in Australia.

Methods

A survey of Australian women who had planned a homebirth was undertaken to collect both qualitative and quantitative data. Questions were developed based on a previous survey study conducted by Homebirth Australia (HBA) and information from a review of the literature. The study also included questions based on the Mother's Autonomy and Decision-making (MADM) scale and Mothers on Respect (MOR) index developed and used in research in Canada and the USA, including with homebirth populations [16,17]. The MADM scale is used to measure women's ability to lead decision-making and whether their choices are respected [16], while the MOR index is used to measure quality, safety and human rights in childbirth [17]. These questions were modified slightly for women planning a homebirth in Australia and so are reported in percentages. The survey contained scales, multiple-choice and open-ended questions and was separated into five sections: demographics; women's most recent planned homebirth; decision-making and respect for women's homebirth experience; decision-making and respect for women's hospital-based experience; and questions for practitioners with specialist knowledge of pregnancy and birth. Ethics approval was granted from Western Sydney University Human Research Ethics Committee (H11518).

Participants and data collection

Non-probability sampling techniques were used to recruit participants. Any woman who planned a homebirth in Australia

and was over 18 years of age could answer the survey. The survey was designed and distributed using Qualtrics online survey software. The survey was distributed through social media via homebirth groups such as Home Birth Australia, Homebirth Access Sydney and Maternity Choices Australia using a snowball technique. Some of the researchers in the team with extensive social media followings also posted the link on their Facebook pages and distributed it via their own twitter accounts. The use of social media to recruit women raises some ethical issues as well as poses some limitations. This survey was limited to women who had access to a computer or smartphone and the Internet and were members of a homebirth group or were engaged in social media. However, given that the cohort of women who access homebirth tend to be well-resourced, online recruitment and data collection was considered an appropriate way to reach these women.

The survey was initially intended to be open for a period of six weeks with a goal of 1000 participants. This goal was surpassed within two weeks and was closed after a period of three weeks.

Data analysis

Analysis of quantitative data was completed using Statistical Package for the Social Sciences (SPSS) version 23. Survey data were cleaned and de-identified before uploading to SPSS. Descriptive statistics using frequencies and means were generated [18]. Frequency reports for each variable were collected and data formulated into tables for interpretation. Detailed analysis of the qualitative data will be presented in a future paper.

Findings

In total, 1835 participants responded to the survey, for which the majority 77% ($n = 1413$) also completed every question. A small proportion of women provided only demographics details; hence these entries were removed to arrive at a total number for analysis of 1681. Of those remaining, it was noted that the vast majority answered most of the globally relevant questions. In regard to those providing fewer responses, we considered further exclusion from the data set, however resolved that removal of this data would result in the loss of valuable content. Indeed, a recent analysis of potential bias resulting from low survey responses concluded that "even a survey with a 4% response rate may provide data of scientific value" [p. 1989] [19]. Consequently we report response numbers, percentages and missing data in the context of the entire data set, with missing data thought to be a combination of both non-response due to question irrelevance, as well as omitted answering.

At the time of their most recent homebirth, the average age of respondents was 32 years (Table 1). The majority of participants were born in Australia (81.7%) or countries with English as their first language (11.3%). Sixty-five percent of women resided in NSW, VIC or QLD. A large proportion held university level qualifications (65.8%) when compared to the national Australian average reported in 2016 of 24.0% [20], and most average household incomes were over \$80,000 (59.45%).

Participant's birth history

Whilst the majority of survey questions focused on the most recent homebirth, data was also collected on the type of birth women had for each of their children. Findings demonstrated that 1099 participants had experienced at least one homebirth with a privately practising registered midwife (eligible or non-

Table 1
Participant demographics.

Participants <i>n</i> = 1681	<i>N</i> (%)
<i>Age at the time of most recent homebirth</i>	
<20	5 (0.3)
20–24	89 (5.3)
25–29	356 (21.2)
30–34	571 (34.0)
35–39	358 (21.3)
>40	79 (4.7)
Missing data	223 (13.3)
<i>Country of birth</i>	
Australia	1373 (81.7)
New Zealand	57 (3.4)
United Kingdom	99 (5.9)
USA	33 (2.0)
Canada	21 (1.3)
Germany	17 (1.0)
South Africa	14 (0.8)
Other	63 (3.8)
Missing data	4 (0.2)
<i>State or territory of most recent homebirth</i>	
NSW	446 (26.5)
QLD	282 (16.8)
VIC	365 (21.7)
ACT	22 (1.3)
TAS	34 (2.0)
WA	174 (10.4)
SA	115 (6.8)
NT	36 (2.1)
Overseas	20 (1.2)
Missing data	187 (11.1)
<i>Highest level of education</i>	
Year 10 or school certificate	59 (3.5)
Year 12 or higher school certificate	126 (7.5)
TAFE or diploma	382 (22.7)
Undergraduate or university qualification	634 (37.7)
Post-graduate (e.g. Graduate diploma, Masters, PhD)	473 (28.1)
Missing data	7 (0.4)
<i>Combined annual family income</i>	
<\$40,000	187 (11.1)
\$40,000–60,000	222 (13.2)
\$60,000–80,000	270 (16.1)
\$80,000–100,000	351 (20.9)
>\$100,000	647 (38.5)
Missing data	4 (0.2)

eligible for Medicare); 238 had experienced a publicly funded homebirth; and 216 experienced a freebirth or gave birth with an unregistered birthworker (UBW). In addition, 1056 women had experienced a hospital or birth centre birth for at least one other child.

Table 2
Most recent birth planned and experienced.

Type of birth <i>n</i> = 1681	Planned for <i>N</i> (%)	Experienced <i>N</i> (%)
Homebirth with a registered midwife not eligible for medicare	547 (32.5)	436 (25.9)
Homebirth with a medicare eligible midwife	483 (28.7)	366 (21.8)
Publicly funded hospital homebirth programme	232 (13.8)	175 (10.4)
Homebirth with an UBW	92 (5.5)	79 (4.7)
Freebirth	67 (4.0)	97 (5.8)
Hospital birth – pre-labour transfer of care	N/A	66 (3.9)
Hospital birth – transfer in labour	N/A	122 (7.3)
Homebirth with postnatal transfer	N/A	27 (1.6)
Other ^a	73 (4.3)	120 (7.1)
Total responses	1494 (88.9)	1488 (88.5)
Missing data	187 (11.1%)	193 (11.5%)

^aSuch as home birth with general practitioners, or friends that are doctors.

Participant's most recent planned homebirth

Responses provided by women in relation to their most recent planned homebirth (*n* = 1493) demonstrated that the majority had birthed within the last 5 years (*n* = 1106), representing 65.8% of the sample (missing data *n* = 188). With respect to the type of birth planned and the one ultimately experienced, it was revealed that of the 61.2% of women planning a homebirth with a registered midwife, 47.7% achieved that outcome (Table 2). Of those that were unable to experience a home birth, reasons provided included transfer to hospital during pregnancy, labour, or the early postnatal period, as well as changes to plans prior to the onset of labour. Even where women did have access to publicly-funded homebirth, some reported choosing to have a freebirth or birth with an UBW, predominantly due to being excluded from programmes as a consequence of: being 'out of area' (due to strict geographic boundaries); or developing risk factors.

Homebirth had not been the first choice for 66 (3.9%) participants, the majority of whom had originally planned a public hospital or birth centre birth. Of these, 58 changed their plans to give birth at home by 36 weeks, and 8 altered their plans after 36 weeks gestation. For some women, these changes were made after personal research, exposure to friends or family who had homebirths, or information from childbirth education classes. However, the majority of women reported feeling dissatisfied with the care they were currently receiving and changed their plans due to feeling pressured to accept interventions they were not comfortable with, as well as a lack of suitable choices being offered. These included: lack of access to waterbirth; wanting a VBAC and feeling pressured to have a repeat caesarean; and minimal support or involvement in decision-making. Some women also changed their plans from homebirth with a registered midwife, or publicly funded homebirth programme, in order to freebirth or birth with an UBW, due to similar restrictive policies.

If women did not have a registered midwife at their birth, they were asked why this was the case. For some, midwives missed the birth because it happened too quickly (*n* = 73) or the midwife lived more than 1 h away and missed the birth (*n* = 20). In other cases, common reasons provided included: non-availability of registered midwives in their area (*n* = 40); being unable to afford a registered midwife (*n* = 49); and midwives not being supportive (*n* = 31), due to having various risk factors. Some women also intentionally decided not to have a registered midwife at their birth (*n* = 104).

Future birth choices

Women were asked what choice they would make for a future birth if all possible options were fully available to them or if the

Table 3
Choices women would make if they were to have another baby.

Future choice for type of birth <i>n</i> = 1681	All options available <i>N</i> (%)	Currently available options <i>N</i> (%)
Homebirth attended by a registered midwife	960 (57.1)	860 (51.2)
Publicly funded hospital homebirth programme	348 (20.7)	246 (14.6)
Homebirth with an UBW	42 (2.5)	98 (5.8)
Freebirth	64 (3.8)	129 (7.7)
Hospital or birth centre birth	48 (2.9)	113 (6.7)
Other ^a	29 (1.7)	48 (2.9)
Total responses	1491 (88.7%)	1494 (88.9)
Missing data	190 (11.3%)	187 (11.1%)

^aExamples included: “Don’t know”, “Not sure”, or “Either x or y”, “Cultural bush birth”, etc.

current status quo persisted (Table 3). As presented in the Introduction choice to homebirth is currently restricted in Australia due to financial constraints or legislation/government/hospital constraints making fewer choices available. There are limited numbers of midwives providing home birth services privately or through publicly funded homebirth programmes. We wanted to know what women would plan for in future births if homebirth was freely available and funded with no restrictions as well as what they would do for future births under the current situation.

Overall it was observed that 77.8% would plan a homebirth with a registered midwife or through a publicly funded programme if all options were available. This was seen to drop to 65.8%, based upon the options women currently have available to them. The number of women who would plan a freebirth, or birth with an UBW, more than doubled from 6.3% with all options available to 13.5% based on the current status quo.

Risk factors

Women were asked if they had any of the risk factors provided by the National Midwifery Guidelines for Consultation and Referral [21] for their most recent planned homebirth (Table 4). Guidelines for publicly funded homebirth programmes are more restrictive than for private midwifery care therefore women were also asked to comment if they felt their risk factor would exclude them from a publicly funded homebirth programme (listed as “other” in Table 4). A gestation of greater than 41 weeks was included as a risk factor as consultation with a medical professional is now

Table 4
Risk factors which applied to women's most recent planned homebirth.

Risk factor (<i>n</i> = 1681)	<i>N</i> ^a (%)
Vaginal birth after caesarean section (VBAC)	155 (9.2)
Multiple pregnancy	12 (0.7)
Breech	33 (2.0)
Gestation > 41 weeks	295 (17.5)
Gestation > 42 weeks	144 (8.6)
Maternal body mass index (BMI) > 35 and/or weight > 100 kg	143 (8.5)
Maternal body mass index (BMI) < 17	3 (0.2)
Grand multiparity (≥5 previous births)	30 (1.8)
Previous post-partum haemorrhage	101 (6.0)
Gestational diabetes	39 (2.3)
Previous obstetric complications (shoulder dystocia, stillbirth, pre-eclampsia, >3 miscarriages, placental abruption, placenta accrete)	67 (4.0)
Other including: advanced maternal age, Group B streptococcus status, declining tests, obstetric history (previous breech, retained placenta, inter-uterine growth restriction (IUGR), low birth weight, premature birth, cephalo-pelvic disproportion (CPD), 4th degree tear), or current or previous health condition (blood disorder, mental health condition, heart condition)	163 (9.7)
None of the above applied to me in this pregnancy	675 (40.2)

^aWomen were able to select more than one option.

required when women reach 41 weeks in Australia. Findings demonstrated that 59.8% of women reported that at least one of the listed risk factors would have excluded them from publicly funded homebirth programmes in Australia (Table 4).

Women's future birth choices if no midwife were available

Women were asked what choice they would make for their next birth if registered midwives were not allowed to support women at home with the risk factors listed in Table 4. In total, 743 of the women answering this question (*n* = 1487) indicated that they would plan a freebirth or try to find an UBW to support them, whereas 449 stated that they would plan a hospital or birth centre birth (missing data *n* = 194).

Analysis of open text data responses also revealed that several women disclosed that they would lie about their health history in order to access a hospital-based programme, while others stated they would go through the hospital system but plan to “accidentally” have the baby at home. Other ways that women stated they could ensure a homebirth included travelling somewhere they could access a registered midwife to attend them at home or finding “midwife friends” who would attend their homebirth underground. Four women also declared they would not have another baby if they were unable to access a registered midwife to attend their homebirth.

Interventions and other hospital factors

In choosing to give birth at home, women were not only avoiding medical intervention but also other factors associated with hospital birth, such as time pressure, hospital policies and coercion (Table 5). In addition, women indicated (completely or strongly agreeing) that there were numerous considerations influencing their choice to give birth at home, including access to continuity of midwifery care (80%, missing *n* = 242); immediate, and uninterrupted skin-to-skin with their baby and early breast attachment (79.7%, missing *n* = 208); access to waterbirth (72.7%, missing *n* = 245); choice of birth position (71.8%, missing *n* = 218); choice regarding the birth of the placenta (75.4%, missing *n* = 207); and choice regarding the individual practitioner they wanted to attend their homebirth (66.5%, missing *n* = 294).

Home vs hospital experience

Women were asked a series of questions about their experiences, and the treatment they received, whilst making decisions during pregnancy and their homebirth. Similarly, women who had also experienced hospital-based care (*n* = 1120/1440 responders), either in another pregnancy (*n* = 769), or at some point during their most recent planned homebirth (*n* = 351), were also asked about their hospital experiences (Table 6).

Table 5
Interventions and other factors women were avoiding in choosing homebirth.

For my most recent homebirth I was choosing to avoid: <i>n</i> = 1681	Agree <i>N</i> indicated completely or strongly (%) / <i>N</i> answered	<i>N</i> missing (%)	Disagree <i>N</i> indicated completely or strongly (%) / <i>N</i> answered
<i>Interventions</i>			
Induction	1256 (74.7)/1410	271 (16.1)	41 (2.4)/1410
Forceps	1249 (74.3)/1419	262 (15.6)	36 (2.1)/1419
Episiotomy	1243 (73.9)/1426	255 (15.2)	35 (2.1)/1426
Cardiotocography (CTG)	1230 (73.2)/1442	239 (14.2)	42 (2.5)/1442
Artificial rupture of membranes (ARM)	1184 (70.4)/1432	249 (14.8)	45 (2.7)/1432
Pain-relieving drugs	1134 (67.5)/1414	267 (15.9)	53 (3.2)/1414
Primary caesarean	898 (53.4)/1156	525 (31.2)	73 (4.4)/1156
Antibiotics	1012 (60.2)/1357	324 (19.3)	82 (4.9)/1357
Vaginal examinations (VEs)	971 (57.8)/1445	236 (14.3)	64 (3.8)/1445
Routine Group B Streptococcus testing	890 (53.0)/1392	289 (17.2)	132 (7.9)/1392
Repeat caesarean	192 (11.4)/321	1360 (80.9)	111 (6.6)/321
Routine ultrasound	706 (4.2)/1404	277(16.5)	169 (10.1)/1404
<i>Other hospital factors</i>			
Time pressure	1341 (79.8)/1455	226 (13.4)	19 (1.1)/1455
A hospital environment that does not support normal birth	1315 (78.2)/1464	217 (12.9)	19 (1.1)/1464
Risk agenda of the hospital	1279 (76.1)/1456	225 (13.4)	25 (1.5)/1456
Hospital policies	1225 (72.9)/1464	217 (12.9)	29 (1.7)/1464
Hospital staff that do not support normal birth	1251 (74.4)/1464	217 (12.9)	26 (1.5)/1464
Added risk in hospital	1211 (72.0)/1463	218 (13.0)	31 (1.8)/1463
Hospital staff/strangers	1225 (72.9)/1464	217 (12.9)	29 (1.7)/1464
Coercion	1137 (67.6)/1387	294 (17.5)	45 (2.7)/1387
Lack of informed consent	1170 (69.6)/1442	239 (14.2)	39/1442 (2.7)
Repeat of negative hospital experience	559 (33.3)/905	776 (46.2)	124 (7.4)/905

For their most recent planned homebirth, over 75% of women “completely” or “strongly” agreed that their care provider: involved them in decision-making; helped them understand all the information; gave them enough time to consider different care options; allowed them to choose what they considered the best options; and respected their choice. In contrast only 13–15% of women “completely” or “strongly” agreed with the same statements in regards to their most recent hospital experience.

In addition, during their most recently planned homebirth the majority of women felt comfortable asking questions (79.2%); declining care that was offered (71%); and accepting options their provider suggested (76.5%). They also felt the time provided during prenatal visits was adequate (77.6%), and that their personal (78.3%) and cultural preferences (61.9%) were respected. In contrast, for their most recent hospital experience, only 11–18% of women “completely” or “strongly” agreed with the same statements.

In regard to feeling coerced into accepting options their provider suggested, only 11% disagreed with this statement when

accessing hospital care compared to 70% who disagreed when accessing homebirth. In addition, 25% of women “completely” or “strongly” agreed that they were treated poorly by hospital-based providers when opinions differed regarding care options, whereas only 2% agreed that they were treated poorly if they had a different opinion to their homebirth midwife. Furthermore, women accessing hospital care reported that they would hold back from asking questions because: they wanted care that differed from what was recommended (31.3%); they thought their care provider might think they were being difficult (25.9%); or they felt their care-provider did not value their opinion (28.8%). In comparison only 1–2% of women felt the same way about asking questions or discussing concerns with their homebirth care-provider (Table 6).

Trauma and PTSD

When asked if they would describe their birth experience as traumatic, 533 of 1097 women answering this question reported

Table 6

Experiences with decision-making and respect with home and hospital care.

When making decisions and choosing options for my most recent pregnancy and homebirth or hospital experience: <i>n</i> = 1681	Home		Hospital	
	Agree <i>N</i> indicated completely or strongly (%)/ <i>N</i> answered	Disagree <i>N</i> indicated completely or strongly (%)/ <i>N</i> answered	Agree <i>N</i> indicated completely or strongly (%)/ <i>N</i> answered	Disagree <i>N</i> indicated completely or strongly (%)/ <i>N</i> answered
	<i>N</i> missing (%)		<i>N</i> missing (%)	
My care provider involved me in decision-making	1286 (76.5)/1378	33 (2.0)/1378	229 (13.6)/1084	352 (20.9)/1084
My care provider helped me understand all the information	1284 (76.4)/1376	303 (18.0)	250 (14.9)/1086	597 (35.5)
I was given enough time to thoroughly consider the different care options	1289 (76.7)/1373	33 (1.9)/1376	227 (13.5)/1075	375 (22.3)/1086
I was able to choose what I considered to be the best care options	1302 (77.5)/1399	305 (18.1)	228 (13.5)/1083	595 (35.4)
My care provider respected that choice	1292 (76.8)/1373	29 (1.8)/1373	220 (13.1)/1055	463 (27.5)/1075
		308 (18.3)		606 (36.0)
		28 (1.7)/1399		471 (28.0)/1083
		282 (16.8)		598 (35.6)
		32 (1.9)/1373		471 (27.6)/1055
		308 (18.3)		626 (37.2)
<i>While making decisions during my pregnancy/birth care for my most recent planned homebirth or hospital experience</i>				
I felt comfortable asking questions	1332 (79.2)/1394	15 (0.9)/1394	294 (17.5)/1085	289 (17.1)/1085
I felt comfortable declining care that was offered	1194 (71.0)/1329	287 (17.1)	596 (35.5)	
I felt coerced into accepting the options my care provider suggested	69 (4.1)/1337	21 (1.3)/1329	179 (10.7)/1068	500 (29.7)/1068
I chose the care options I received	1285 (76.5)/1392	352 (20.9)	498 (29.6)/1047	613 (36.5)
My personal preferences were respected	1315 (78.3)/1405	1174 (69.9)/1337	266 (15.8)/1067	183 (10.9)/1047
My cultural preferences were respected	1041 (61.9)/1086	344 (20.5)	218 (13.0)/1075	634 (37.7)
I felt that I had enough time during prenatal visits	1304 (77.6)/1378	20 (1.2)/1392	266 (15.8)/1067	333 (19.8)/1067
		289 (17.2)		614 (36.5)
		22 (1.3)/1405		405 (24.1)/1075
		276 (16.4)		606 (36.0)
		10 (0.6)/1086		136 (8.1)/1057
		595 (35.4)		624 (37.1)
		10 (0.6)/1378		348 (20.7)/924
		303 (18.0)		757 (45.0)
<i>I felt that I was treated poorly by my maternity care provider for my most recent homebirth or hospital experience because of:</i>				
My race, ethnicity, cultural background or language	7 (0.5)/1075	1066 (63.5)/1075	34 (2.0)/681	586 (32.8)/681
My sexual orientation and/or gender identity	8 (0.5)/1051	606 (36.0)	9 (0.5)/651	1000 (59.5)
A difference in opinion with my care givers about the right care for myself or my baby	32 (1.9)/1153	1041 (61.9)/1051	427 (25.4)/975	581 (34.6)/651
		630 (37.5)		1030 (61.3)
		1072 (63.8)/1153		242 (14.4)/975
		528 (31.4)		706 (42.0)
<i>I held back from asking questions or discussing concerns with my home or hospital-based care provider because:</i>				
My maternity care provider seemed rushed	12 (0.7)/1226	1141 (67.8)/1226	336 (20.0)/1007	202 (12.1)/1007
I wanted maternity care that differed from what my maternity care provider recommended	37 (2.2)/1215	455 (27.1)	525 (31.3)/1022	674 (40.1)
I thought my maternity care provider might think I was being difficult	30 (1.8)/1219	1104 (65.7)/1215	435 (25.9)/1016	151 (9.0)/1022
I felt discriminated against	16 (1.0)/1211	466 (27.7)	156 (9.2)/872	659 (39.2)
I felt my maternity care provider didn't value my opinion	27 (1.6)/1241	1099 (65.3)/1219	485 (28.8)/1029	198 (11.7)/1016
I felt they didn't explain in lay terms	7 (0.4)/1222	462 (27.5)	201 (12.0)/990	665 (39.6)
		1177 (70.1)/1211		467 (27.7)/872
		470 (28.0)		809 (48.1)
		1173 (69.8)/1241		221 (13.2)/1029
		440 (26.2)		652 (38.8)
		1180 (70.2)/1222		351 (20.9)/990
		459 (27.3)		691 (41.1)

that their hospital-based experience was (32% with missing data *n* = 584). In addition, 96 (of 1093 responders) reported having had a diagnosis of post-traumatic stress disorder (PTSD) following their traumatic hospital birth (6% with missing data *n* = 588). Of the women reporting their hospital experience was traumatic, 338 women left comments regarding why they found this to be the case. For 236 of these women, the trauma was attributed to how they were treated by hospital staff. Specifically, women felt their choices were not respected; that they were not listened to; and that staff were disrespectful, dismissive and unsupportive. Many women additionally mentioned feeling a loss of control, as well as in 44 cases, feeling bullied and coerced. Forty-four women also referred to a lack of consent for procedures.

In contrast only 81 of 1439 responders considered their homebirth experience to be traumatic (5% with missing data

n = 242) and 19 (of 1434 answering) as having had a diagnosis of PTSD following homebirth (1% with missing data *n* = 247). Of the women finding their homebirth experience to be traumatic, comments provided by 71 revealed that only 16 of these related to the actual homebirth or care provided by the midwife, whereas 34 were a result of being transferred to hospital.

Discussion

This is the largest survey to date undertaken in Australia on homebirth. The aim of this study was to understand the characteristics, needs and experiences of women choosing to have a homebirth in Australia. In particular, the aim was to explore which interventions, and other hospital practices, women sought to avoid by choosing homebirth. We also wanted to determine

what choices women would make if regulations restricted access to registered midwives.

Survey participant distribution across the States and Territories was proportional to the population distribution [22], with the highest response rate coming from NSW, the most populace state. Women in this study had a higher household income and level of education than the national average [23]. They were seeking to give birth naturally in a comfortable, private and familiar environment surrounded by their family and unhindered by hospital policies, unnecessary interventions and unfamiliar hospital staff. They were also actively seeking to avoid interventions and practices associated with hospital birth. This study has highlighted many areas of concern within the current mainstream maternity services, which failed to meet women's needs and appeared to be driving women, with risk factors, to seek a homebirth or freebirth. A significant number of the women surveyed also reported trauma from a previous birth experience, with some reporting PTSD.

Lack of options is driving women to freebirth

The majority of women in this study had experienced homebirth with a PPM, with smaller numbers of women utilising a publicly funded homebirth service, which is likely to be reflective of the lack of availability [8]. A small number of women chose to give birth at home with an UBW or to have a freebirth. This study found that if women had all options available to them, less women would plan a freebirth, or birth with an UBW, and more would plan a homebirth with a PPM or through a publicly funded homebirth programme. This resonates with the findings from a recent Australian study [6] which indicates that the majority of women choose freebirth or birth with an UBW because of a lack of other options, not because this was their first choice.

Recent research into rates of babies born before arrival at hospital (BBA) found that areas in NSW with high homebirth rates, also have high rates of BBA, indicating that some women may be freebirthing and then transferring to hospital for the birth registration papers or postnatal care [24].

Lack of access to registered midwives

Availability of midwives in private practice in Australia is in decline and has reportedly been affected by: the availability of insurance; unwillingness of doctors to collaborate; and increased scrutiny and investigations into individual midwives' practices [25]. There are few PPMs available in rural and remote areas and many women responding to this survey, who had a freebirth or homebirth with an UBW, reported having difficulty accessing a registered midwife due to their location. Women in rural and remote areas have limited choices available, due to the closure of large numbers of rural maternity units [26]. This forces women to travel long distance to access services, incurring significant cost and disruption to their lives and increasing the risk of poor outcomes [26,27].

Half of the women surveyed said they would plan a freebirth or birth with an UBW and many of the women who already chose to have a freebirth, or hire an UBW, reported that this choice was directly related to the restrictions placed on registered midwives. This finding is supported in the literature both in the USA, and Australia, where there is limited access to non-medical birth options; restrictions on midwives; and reports of rising freebirth rates [6,28]. Rather than increasing safety, this research indicates that current regulations restricting midwives' practice are forcing women to avoid the system [29]. Further restrictions could increase the number of women forced into options they do not want and choose to deceive or disengage completely from services.

Perceptions of risk

Women who choose homebirth have differing perceptions of risk and safety compared to women choosing hospital birth [28,30]. It is clear from the literature, and confirmed by this study, that women who choose homebirth are seeking to avoid interventions and other hospital factors which they consider increase the risk of harm for themselves and their babies [31,32].

Over half of the women in this study reported having at least one risk factor, at the time of their last planned homebirth, and many indicated they would seek out a freebirth or UBW if there were no option to be supported at home by a health professional. Rather than encouraging women with risk factors to birth in hospital, this research indicates that increasingly prohibitive restrictions are driving women away from the system.

Birth trauma

Whether choosing to give birth at home or in hospital, women who are considered high risk also seek to mitigate the psychological impact of their choices [30]. Emotional safety is especially important for women who choose homebirth following a previous negative experience in the hospital [31,32].

In this study women reported that their choice to give birth at home was influenced by a previous negative experience. This is a consistent finding in the literature on multiparous women's reasons for choosing homebirth [14,32]. It is also a key motivating factor for women choosing freebirth [10,31]. In the general population around 20–50% of women report some aspect of birth as traumatic, with between 2% and 6% of women developing PTSD [33].

Of note, in this study, there was a vast difference between the rates of trauma after a hospital birth compared to homebirth. Interestingly women who described birth trauma following a homebirth pointed to the transfer from home to hospital as the main cause of trauma. Research into the experiences of women, and clinicians, during homebirth transfers to hospital, revealed that women who planned a homebirth, and transferred in labour, often experienced hostile behaviours and negative attitudes from hospital staff [34].

While birth trauma and PTSD are associated with increased intervention in childbirth and mode of birth, studies indicate that it is the quality of interpersonal relationships which is more influential [32,33]. In particular women are more likely to report experiencing their birth as traumatic or display PTSD symptoms if they experienced a loss of control over decision-making or felt unsupported or abandoned by their care providers [35,36]. In a recent study by Reed et al. [37] into birth trauma and care provider interactions, women reported feeling dismissed, violated and abused and that care providers used lies and threats to coerce them into accepting interventions. Similar findings were reported in a study on women who had a homebirth after caesarean, with women feeling ignored, intimidated and bullied in the hospital and ultimately fleeing the system to choose homebirth [32].

The link between birth trauma and feelings of loss of control and involvement in decision-making [35], could at least in part, be the reason comparatively few women in this study experienced their homebirth as traumatic. This may be due to the fact that over 75% of women reported that their homebirth care provider involved them in decision-making, gave them information and time to consider their options, and respected their choices compared to 13–15% when reflecting on their hospital-based care providers. Research into women's reasons for choosing a private midwife in Western Australia showed that women were seeking a deep relationship of mutual trust and respect with their midwife and to feel safe and in control [38].

The human rights of childbirth

A woman's right to autonomy, choice and informed consent, is upheld in national health and maternity policy and professional guidelines and includes the right to decline medical advice without threat of abandonment [11,39–41]. While the recent increase in regulations and restrictions on midwifery scope of practice in Australia aims to improve outcomes for women at higher-risk of complication, they also threaten these basic human rights.

In Australia, care providers have the right to withdraw care as long as they assist the person to find a suitable alternative [21,42]. While in the UK, for example, midwives have a duty of care to support the woman in her choices, even if these are outside of guidelines [43]. These are complex ethical considerations, as care providers may feel they do not have the skills or experience to continue to care for a woman with particular risk factors at home, however on the other hand, the threat of abandonment by a care provider can undermine a woman's autonomy [39,44].

Research indicates that care provider's understanding of their legal and ethical responsibilities, in situations where women decline advice or choose non-standard care, is poor [45]. While some health facilities have implemented procedures to guide practice when a woman declines recommended treatment, these policies remain rare and under-utilised [46]. Under the current systems, when women wish to make choices outside of guidelines, midwives face a professional and ethical dilemma when providing care to these women. Private midwives are forced to either risk regulatory investigations into their practice, by providing woman-centred care in line with their professional code of conduct, or adhere to policy and reject the woman's right to make an informed choice in order to maintain their own bodily autonomy [25]. This conflict of allegiances between the medical and organisational hegemony, and honouring the rights of women, is a cause of significant stress for midwives [25,47]. That women are choosing UBWs to ensure a care provider's allegiance over that of an institution, or professional body, reflects the close relationship between women's autonomy and the professional autonomy of health practitioners [6,10].

Implications and recommendations

This research indicates that tighter regulation of the practice of midwives could drive homebirth underground, with half of participants in this survey reporting they would freebirth or find a UBW to support them if a midwife could not be found. Formal documentation and communication processes for care providers are required when women decline standard care, as they have every right to do. Maternity Care Plans (MCPs) introduced in a Queensland hospital [46,48], could be used by PPMs in the community, and by health professionals in public hospitals, to protect women's autonomy and provide some validation for those midwives and obstetricians who continue to provide care for women declining recommended procedures. Combined with better access to midwifery continuity of care, and home-like birth environments, this may prevent women at higher risk of complications from disengaging with the mainstream maternity system.

Government support for homebirth in the form of Medicare funding would improve access to midwife-attended homebirth for many women who currently cannot afford it. A workable solution to the lack of insurance for intrapartum care at home, which includes women with risk factors, is also desperately needed.

The number of women in this study who experienced their hospital birth as traumatic, and reported experiencing a lack of informed consent, and coercion in the hospital setting, is very concerning. Guidelines on decision-making in pregnancy and birth, and the use of Maternity Care Plans in the hospital, could help to address this.

The role of regulation is to protect the public, however this study indicates that over-regulation may have had the opposite effect. A balance needs to be found so that midwives are held accountable to professional standards, whilst also being supported to respect the autonomy and rights of women who make choices outside of guidelines or recommendations.

Limitations

This survey was limited to women who had access to a computer or smartphone and the Internet and were members of a homebirth group or were engaged in social media. However the cohort of women who access homebirth tend to be wealthier and with higher levels of education so online was considered an appropriate way to reach these women. Missing from this research is the voices of indigenous women and women with lower socio-economic status. We did not align every response to the woman's individual past birth experience and history. This was a descriptive study giving a macro view of homebirth experiences in Australia. We also recognise that a significant number of the women had planned a homebirth over 6 years previously and so their responses reflect the homebirth landscape at the time and this has changed in recent years. Birth trauma was self-reported by the women and no formal diagnosis was undertaken, however several women reported they had been given a diagnosis of birth trauma. Research indicates that one-to-one midwifery care with the option to give birth at home, or in midwifery-led units, would benefit many of these women [49,50]. This survey taps into a portion of the population who are not satisfied with mainstream care or have a negative view of hospital birth and therefore presents a one-sided view.

Conclusion

This research has revealed that women who choose homebirth in Australia struggle to access midwife-attended homebirth due to cost, limited number of PPMs, the small number of publicly-funded homebirth programmes available and strict eligibility criteria. Access is also limited by the increasing restrictions and regulations placed on midwifery practice. This research indicates that rather than increasing safety, further restrictions could lead women with risk factors to have a freebirth and give birth with UBWs. Many women are drawn to homebirth after a previous negative experience and are seeking more control over their experience. Participants in this study encountered difficulties accessing respectful pregnancy and birth care, which met their needs, within mainstream maternity care.

Conflicts of interests

The authors have no conflicts of interest to declare.

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Author contributions

HS, EB and HD designed the research question. HS conducted the review of the literature. HS, EB and HD designed the survey. HS, HD, SO analysed the data. HS, EB, HD and SO participated in the writing of the paper. All authors reviewed the manuscript prior to submission. The paper is not under consideration for publication elsewhere.

Ethics approval

Ethics approval was granted from Western Sydney University Human Research Ethics Committee (H11518).

Please note there are no appropriate reporting guidelines for surveys.

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RESEARCH ARTICLE

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Modelling the cost of place of birth: a pathway analysis

Vanessa L. Scarf^{1*} , Serena Yu², Rosalie Viney², Seong Leang Cheah¹, Hannah Dahlen³, David Sibbritt¹, Charlene Thornton⁴, Sally Tracy⁵ and Caroline Homer^{1,6}

Abstract

Background: In New South Wales (NSW), Australia there are three settings available for women at low risk of complications to give birth: home, birth centre and hospital. Between 2000 and 2012, 93.6% of babies were planned to be born in hospital, 6.0% in a birth centre and 0.4% at home. Availability of alternative birth settings is limited and the cost of providing birth at home or in a birth centre from the perspective of the health system is unknown.

Objectives: The objective of this study was to model the cost of the trajectories of women who planned to give birth at home, in a birth centre or in a hospital from the public sector perspective.

Methods: This was a population-based study using linked datasets from NSW, Australia. Women included met the following selection criteria: 37-41 completed weeks of pregnancy, spontaneous onset of labour, and singleton pregnancy at low risk of complications. We used a decision tree framework to depict the trajectories of these women and Australian Refined-Diagnosis Related Groups (AR-DRGs) were applied to each trajectory to estimate the cost of birth. A scenario analysis was undertaken to model the cost for 30 000 women in one year.

Findings: 496 387 women were included in the dataset. Twelve potential outcome pathways were identified and each pathway was costed using AR-DRGs. An overall cost was also calculated by place of birth: \$AUD4802 for homebirth, \$AUD4979 for a birth centre birth and \$AUD5463 for a hospital birth.

Conclusion: The findings from this study provides some clarity into the financial saving of offering more options to women seeking an alternative to giving birth in hospital. Given the relatively lower rates of complex intervention and neonatal outcomes associated with women at low risk of complications, we can assume the cost of providing them with homebirth and birth centre options could be cost-effective.

Keywords: Economic analysis, Childbirth, Cost, Homebirth, Birth centre, Decision tree

Background

In New South Wales, Australia's most populous state, there were 95 825 births to 94 449 mothers in 2017 [1]. Of these, 92.8% of women planned to give birth in a hospital, 6.3% planned birth in a birth centre, 0.25% of women planned a homebirth and the remaining 0.6% were born before arrival [1]. Maternity care in Australia

is provided by the public and private sectors, with a 74% to 26% split respectively.

The evidence of the safety and benefits of birth at home or in a birth centre for women at low risk of complications is clear [2–5]. Access to these settings in New South Wales (NSW) and across Australia remains limited. There are 61 maternity services in NSW, 10 of which provide a birth centre option and three offer homebirth through a publicly funded model of care (where the midwives are employees of a maternity service) [6]. Most women who plan a homebirth, however,

* Correspondence: vanessa.scarf@uts.edu.au

¹Centre for Midwifery, Child and Family Health, Faculty of Health, University of Technology Sydney, PO Box 123 Broadway, Sydney, NSW 2007, Australia
Full list of author information is available at the end of the article



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engage a privately practising midwife, at their own cost; these midwives are independent practitioners.

A hospital birth service, also referred to as a birth unit, birth suite, or labour ward, is staffed by midwives and doctors and provides maternity services to women with and without medical or obstetric risk factors. These birthing services are in both public and private hospitals. A birth centre offers women the option to give birth in a 'homelike' environment where the emphasis is on the physiological process of pregnancy and birth. Birth centres are staffed by midwives and are either located on the site of a maternity hospital (alongside birth centres) or in a location which may be on a hospital campus but does not offer obstetric and neonatal emergency care (freestanding birth centres). If a woman begins labour at a freestanding birth centre and develops a complication during the labour, she will be transferred to the nearest facility which provides higher level obstetric care. The 'transfer' process in an alongside birth centre is often a matter of re-locating a woman to a hospital birth room, most likely in the same building and often on the same floor as the birth centre. It is, however, an important distinction: if a woman planning to give birth in a birth centre develops a complication in labour, she is effectively transferred to higher level care in the hospital birth unit. Homebirth services are provided by midwives in private practice or by midwives employed by a health service and who work out of a maternity facility, known as a publicly funded homebirth model.

Anecdotally, it is asserted that offering homebirth or birth centre services is more costly to the health service despite few studies costing the place of birth in Australia. A study by Toohill et al. (2012) compared the cost of Midwifery Group Practice (MGP) and standard hospital care. MGP is a model of care which generally provides women continuity of midwifery carer, or group of carers and these midwives work across birth settings where available [7, 8]. Standard hospital care included hospital-based midwifery or obstetric care, or community-based General Practitioner (GP) shared care where the woman sees the GP for most of her antenatal consultations and has scheduled visits at the hospital where she plans to give birth. The majority of women in the MGP group gave birth in a birth centre. The results showed a cost saving overall for women in the MGP group compared with the hospital group applying a hospital-based costing system (AUD\$4,696 vs \$5,521) and (AUD\$4,722 vs \$5,641) when applying Australian Refined Diagnosis Related Groups (AR-DRGs) [8]. Similar results were found by Tracy et al, however the M@NGO study estimated costs related to model of care (continuity versus no continuity) rather than place of birth [9].

A systematic review of economic analyses of place of birth has shown a cost saving found for women giving birth at home or in a birth centre in eight of the eleven included studies, no difference in cost in two of the studies and a slight increase in one study which included initial set-up costs of a new birth centre [10]. An Australian micro-costing study [11] estimated the direct cost of vaginal birth for women planning birth at home, in a birth centre or in a hospital. The results revealed the overall costs were similar (AUD \$2150, \$2100 and \$2097 respectively) however the services incurring the costs differed between homebirth and the other two settings. For women planning a homebirth, the majority of the cost was incurred by midwifery time and for women planning birth in a birth centre or hospital birth unit, facility overhead costs accounted for almost half the total cost [11].

A recent comparison of low-risk women choosing to give birth in a freestanding birth centre with a hospital obstetric unit in the United Kingdom (UK) estimated a saving of approximately £850 per woman [12]. Huynh et al. (2013) conducted a review of the cost of pregnancy in the United States of America (USA) to investigate the drivers of cost for payers in light of the increasing costs associated with pregnancy notwithstanding the decreasing birth rate. This review reported the varied results of the studies which included drivers such as inpatient care, pregnancy complications, pre- and post- term birth and pre-existing morbidity. The overall mean cost per hospital stay ranged from US\$3,306 to US\$9,234 however, costs associated with pre-term birth were as high as US\$326,953 for an infant born at 25 weeks gestation [13]. The authors concluded that medical resource utilisation is increased, and therefore so are costs, with increasing complications during pregnancy. These findings are similar to those in an Australian study more than a decade ago estimating the cost of interventions in labour, which found the relative cost of birth increased by up to 50% for first-time mothers related to accumulating interventions [14]. Recent analyses of the costs by place of birth in NSW is lacking hence this study was undertaken.

The aim of this study is to estimate the cost of giving birth at home, in a birth centre or in a hospital for women at low risk of complications, by applying AR-DRG and other costs to each potential pathway identified in a decision tree developed using population-based data of pregnant women at low risk of complications in New South Wales.

Methods

This study used a decision analytic modelling framework to construct a decision tree which illustrated the pathways of women at low risk of complications who gave

birth in NSW between 2000 and 2012 [15]. The pathways were developed by identifying planned place of birth, and then using descriptive statistics, we determined each pathway including planned and actual place of birth, transfer to hospital labour ward, mode of birth and possible admission to neonatal care unit. Once the pathways were determined, an estimate of the cost of each pathway was applied to the terminal node by using Australian Refined Diagnosis Related Groups (AR-DRGs) (Table 1).

Data sources

We obtained linked data from the NSW Centre for Health Record Linkage (CHeReL) which linked data from the NSW Perinatal Data Collection (PDC), the NSW Admitted Patient Data Collection (APDC), the NSW Registry of Births, Deaths and Marriages (NSWRBDM) (death registrations only), and the Australian Bureau of Statistics (ABS) mortality data. We used these combined datasets to create a new dataset containing women who planned to give birth at home, in a birth centre or in a hospital, for the Birthplace in Australia Study [16] during the abovementioned years. The NSW Perinatal Data Collection (PDC) is a record of routinely collected data on all women who give birth in NSW, collected at the point of care (by midwives and doctors), most often through electronic medical record platforms. Maternal and infant data are collected on all livebirths and stillbirths greater than 20 weeks gestation or 400g birthweight (the Australian definition of viability) regardless of place of birth. The NSW APDC contains records of all NSW hospital inpatient separations (discharges, transfers, deaths) from public and private hospitals, public psychiatric hospitals, public nursing homes and private day procedure centres. Clinical data include identification and demographic data, International Classification of Diseases-Australian modification codes (ICD-10-AM) and procedure codes. The NSWRBDM is a permanent record of all registered births and deaths kept at the RBDM and the Australian

Bureau of Statistics (ABS) compiles mortality data including primary cause and date of death.

Population

Women were included if they were at low risk of complications, that is, 37 to 41 completed weeks gestation, pregnant with a single baby in the head down or ‘cephalic’ presentation. Women were also included if they had a spontaneous onset of labour (that is, no induction of labour) and were aged between 17 and 40 years (inclusive). Women who had an unplanned homebirth (born before arrival) or gave birth intentionally without a registered health provider present (free-birth) were not included in this cohort. The dataset itself includes data from both the public and private health sectors, however for the purposes of the cost modelling, a public sector perspective is taken.

Women were excluded if they experienced any obstetric or medical complication, mal-presentation (fetus in a position other than head-down), had a previous caesarean section, did not attend antenatal care or had their labour induced. Relevant variables and ICD-10-AM codes were identified from the PDC and APDC, a complex process which is described in full in Cheah et al. [16].

Setting

This study expands on the investigation of the trajectories of women who plan to give birth at home, in a birth centre (both alongside and freestanding) or in a hospital [15]. Between 2000 and 2012, there were six alongside birth centres and three freestanding birth centres in NSW. The ‘transfer’ process from an alongside birth centre is often a matter of re-locating a woman to a hospital birth room, most likely in the same building and often on the same floor as the birth centre. It is, however, an important distinction: if a woman planning to give birth in a birth centre develops a complication in labour, she is effectively transferred to higher level care in the hospital labour ward. Homebirth services are

Table 1 AR-DRG definitions included in cost estimations

AR-DRG code ^a	Definition	Cost ^b
O60C	Vaginal delivery (minimal complications, singleton) - including women who had no intervention, or received any of the following: induction or augmentation of labour, epidural analgesia, narcotic pain relief, and/or minor perineal trauma.	\$4515
O60B	Vaginal delivery (intermittent complications) - including women who had any of the following: multiple birth, instrumental vaginal birth with vacuum or forceps (not in operating theatre), post-partum haemorrhage (PPH), third or fourth degree perineal tear, episiotomy, or other ‘non-severe’ complications.	\$6108
O01C	Uncomplicated Caesarean section, with or without labour.	\$9853
P68D	Admission of neonate >= 37 weeks gestation, with minimal complications requiring observation for around 48 hours	\$4016
P68C	Admission of neonate >= 37 weeks gestation, with intermediate complications requiring observation for 2-3 days	\$5562

^aAustralian Refined Diagnosis Related Groups Version 5.2 Definitions Manual

^bIHPA National Hospital Cost Data Collection Australian Public Hospitals 2016-17

provided by midwives in private practice or by midwives employed by a public health service and who work out of a maternity facility, known as a publicly funded home-birth model.

The public health service perspective is taken in this study. We received approval from the NSW Population and Health Services Research Ethics Committee, approval number HREC/14/CIPHS/15.

Decision tree framework

Decision analytic modelling provides a framework or structure that depicts the consequences of alternative options or treatments (and in this case, labour and birth outcomes) [17, 18]. The decision tree, interpreted from left to right, depicts the pathways of the women as their labour progressed, specifically noting transfer from home or a birth centre to a hospital, mode of birth (normal vaginal birth, instrumental birth- vacuum or forceps birth, and caesarean section) and admission to special care nursery/neonatal intensive care (SCN/NICU) for the baby. Figure 1 depicts the basic framework of the decision tree developed for this study. The decision node on the left represents the planned place of birth at the onset of labour. To the right of the decision node are chance nodes which represent the events that unfolded for the women and their infants. The branches which emanate from these chance nodes are mutually exclusive. The decision framework was chosen as it provides a visual structure which illustrates the pathways the women took using the linked dataset, and allows us to assign costs to each pathway.

Pathway costs

Once the pathways were mapped in the decision tree, costs were allocated to each pathway. Included in the cost estimations were Australian Refined Diagnosis Related Group (AR-DRG) categories. AR-DRGs classify admitted patient episodes into groups with similar conditions and then match the resources required by the institution to provide the service [19]. The AR-DRGs associated with childbirth are in the major diagnostic category (MDC) 14: Pregnancy, childbirth and the puerperium (codes: O01A-O66B), the relevant codes are described in Table 1. Admission to the Special Care Nursery (SCN) / Neonatal Intensive Care (NICU) was also included, however, in the NSW Perinatal Data Collection, there is one variable which records admission to SCN/NICU, and does not distinguish between the two. In the cases where a baby was admitted to SCN/NICU, we were able to determine from the data if the admission was for greater than (or equal to) or less than 48 hours, and applied the corresponding AR-DRG. For simplicity, a baby who is not admitted to the ward (as is the case when the infant is healthy and under the full care

of the mother) does not attract an AR-DRG and is thus costed at \$0. This was assumed across the three birth settings for babies not admitted to the SCN/NICU.

To estimate the cost per woman, we calculated the total cost per pathway by multiplying the pathway cost with the number of women in each pathway group. We then added the totals of the pathways by place of birth and divided each total with the number of women in each planned place of birth. All costs are reported in Australian dollars (AUD). Table 2 contains the costs included in each pathway.

Scenario analysis

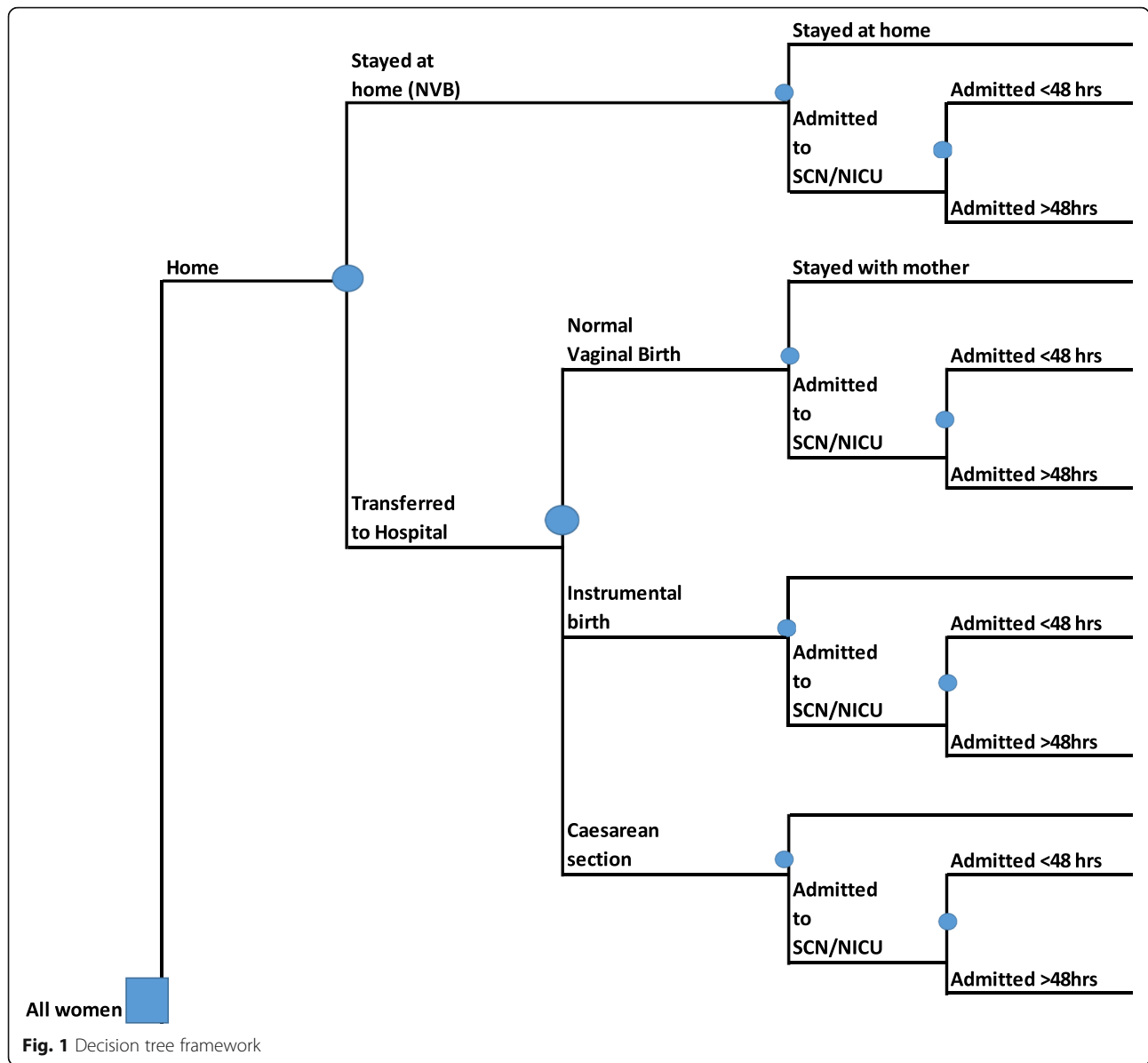
In a scenario analysis, we recalculated the pathway costs and included antenatal consultation costs. The Independent Hospital Pricing Authority identified a national non-admitted cost per maternity patient of \$2104 (\$1550 allocated to antenatal care and \$554 for postnatal care) [20] which we used to recalculate the cost per woman by place of birth.

Using the costs calculated including AR-DRGs and antenatal consultation costs, we proposed five different scenarios to model the cost of upscaling publicly funded homebirth and birth centre options. *Scenario 1* estimates the total cost to the health service using the current proportions of 0.4% of women planning a homebirth (current rate in NSW), 6% planning a birth centre birth and 93.6% planning a hospital birth. For *Scenario 2*, we calculated the cost of birth in these settings if the proportions were increased to 1% homebirth, 9% birth centre birth and decreased to 90% hospital birth. *Scenario 3* is a calculation of the costs of birth in the three settings if these services were up-scaled similar to maternity services in the United Kingdom, that is 2.5% homebirth, 5% birth centre and 92.5% hospital obstetric unit [21]. For *Scenario 4* the cost of upscaling homebirth to 1% and birth in a birth centre to 15% were calculated and Scenario 5 calculated the upscaling of homebirth to 2.5% and 15% in a birth centre. We calculated the total cost of these scenarios for a population of 30,000 women. This is the estimated number of childbearing women in NSW who meet the criteria of low-risk pregnancy and spontaneous onset of labour per year.

Results

Planned place of birth

There were 496 387 women identified as meeting the criteria for inclusion (Table 3). Of these, 0.4% planned a homebirth, 6.0% planned a birth centre birth and 93.6% planned birth in a hospital. There were differences in the demographic characteristics across the three birth settings. Women planning a homebirth were older (mean 31.7 years, standard deviation (SD) 4.7) compared with women who planned birth in a birth centre (mean



29.1 years, SD 5.1) or in a hospital (mean 28.9, SD 5.3). There was a higher proportion of women having their first baby (nulliparous women) in the hospital and birth centre groups (45.1% and 42.7% respectively) compared to the homebirth group (29.9%). We included women who were at term (37 to 41 completed weeks gestation) and who went into spontaneous labour. Overall, the highest proportion of women laboured at or beyond 40 weeks, with 67.1% in the homebirth group, 57.1% planning a birth centre birth and 54.0% planning a hospital birth.

Pathway costs of place of birth

The women planning birth at home or in a birth centre had twelve potential outcome pathways. The women

planning a hospital birth have the most direct pathway, differing only by mode of birth and neonatal outcome. Women in the planned birth centre and homebirth group differed by transfer and then mode of birth and neonatal outcome. Figure 2 illustrates these potential pathways and the number of women in the sample who followed each pathway are presented below each branch. A description of the conditional probabilities of each pathway has been presented in a previous publication [15]. Briefly, the normal vaginal birth rate in women planning a homebirth was 96.2% (including women who transferred to hospital), 91.1% for women planning birth in a birth centre (including transfers) and 79.5% in the hospital birth group. The transfer rate from home or a birth centre to hospital was 12.2% and 21.5%

Table 2 Factors included in cost estimates

Planned place of birth	Mode of Birth AR DRG (\$)	NICU admission AR DRG (\$)	Total unit cost AUD
Home			
Homebirth - SVB	O60C (4515)	NA	\$4515
HB SVB + TF to NICU <48 hrs	O60C (4515)	P68D (4016)	\$8351
HB SVB + TF to NICU >48 hrs	O60C (4515)	P68C (5562)	\$10077
Mat TF + SVB	O60C (4515)	NA	\$4515
Mat TF + SVB + NICU <48hrs	O60C (4515)	P68D (4016)	\$8351
Mat TF + SVB + NICU >48hrs	O60C (4515)	P68C (5562)	\$10077
Mat TF + IB	O60B (6108)	NA	\$6108
Mat TF + IB + NICU <48hrs	O60B (6108)	P68D (4016)	\$10124
Mat TF + IB + NICU >48hrs	O60B (6108)	P68C (5562)	\$11670
Mat TF + CS	O01C (9853)	NA	\$9853
Mat TF + CS + <48hrs	O01C (9853)	P68D (4016)	\$13869
Mat TF + CS + >48hrs	O01C (9853)	P68C (5562)	\$15415
Birth Centre			
BC SVB	O60C (4515)	NA	\$4515
BC SVB + NICU <48hrs	O60C (4515)	P68D (4016)	\$8531
BC SVB + NICU >48hrs	O60C (4515)	P68C (5562)	\$9851
BC IB	O60B (5562)	NA	\$6108
BC IB + NICU <48hrs	O60B (5562)	P68D (4016)	\$10124
BC IB + NICU >48hrs	O60B (5562)	P68C (5562)	\$11670
BC CS	O01C (9853)	NA	\$9853
BC CS + NICU <48hrs	O01C (9853)	P68D (4016)	\$13869
BC CS + NICU >48hrs	O01C (9853)	P68C (5562)	\$15415
Hospital			
Hosp SVB	O60C (4515)	NA	\$4515
Hosp SVB + NICU <48hrs	O60C (4515)	P68D (4016)	\$8531
Hosp SVB + NICU >48hrs	O60C (4515)	P68C (5562)	\$9851
Hosp IB	O60B (5562)	NA	\$6108
Hosp IB + NICU <48hrs	O60B (5562)	P68D (4016)	\$10124
Hosp IB + NICU >48hrs	O60B (5562)	P68C (5562)	\$11670
Hosp CS	O01C (9853)	NA	\$9853
Hosp CS + <48hrs	O01C (9853)	P68D (4016)	\$13869
Hosp CS + >48hrs	O01C (9853)	P68C (5562)	\$15415

Abbreviations: BC birth centre, CS caesarean section, HB homebirth, Hosp hospital, IB instrumental birth (forceps, vacuum), NICU neonatal intensive care unit, SVB spontaneous vaginal birth, TF transfer

respectively. Instrumental birth rates for the three settings were 2.1% (homebirth), 5.9% (Birth Centre) and 12.5% (hospital), and caesarean sections occurred in 1.6% of planned homebirths, 3.0% of planned birth centre births and 7.9% of births planned in hospital.

Each pathway accrued a cost (Table 2) depending on the resources used. In Fig. 2, for example, a woman planning a homebirth who is transferred to hospital for an instrumental birth and whose baby is well enough to be discharged home with her incurred a cost of \$6524. A woman planning a birth centre birth or a hospital

birth with the same outcome incurred a cost of \$6108. In these three pathways the AR-DRG was the same (O60B), and the difference in the cost is attributable to the cost of transfer by ambulance (see Table 2). Another example is the pathway illustrating a caesarean section (O01C) and neonatal admission to the special care nursery/neonatal intensive care unit for over 48 hours (P68C). For a woman planning a homebirth who is transferred to hospital and receives these interventions, the estimated cost was \$15 831. The same pathway for a woman planning a hospital birth incurs a cost of \$15

Table 3 Demographic characteristics

	Hospital n = 464,630 (%)	Birth Centre n = 29,933(%)	Home n = 1824 (%)
Maternal age (Years) Mean (SD)	28.9 (5.3)	29.7 (5.1)	31.7 (4.7)
<20	20,733 (4.5)	767 (2.6)	19 (1.0)
20-24	81,183 (17.1)	4189 (14.0)	118 (6.2)
25-29	142,161 (30.0)	9110 (30.4)	439 (23.2)
30-34	147,523 (31.1)	10,271 (34.3)	700 (37.0)
35-39	68,094 (14.4)	5251 (17.5)	504 (26.7)
>40	4936 (1.1)	345 (1.2)	111 (5.9)
Previous pregnancies (>20 weeks)			
0	209,664 (45.1)	12,782 (42.7)	546 (29.9)
1	150,364 (32.4)	10,727 (35.8)	662 (36.3)
2	65,633 (14.1)	4460 (14.9)	373 (20.4)
> 3	38,969 (8.4)	1964 (6.6)	243 (13.3)
Gestation (weeks) Mean (SD)	39.5 (1.04)	39.6 (1.04)	39.7 (1.02)
37	22,518 (4.8)	1073 (3.6)	66 (3.6)
38	62,166 (13.4)	3231 (10.8)	163 (8.9)
39	129,050 (27.8)	7930 (26.5)	370 (20.3)
40	185,175 (39.9)	11,558 (38.6)	821 (45.0)
41	65,721 (14.1)	6141 (20.5)	404 (22.1)

415. Again, the difference in cost relates to transfer costs. Finally, the estimated cost per women (Fig. 2) by place of birth was \$484 more costly in the hospital group compared with the birth centre, \$715 more costly in the hospital group compared with homebirth and \$231 more costly in the birth centre compared with homebirth.

Proposed scenarios

The following scenarios calculate the total cost to the public health system for 30 000 women in NSW by place of birth when AR-DRGs only are used and when AR-DRGs plus an estimated cost of antenatal care is included (Table 4).

Scenario 1 estimated the total cost to the health service for a cohort of 30,000 women in NSW per year using the current proportions of women planning birth at home, in a birth centre and in a hospital. The average cost per place of birth was calculated to be \$4748 for homebirth, \$4979 for birth in a birth centre and \$5463 for planned hospital births (Fig. 2). When the estimated cost of antenatal care is included, the cost increases by \$2104, resulting in a total cost of birth at home, in a birth centre and in a hospital of \$826,560, \$12,814,200 and \$213,492,240 respectively.

In scenario 2, we recalculated the costs the three places of birth increasing the proportions of planned births to 1% at home, 9% in a birth centre and 90% in a hospital. When antenatal costs are included, the total cost saving per year was \$564,300, reducing the total

expenditure by 0.25% when compared to the costs associated with the current proportions of 0.4% homebirth, 6% birth centre and 93.6% hospital birth (Scenario 1).

Scenario 3 estimates the costs when homebirth and birth centre services are increased to 2.5% and 5% respectively, as is the case in the UK. The total saving to the health service per year amounts to \$305,250 when antenatal costs are included, when compared to the current proportions.

We further tested the scaling up of homebirth and birth centre services to 1% and 15% in scenario 4 and 2.5% and 15% in scenario 5 and calculated an annual cost saving of \$2,475,000 and \$2,783,250 respectively. These scenarios amounted to a saving of over 1%.

Discussion

This is the first study to examine cost by place of birth using standardised cost weights, that is, AR-DRGs. This approach was taken to more closely reflect the cost to the health system, as the estimates and scenarios are based on actual and proposed numbers of women coming through a publicly funded maternity system. We found differences in the cost per woman by place of birth which can be attributable largely to mode of birth. During the development of the NSW dataset, we endeavoured to create a cohort as similar as possible however we recognise that there would be unobservable characteristics in the women included which may influence the results. Our selection processes enabled us to identify

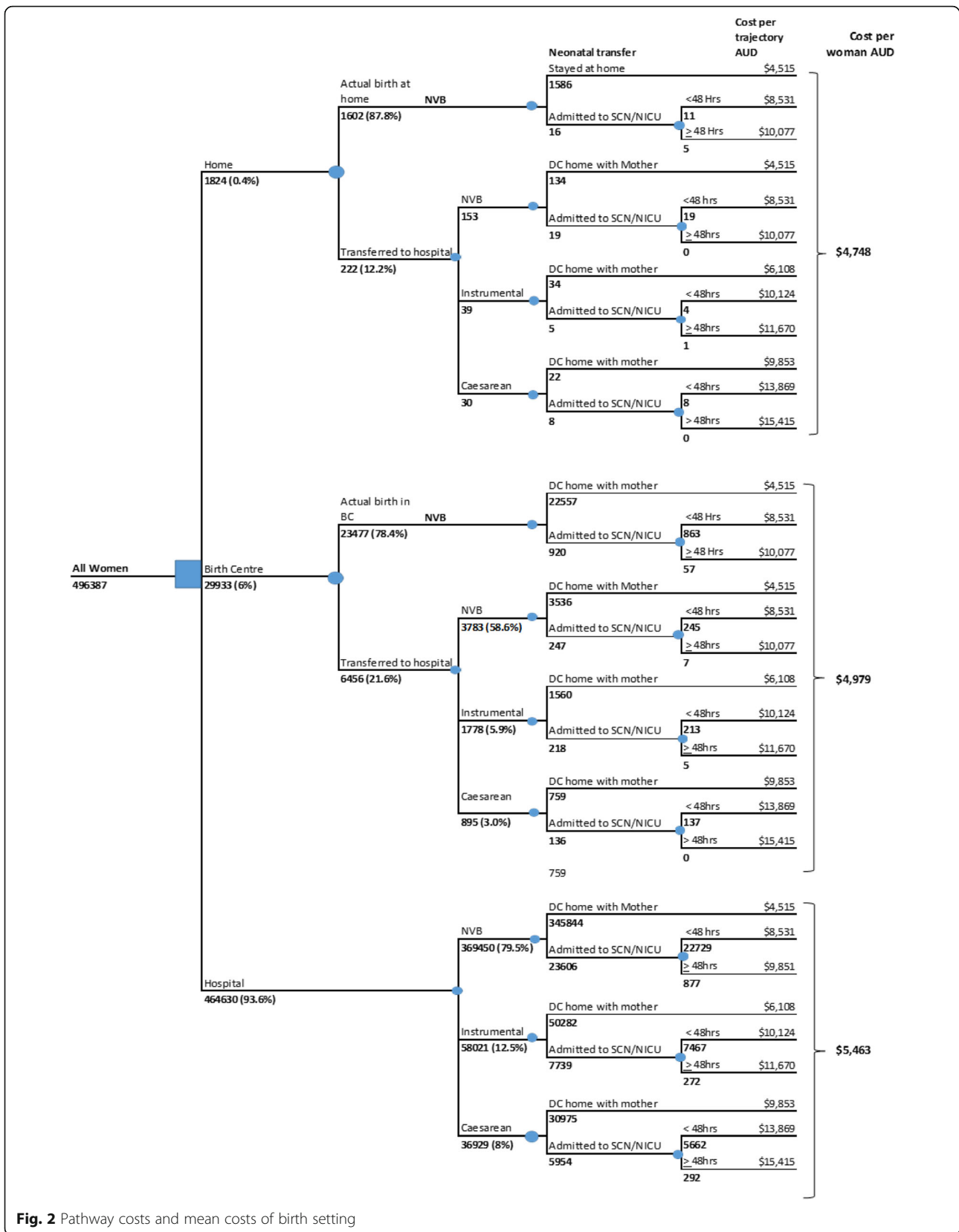


Fig. 2 Pathway costs and mean costs of birth setting

Table 4 Modelling cost by place of birth per year in NSW

N=30000	Proportion	AR DRG only	Estimated AN care and AR DRG
Scenario 1: Current proportions			
Home	0.004	\$569,760	\$826,560
Birth Centre	0.06	\$8,962,200	\$12,814,200
Hospital	0.936	\$153,401,040	\$213,492,240
Total	1	\$162,933,000	\$227,133,000
Scenario 2: Upscaling to 1% homebirth and 9% Birth Centre			
Home	0.01	\$1,424,400	\$2,066,400
Birth Centre	0.09	\$13,443,300	\$19,221,300
Hospital	0.9	\$147,501,000	\$205,281,000
Total	1	\$162,368,700	\$226,568,700
Difference^a			-\$564,300
Scenario 3: Upscaling 2.5% homebirth 5% birth centre (similar to UK proportions)			
Home	0.025	\$3,561,000	\$5,179,500
Birth Centre	0.05	\$7,468,500	\$10,624,500
Hospital	0.925	\$151,598,250	\$210,983,250
Total	1	\$162,627,750	\$226,827,750
Difference^a			-\$305,250
Scenario 4: Upscaling to 1% homebirth and 15% birth centre			
Home	0.01	\$1,424,400	\$2,066,400
Birth Centre	0.15	\$22,405,500	\$30,996,000
Hospital	0.84	\$137,667,600	\$191,595,600
Total	1	\$161,497,500	\$224,658,000
Difference^a			-\$2,475,000
Scenario 5: Upscaling to 2.5% homebirth and 15% birth centre			
Home	0.025	\$3,561,000	\$5,179,500
Birth Centre	0.15	\$22,405,500	\$30,996,000
Hospital	0.825	\$135,209,250	\$188,174,250
Total	1	\$161,175,750	\$224,349,750
Difference^a			-\$2,783,250

^aDifference between the total of the scenario compared to Scenario 1

women with key characteristics which place them closely aligned, specifically, spontaneous onset of labour, cephalic presentation, 37-41 completed weeks gestation (at term), with no documented pre-existing medical or pregnancy complication [16]. The greatest proportion of women who attracted the AR-DRG with the lowest value (O60C) were in the homebirth group (96.2%) followed by 91.1% in the birth centre group and 74.4% in the hospital group.

The impact of the complex outcomes for women in all groups contributed to the incremental increase in cost from homebirth to birth centre to hospital. For women planning a homebirth for example, the proportion of neonates admitted to NICU/SCN was 2.3% (<48hrs) and 0.3% (>48hrs) which attracts a cost of between \$8947 and \$15831 depending on the mode of birth. Neonates

of women planning birth in a birth centre had an SCN/NICU admission rate of 4.9% (<48hrs) and 0.46% (>48hrs) in the hospital birth group, the neonatal admission rates to SCN/NICU were 7.7% (<48hrs) and 0.3% (>48hrs) with costs of between \$8531 and \$15415 again, depending on the mode of birth and no addition of transfer cost.

The national costing authority in Australia, the Independent Hospital Pricing Authority (IHPA) found that non-admitted (antenatal and postnatal) care was similar across most childbearing women with the exception of women with very complex pregnancies. The cost of the admitted birth episode (and in the case of a homebirth, the “admission” relates to the birth episode at home/transfer to hospital) differed significantly as the driver for that cost was mode of birth indicating that significant

savings can be made by “clinically warranted reductions in the rate of interventions during birth” ([20] p24). Research has shown significant differences in modes of birth related to birth setting, including increased spontaneous vaginal birth rates for women planning birth at home or in a birth centre [21, 22]. This translates to a lower cost per birth when comparing birth setting [12, 23, 24]. There are countries, however, which employ very few DRG categories to cost childbirth. In a study by Or et al (2012) of European countries, the variation of DRG-related birth codes ranged from three in Austria and Poland (where the payment for vaginal birth and caesarean section were the same) to seven in England and eight in Germany describing several birth complications [25]. This has the potential to provide a perverse incentive to service providers to be more prone to intervention during birth to increase funding from government [26, 27].

When we proposed an up-scaling of services to enable women to plan a birth at home or in a birth centre, the cost to the public health service resulted in a slight decrease in cost over a 12-month period. While the increase in homebirth options were considerable comparatively (scenarios 2 and 4 represented a 250% increase and scenarios 3 and 5 were a 625% increase in homebirth) the proportions remained very small. Considering the absolute increase of services was modest, it would be feasible to offer a greater number of women options including publicly supported homebirth and birth centre care while utilising the existing infrastructure. There may be additional costs related to training and accreditation of staff and facilities, which would ultimately be recouped over time with the prospected decrease in intervention. A limitation of proposing this increase in service options is that there exists only anecdotal reports of the demand by women to enter into a program which offers an alternative to hospital birth; reports of waiting lists cannot be quantified and further research into the apparent demand is warranted.

Strengths and limitations

This study represented the provision of homebirth services in a publicly-funded model however, in NSW, more than half of homebirths were attended by midwives in private practice. Smooth transfers to hospital require a networked or integrated service. Additionally, transfer costs were not included in the total cost for women who transferred to hospital from home as not all transfers occur via ambulance. If an ambulance was required, we calculated an additional \$416 for transfer assuming a ten-kilometre distance from the nearest maternity facility¹. In countries where

different birth setting options are integrated in to the health system, for example the United Kingdom, New Zealand or the Netherlands, the decision for women about where they will give birth is more contemporaneous, and the transfer processes are well understood and facilitated by the health services [28–30]. In Australia, homebirth is uncommon and integration into the health services varies across individual services, as do attitudes relating to the acceptability and demand among midwives and obstetricians [31, 32]. Fox et al (2018) explored the processes and interactions that occurred during transfer from home to hospital during a birth for both women and health professionals. They found the divergence of philosophical beliefs related to safety and risk negatively influenced their understanding and respect for the women and the midwives who were attending their birth. This resulted in an “us and them” dynamic which created an atmosphere of conflict rather than collaboration in some transfer cases [33]. The cost of transfer also varies with the distance from the maternity facility, which may increase (or decrease) the cost of transfer from home or a freestanding birth centre.

Conclusion

The findings from this study offer some clarity into the financial saving of offering greater options to women seeking an alternative to giving birth in hospital. Maternity service provision is complex and admission for intrapartum care drives the costs related to overheads, interventions and outcomes. Given the relatively lower rates of complex intervention and neonatal outcomes associated with women at low risk of complications, we can assume the cost of providing them with homebirth and birth centre options could be cost-effective.

Abbreviations

ABS: Australian Bureau of Statistics; APDC: Admitted Patient Data Collection; AR-DRG: Australian Refined-Diagnosis Related Groups; AUD: Australian dollars; CHReL: Centre for Health Record Linkage; GP: General Practitioner; ICD-10-AM: International Classification of Diseases-Australian modification; MDC: Major Diagnostic Category; MGP: Midwifery Group Practice; NICU: Neonatal Intensive Care; NSW: New South Wales; NSWBRDM: NSW Registry of Births, Deaths and Marriages; PDC: Perinatal Data Collection; SCN: Special Care Nursery; UK: United Kingdom; USA: United States of America

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Authors' contributions

VS, CH and RV conceived of the study design. The data were acquired for the Birthplace in Australia study and approved to be used for this study. VS and SC undertook the analysis. VS wrote the first draft of the paper, CH, HD, RV, SY, CT, ST and DS contributed to the content and editing of the paper. All authors agree with the final draft and accept responsibility for the content of the paper.

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¹Transfer costs were calculated using the latest fees and charges for the NSW Ambulance Service which includes a callout fee (AUD\$382) and rate per kilometre (AUD\$3.44). The final transfer cost was calculated at AUD\$416.40 which assumes a ten-kilometre distance to the nearest maternity hospital.

Availability of data and materials

The data that support the findings of this study are not available. It is a condition of the agreement between the Centre for Health Record Linkage (CHeReL) and the researchers that the dataset remain confidential. We are not permitted to make any part of the linked data available to any party outside those named on the research team who have been granted access.

Declarations**Ethics approval and consent to participate**

We received approval from the NSW Population and Health Services Research Ethics Committee, approval number HREC/14/CIPHS/15. Consent to participate was waived due to the size of the dataset and the fact that the data is routinely collected and de-identified during the linkage process.

Consent for publication

No applicable

Competing interests

The authors declare they have no competing interests.

Author details

¹Centre for Midwifery, Child and Family Health, Faculty of Health, University of Technology Sydney, PO Box 123 Broadway, Sydney, NSW 2007, Australia. ²Centre for Health Economics Research and Evaluation, University of Technology Sydney, Sydney, Australia. ³School of Nursing and Midwifery, Western Sydney University, Sydney, Australia. ⁴University of Sydney, Sydney, Australia. ⁵College of Nursing and Health Sciences, Flinders University, Adelaide, Australia. ⁶Burnet Institute, Melbourne, Australia.

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RESEARCH ARTICLE

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Caseload midwifery compared to standard or private obstetric care for first time mothers in a public teaching hospital in Australia: a cross sectional study of cost and birth outcomes

Sally K Tracy^{1,5*}, Alec Welsh², Bev Hall^{1,5}, Donna Hartz^{1,5}, Anne Lainchbury³, Andrew Bisits³, Jan White³ and Mark B Tracy^{4,5}

Abstract

Background: In many countries midwives act as the main providers of care for women throughout pregnancy, labour and birth. In our large public teaching hospital in Australia we restructured the way midwifery care is offered and introduced caseload midwifery for one third of women booked at the hospital. We then compared the costs and birth outcomes associated with caseload midwifery compared to the two existing models of care, standard hospital care and private obstetric care.

Methods: We undertook a cross sectional study examining the risk profile, birth outcomes and cost of care for women booked into one of the three available models of care in a tertiary teaching hospital in Australia between July 1st 2009 December 31st 2010. To control for differences in population or case mix we described the outcomes for a cohort of low risk first time mothers known as the 'standard primipara'.

Results: Amongst the 1,379 women defined as 'standard primipara' there were significant differences in birth outcome. These first time 'low risk' mothers who received caseload care were more likely to have a spontaneous onset of labour and an unassisted vaginal birth 58.5% in MGP compared to 48.2% for Standard hospital care and 30.8% with Private obstetric care ($p < 0.001$). They were also significantly less likely to have an elective caesarean section 1.6% with MGP versus 5.3% with Standard care and 17.2% with private obstetric care ($p < 0.001$). From the public hospital perspective, over one financial year the average cost of care for the standard primipara in MGP was \$3903.78 per woman. This was \$1375.45 less per woman than those receiving Private obstetric care and \$1590.91 less than Standard hospital care per woman ($p < 0.001$). Similar differences in cost were found in favour of MGP for all women in the study who received caseload care.

Conclusions: Cost reduction appears to be achieved through reorganising the way care is delivered in the public hospital system with the introduction of Midwifery Group Practice or caseload care. The study also highlights the unexplained clinical variation that exists between the three models of care in Australia.

Keywords: Midwifery group practice, Cost of caseload, Private obstetrics

* Correspondence: sally.tracy@sydney.edu.au

¹Midwifery and Women's Health Research Unit, Royal Hospital for Women, Barker Street, Randwick, New South Wales 2031, Australia

⁵University of Sydney, Sydney, New South Wales 2006, Australia

Full list of author information is available at the end of the article

Background

Australia's national caesarean section rate of 30.8% in 2011 sits above the OECD average of 25.8% of births [1] and well outside the World Health Organisation (WHO) recommendation of 15% [2]. This rate is increasing in both the public and private sectors in Australia, but continues to show a significant degree of unexplained clinical variation [3] and be substantially higher in the private sector [4-6].

In addition to the potential long term morbidity following caesarean section [7-10], operative birth incurs a measurable increase in cost [11,12], and an unquantified burden on the health system through pressure on resources such as staff and operating theatres [13]. The apparent inevitability of a rising caesarean rate due to the broadening indications for a primary caesarean is driving worldwide interest to find ways to address the issue [14].

Many countries have responded to this perceived public health concern with policies designed to promote a lower rate of operative birth and increase the rate of normal vaginal birth. In the US, the *Healthy People 2020* reports a national objective to reduce caesarean births among low risk first time mothers at full-term by 10% to 23.9 percent over the next ten years [15]. Similar policies have been promoted in the UK [16,17]. In New South Wales, Australia the 'Towards Normal Birth' policy directive was launched with the explicit aim of increasing the vaginal birth rate and decreasing the caesarean section rate [18].

At our tertiary hospital in New South Wales we introduced caseload midwifery care with a view to altering the caesarean section rate.

The latest Cochrane systematic review of midwife led care [19] recommends providing midwife led models of care to women in view of their known effectiveness, with a caveat that women who have complex pregnancies proceed with caution. However a randomised controlled trial of caseload midwifery care recently published in the *Lancet* concluded that for women of all risk caseload midwifery care costs less with similar clinical outcomes [20]. That study argued that caseload midwifery appeared to alter some of the pathways that recurrently contribute to increased obstetric intervention, working on the assumption that women will labour more effectively, need to stay in hospital less time and feel a stronger sense of satisfaction and personal control if they have the opportunity to get to know their midwife at the beginning of pregnancy.

The current project was also set in an Australian context with a similar population to that recently described in the randomised controlled trial of caseload care published in *The Lancet* [20]. The current study differed from the trial in that women were able to choose to have caseload care or standard care rather than be randomised to either model. In addition we also included in this analysis a third group of women – those who choose to receive private obstetric care in the public hospital.

Caseload midwifery offers greater relationship continuity, by ensuring that childbearing women receive their ante, intra and postnatal care from one midwife or her/his practice partner [21]. The evaluation of One-to-One Midwifery practice in the UK showed that continuity of carer could improve women's satisfaction with their care, give midwives greater job satisfaction, increase their autonomy, and reduce intervention rates [22,23].

In a clinical redesign of maternity services in 2008 [24], we implemented nine caseload midwifery group practices (MGP) with the aim of providing continuity of midwifery care to women regardless of their risk status at booking. Prior to this there were two main maternity models on offer at the hospital - standard public hospital care or private obstetric care in the public hospital. At the outset we planned to evaluate the introduction of caseload through comparing the new model with both the cost and clinical outcomes of all women who received maternity care at the hospital during the study time period.

Caseload care in our setting is characterised by midwives arranged in formally recognised group practices of four midwives who undertake the midwifery management and responsibility for the continuum of care through pregnancy, birth and postpartum for a specified caseload of women [23]. The 'named' midwife provides leadership in midwifery care within her scope of practice with arrangements between partner members of the midwifery group practice to provide cover for leave and time off. Consultation and referral occurs as necessary using the Australian Midwifery Consultation and Referral Guidelines [25]. Collaborative practice is encouraged between the MGP midwives and a nominated consultant obstetrician or with other medical colleagues. Unlike other midwifery models such as team or birth centre care there is no limitation to only care for women deemed to be 'low risk'. In addition to this the MGP midwives experience a level of flexibility through their annualised salary contracts which allows them to self-manage their work hours in response to individual woman's needs rather than the ward roster system.

In the *Standard Care* model women receive their care from rostered midwives in discrete wards or clinics; public hospital obstetric care (staff and trainee obstetricians) and community based general medical practitioner care. In the *Private Obstetric* model women pay for the services of a private obstetrician and receive private antenatal care in the rooms of their obstetrician. During labour and birth management decisions are made by the private obstetrician. Women are cared for in the hospital ward or clinic setting by the rostered midwives and obstetric trainees who provide the routine or standard public hospital care. Midwifery care in all three models is funded through state based revenue via the acute health services budget funding for public hospitals.

Following the introduction of Midwifery Group Practice at our hospital we undertook a cross sectional study to examine both the cost of each model of care from the standpoint of the public health system and the maternal and infant outcomes. There has not been an economic analysis of the three models of care available in the Australian public hospital setting to date.

The population included all women who gave birth at the metropolitan teaching hospital between 1st July 2009 and 31st December 2010. In an effort to make a more meaningful comparison between the three different models of care we examined more closely a sub group of the population known as the 'standard primipara' [26-28] similar to that reported recently by Coulm et al. [29] in France. These women were considered low-risk at the time of birth and were having their first baby. We examined the outcomes of each option for maternity care available to all women, and in particular to those described as the 'standard primipara'. The primary outcomes were the mode of birth defined as caesarean section, instrumental birth or unassisted vaginal birth; and the cost associated with providing this care per woman from the standpoint of the public hospital over one financial year 2009/10.

Methods

The study population included all women who gave birth at a large metropolitan tertiary teaching hospital between the 1st July 2009 and the 31st December 2010. Data were entered into the *Obstetrix* hospital data system by the attending midwife and electronically collated and checked by the research midwives. For missing data and data that were not credible the notes were checked manually. Maternal factors available for analysis were age, parity, medical conditions (any or none reported), and obstetric complications (any or none reported) as well as mental health disorders. Labour onset was described as spontaneous, induced or none (where an elective caesarean was performed). Induction was achieved through the use of drugs or mechanical means (Foley catheter) plus amniotomy - but not amniotomy alone. Augmentation referred to the acceleration of labour after 4 cm dilatation. Data were collected for unassisted vaginal birth, instrumental birth including vacuum and forceps, caesarean section including elective (no labour leading to caesarean section) as well as in labour, epidural in the first stage of labour, episiotomy and perineal status following birth. Neonatal factors included multiple birth, gestational age, birth weight, Apgar scores at one and five minutes, resuscitation techniques and admission to special care baby unit or neonatal intensive care nursery. Women having a first baby (at 20 weeks or more of gestation) were analysed separately to those women with a previous birth because of the significant impact of the care and outcome of previous pregnancies on care in multiparous pregnancies. Gestational age

was calculated from menstrual dates noted by the woman and usually confirmed in the first trimester through routine ultrasound dating.

The group of women identified as the "standard primipara" is defined in the international and Australian literature [26-28] as a 20-34 year old woman, giving birth for the first time, free of obstetric and specific medical complications, with a singleton presenting by the vertex. The infant is of normal weight (10-90th centile for birthweight) and born between 37 and 41 completed weeks of pregnancy. Comparison of intervention rates in this group of women effectively controls for differences in population or case mix between groups [26,27,30].

The cost of care was calculated for all women and controlled for differences in the groups of women in each model by examining the cost for primiparous, multiparous and standard primipara separately. We itemized each hospital occasion of service over one financial year (2009/10). The costing branch at the hospital obtained expenditure data for actual and estimated direct and indirect costs from the various cost centres at the hospital. Direct costs were collected for clinical midwifery and obstetric time; operating rooms; pathology; imaging; wards; allied health; pharmacy; depreciation and direct 'on costs'. Indirect costs included: indirect clinical midwifery and obstetric time; operating rooms; pathology; imaging; wards; allied health; pharmacy and indirect depreciation. (These are standard mechanisms to attribute an average cost per ward per unit time adjusted for complexity, although some costs are directly attributed to the patient such as X-rays). The costs presented in this paper are based on expenditure data received from the hospital financial system which provides detailed information about the number of services each woman receives during her hospital stay. The costs for all services used by each woman were then aggregated to determine the total patient cost for pregnancy, birth and postnatal stay (from booking visit to 6 weeks postnatally).

Perinatal mortality was reported for neonates where death occurred during the first 4 weeks of life in a live born infant regardless of gestation or birth weight per 1000 births [31]. Both early and late neonatal deaths were included in the analysis, because deaths due to events in labour may occur beyond the early neonatal period. The perinatal death rate is defined as fetal deaths (of at least 20 weeks gestation or at least 400 grams birth weight), and all neonatal deaths.

Local Human Research Ethics Committee (HREC) approval was obtained (SESIAHS-NHN N10/220).

Analysis

Associations between model of care and maternal, infant, and clinical factors were examined by contingency table analyses unless otherwise specified.

Congenital anomalies were removed from the denominator. When the numbers of events were small, we used Fisher's exact test. Total costs for each woman were summarized as medians and means, with 95% confidence intervals for mean differences by group, analysed with ANOVA using STATA 12 [32] and examined separately for primiparous, multiparous and standard primipara.

Results

We excluded 51 women who were not booked and who were transferred to the hospital under emergency conditions for special medical care from outlying rural districts and 3 women who planned a homebirth and were attended by privately practicing homebirth midwives. This left a sample population of 6,020 women who planned and gave birth at the hospital between 1st July 2009 and the 31st December 2010. There were small but significant demographic differences between women who received care within each of the three maternity models (Table 1). Private obstetricians cared for more women with multiple pregnancies and more women whose infants fell below the 10th centile in birthweight as well as a higher percentage of women older than 35 years (Table 1). MGP midwives cared for women with a small but significantly lower risk profile who gave birth to infants more likely to be in the higher gestational age and birthweight centiles (Table 1). Women under Standard Hospital management were less frequently older than 35 years, more primiparous and with a higher risk profile than either of the other two groups (Table 1). After excluding the 182 women who had a multiple pregnancy 5838 women gave birth to a singleton infant (Table 2) of whom 1,950 (33.4%) women were cared for by MGP; 2655 (45.4%) women had Standard public hospital care and 1233 (21.1%) gave birth in the public hospital under Private Obstetric care (Table 2).

Amongst women with a singleton pregnancy (Table 2), those in MGP were significantly more likely to have a spontaneous onset of labour, less analgesia and a higher rate of vaginal birth with a lower admission rate to the neonatal and special care baby units (Table 2). Women with a singleton infant cared for by Private Obstetricians were more likely to have an elective caesarean (32.5%) than MGP (5.7%) or Standard hospital care (17.9%) ($p < 0.001$), and had a higher rate of epidural in the first stage of labour (37.6 versus 27.8) ($p < 0.001$) and a higher rate of episiotomy (31.4%) than MGP (11.6%) or Standard care (21.3%) ($p < 0.001$) (Table 2).

During the time of the study there were 1,379 (22.9%) women whom we described as the standard primipara (Table 3). *Standard primiparae* under MGP were significantly more likely to have a spontaneous onset of labour, experience an unassisted vaginal birth, and a lower rate of elective caesarean (1.6%) compared

Table 1 Maternal and infant characteristics of all women who gave birth at the teaching hospital, 1st July 2009-31st December 2010

	MGP N = 1,965 (32.8) %	Standard hospital N = 2,751 (45.6) %	Private obstetric N = 1,304 (21.6) %
Maternal age (years)			
Average age	32.4	31.7	34.0
<20	1.5	1.4	0.3
20-34	63.5	67.2	51.6
> = 35	35.0	31.4	48.1
Parity			
Primiparous	49.3	55.4	52.6
Multiparous	50.7	44.6	47.4
Any risk at onset of labour			
None identified	73.1	57.7	61.9
Risk Identified	26.9	42.3	38.1
BMI#			
Average	22.73	23.31	23.55
Missing data	9.5	7.7	74.7
Plurality			
Singleton	99.2	96.5	94.6
Multiple	0.8	3.5	5.4
Gestational age (weeks)			
<37	5.0	11.3	14.3
37-41	93.4	88.0	85.7
42-43	1.6	0.7	0
Birth weight (g)			
<2500	3.2	9.3	11.2
2500-4499	94.9	89.2	87.8
> = 4500	1.9	1.5	1
Birth weight percentiles			
0-9.9	4.7	11.7	14.3
10.0-24.9	11.7	16.0	17.6
25.0-75.0	51.8	49.3	48.7
75.1-90.0	17.4	14.3	12.5
90.1-100	14.4	8.7	6.9

Values are in percentages.

Unless specifically stated the distribution of these variables is significantly ($p < 0.001$) different between models of care using χ^2 tests.

Analysis of variance was used to test differences in means across three groups with a Bonferroni correction.

to Standard care (5.3%) and Private obstetric care (17.2%) $p < 0.001$ (Table 3).

Public hospital costs calculated for the 4,038 women who received care within the three groups over one financial year are shown in Table 4. The average cost per

Table 2 Labour and birth outcomes for all women who had a singleton pregnancy

	MGP		Standard hospital		Private obstetric		
	n = 1950		n = 2655		n = 1233		
	No.	%	No.	%	No.	%	
#Labour							
Spontaneous onset	977	50.1	813	30.6	305	24.7	p < 0.001
Induction	373	19.1	736	27.7	321	26.0	p < 0.001
Augmentation	485	24.9	614	23.1	204	16.6	p < 0.001
†Analgesia & 1st stage							
None	642	32.9	386	14.5	118	9.6	
Epidural 1st stage	542	27.8	913	34.4	464	37.6	
Narcotic	144	7.4	316	11.9	44	3.5	
Nitrous O ₂	427	21.9	481	18.1	158	12.8	
Other	58	3.0	32	1.2	16	1.3	p < 0.001
Mode of birth							
Unassisted vaginal	1331	68.3	1304	49.1	450	36.5	
Instrumental birth	283	14.5	475	17.9	203	16.5	
C/S with labour	224	11.5	401	15.1	179	14.5	
Elective C/S (No labour)	112	5.7	475	17.9	401	32.5	p < 0.001
Perineal status (excl. elective CS)							
Intact following vaginal birth	462	25.0	669	30.1	295	34.3	
Grazes	167	9.0	142	6.4	29	3.4	
Episiotomy only	229	12.4	413	18.6	216	25.1	
1 st & 2 nd degree tear	918	49.6	895	40.2	301	35.0	
3 rd & 4 th degree tear	52	2.8	61	2.7	7	0.8	
Episiotomy & 3/4 th degree tear	23	1.2	44	2.0	12	1.4	p < 0.001
Infant outcomes							
Apgar score at 5 min							
7-10	1909	97.9	2565	96.6	1205	97.8	
<7	41	2.1	90	3.4	28	2.3	p = 0.02
Admission NICU/SCN							
No	1,785	91.6	2,254	84.9	1076	87.3	
Yes	165	8.4	401	15.1	157	12.7	p < 0.001
Outcome #							
Live/survived	1937	99.60	2608	98.27	1218	98.94	
Live/neonatal death	1	0.05	21	0.79	4	0.32	
Stillbirth	7	0.36	25	0.94	9	0.73	p = 0.001

#Percentages may not add up to 100% if women had induction and augmentation.

†Percentages may not add up to 100% if women had no analgesia before CS.

Distribution of these factors significantly (p < 0.001) different between models of care using x² tests unless otherwise specified.

#Fishers exact test.

woman per year receiving MGP care was \$3,904.64. This was \$1935.00 (95% CI \$1,625.1-\$2,245.40) less than the woman receiving Standard care, and \$1,394.88 (95% CI \$1,019.90 - \$1,769.80) less than the woman receiving Private obstetric care (Table 4) (p < 0.001). (Note: this analysis does not include other costs to the taxpayer

outside the public hospital system such as Medicare funding which is incurred by women receiving Private obstetric care or general practitioner shared care who receive antenatal care outside of the public hospital system.) The actual costs from the hospital perspective are further categorised for the care of primiparous women,

Table 3 Birth outcomes for the 'standard primipara' associated with MGP, standard and private obstetric care

Labour & birth characteristics	MGP		Standard hospital		Private obstetric		MGP		Standard hospital		Private obstetric		
	N	(%)	95% CI		N	(%)	95%CI		N	(%)	95%CI		
Spontaneous onset	217	(45.0)	40.6	49.5	207	(32.0)	28.5	35.7	70	(28.0)	22.8	33.9	p < 0.001
Augmentation	171	(35.5)	31.3	39.9	228	(35.2)	31.7-	39.0	67	(26.8)	21.7	32.6	p = 0.04
Epidural 1st stage	195	(40.5)	36.2	44.9	291	(45.0)	41.2	48.8	136	(54.4)	48.2	60.5	p = 0.002
Mode of birth													
Unassisted vaginal	282	(58.5)	54.1	62.9	312	(48.2)	44.3	52.1	77	(30.8)	25.1	36.5	
Instrumental birth	118	(24.5)	20.6	28.3	175	(27.0)	23.6	30.5	86	(34.4)	28.5	40.3	
C/S with labour	74	(15.4)	12.1	18.6	126	(19.5)	16.4	22.5	44	(17.6)	12.9	22.3	
Elective C/S (no labour)	8	(1.6)	0.5	2.8	34	(5.3)	3.5	6.9	43	(17.2)	12.5	21.9	p < 0.001
Episiotomy	101	(21.0)	17.3	24.6	171	(26.4)	23.0	29.8	76	(30.4)	24.7	36.1	p = 0.01
Admit to NICU/SCN	38	(7.9)	5.4	10.3	63	(9.7)	7.4	12.0	19	(7.6)	4.3	10.8	p = 0.48
Apgar < 7 at 5 mins	9	(1.9)	0.66	3.1	14	(2.2)	1.0	3.2	2	(0.8)	0	1.9	p = 0.38

multiparous women and the standard primipara showing mean, median, range, interquartile range and mean difference in costs (Table 4).

The characteristics of each model of care are outlined in Table 5.

Discussion

This small single centre cross sectional study found that MGP care is associated with significantly higher rates of 'normal birth' and a seemingly more cost effective method of delivering maternity care. This study is the

Table 4 Cost per woman from the public hospital perspective for one financial year 2009/10 in Australian dollars

Model	mean	median	IQR	Mean diff (95% CI)
All women				
N = 4,038				
MGP (1,369)	\$3,904.64	\$3,041.71	\$1252.65 - \$5593.33	Reference
SC (1,799)	\$5,839.86	\$5,159.50	\$2850.95-\$7603.85	\$1,935 (\$1,625.1 - \$2,245.40)*
POC (870)	\$5,299.52	\$4994.69	\$2728.47-\$6744.90	\$1,394.88 (\$1,019.90 - \$1,769.80)*
Primiparous women				
N = 2,111				
MGP (671)	\$4722.11	\$4124.37	\$1887.07-\$6664.49	Reference
SC (983)	\$6307.02	\$5879.71	\$3577.41-\$8045.18	\$1,584.91 (\$1167.60 - \$2,002.20)*
POC (457)	\$5878.80	\$5775.72	\$3512.11-\$7186.27	\$1,156.69 (\$651.30 - \$1,662.10)*
Multiparous women				
N = 1,927				
MGP (698)	\$3118.79	\$2121.75	\$760.68-\$4097.74	Reference
SC (816)	\$5277.08	\$4080.72	\$2364.13-\$7031.86	\$2,158.29 (\$1,704.70 - \$2,611.90)*
POC (413)	\$4658.53	\$3922.21	\$2435.91-\$6163.57	\$1,539.73 (\$993.60 - \$2,085.90)*
Standard Primipara				
N = 963				
MGP (349)	\$3903.78	\$3410.02	\$1513.88-\$5647.94	Reference
SC (425)	\$5494.69	\$5429.44	\$3371.54-\$6936.25	\$1,590.91 (\$1177.39- \$2,004.43)*
POC (189)	\$5279.23	\$5218.63	\$3505.79-\$6633.25	\$1,375.45 (\$858.46 - \$1,892.44)*

*p < 0.001.

IQR = Inter quartile range.

MGP = Midwifery group Practice; SC = Standard Care; POC = Private Obstetric Care.

(Note total population N = 4,038).

Table 5 Factors differentiating midwifery and obstetric care in each model

	Midwifery group practice (MGP) caseload care	Standard or routine hospital practice	Private obstetric care in the public hospital
<i>Antenatal Care</i>	Women receive care with MGP midwives in the hospital/at home or in the community	Women receive care from the hospital antenatal clinic midwives or in combination with a GP and the hospital clinic midwives.	Women pay a fee and receive care from a private obstetrician in the obstetrician's rooms.
<i>When risks are identified during pregnancy</i>	Women continue to receive caseload midwifery care with the MGP midwife in consultation with a specialist clinic or with the obstetrician assigned to work with the Midwifery Group Practice.	Women are recommended to attend the doctor's clinic or a specialised clinic.	Women continue care with the private obstetrician or may be referred to a specialised clinic.
<i>When labour begins</i>	Women contact their MGP midwife and decide with their midwife when to go to the labour ward or birth centre.	Women contact labour ward and are advised via telephone whether to come in to the labour ward.	Women contact labour ward and are advised via telephone to come in. Labour ward staff alert the private obstetrician to the admission.
<i>Labour care</i>	Women are cared for by their known MGP midwife or her back-up partner. Problems are attended to by the registrar or consultant on call for birthing services.	Women are cared for by the rostered labour ward midwives. Problems are attended to by the registrar or consultant on call for birthing services.	Women are cared for by the rostered labour ward midwives in consultation with the private obstetrician. Urgent problems are attended to by the registrar on call until the private obstetrician arrives.
<i>Postnatal</i>	Women are discharged at 4 hours postnatal or after a short stay in the postnatal ward and visited by the MGP midwives.	Women are discharged to the home visiting service after a short ward stay.	Women stay in the postnatal ward until the private obstetrician discharges them home.
<i>Conditions of employment</i>	MGP midwives are employed on an annual salary which allows continuity of care for a caseload of women. They work in cycles of 152 hours over four (4) weeks; and do not work in excess of twelve (12) consecutive hours in any twenty four (24) hour period.	Midwives are rostered on wards or clinics and paid according to the award and whether they are full time (38 hours per week) or part time. They are employed to provide a rostered service.	Women booked under a private obstetrician receive the same public hospital midwifery care as those receiving Standard Care.

first to compare cost and outcomes in the public hospital system in Australia associated with the three dominant models of care in large metropolitan centres. Factors that contributed to a lower cost were the increased rate of vaginal birth with fewer epidurals in the first stage of labour; lower rates of elective caesarean section, induction of labour, episiotomy and shorter postnatal lengths of stay.

The study is limited by size and selection bias where those women who chose MGP care may have a stronger commitment to achieving a normal vaginal birth outcome. However, in Australia as in other industrialised countries, women are positioned as self-governing and autonomous consumers able to 'choose' what they consider their best option of care [33]. The introduction of MGP in the public hospital system could be seen as a further enhancement to women's choice and one that has the potential to provide the best market value for money in terms of public hospital funding. The study found an association between MGP care and fewer caesarean sections amongst women without complex pregnancies and having a first baby. Although these associations cannot be considered causal, information such as this is important for first time mothers for whom a first caesarean section so clearly establishes the direction of future pregnancy outcome [34]. To achieve a sustainable level of flexibility MGP midwives work within group practices of four midwives employed under a state

approved annualised salary package which includes a 29% loading that provides an on-call allowance. They are required to work a cycle of 152 hours over a four week time period and do not work in excess of twelve consecutive hours in any twenty-four hour period (24). MGP midwives may arrange their on call for alternate nights and weekends; or other configurations that are mutually agreed within the group practice. An integral factor in this model is the strong collaborative relationship between the MGP midwives and a nominated consultant obstetrician. Referral to medical or other services occurs as necessary using the Australian National Midwifery Consultation and Referral Guidelines [25].

Conclusion

The Australian public are generally unaware of the association with model of care and birth outcomes. The latest Cochrane systematic review found that women who received continued care throughout pregnancy and birth from a small group of midwives were less likely to give birth pre-term and required fewer interventions during labour and birth than when their care was shared between different obstetricians, GPs and midwives [19]. Frequently the increased intervention rate within the private sector in Australia has been apportioned to the 'higher risk' population that seeks this care. By comparing a standardised low

risk population: the standard primipara, we have shown that this may not be the case and that a level of unexplained variation exists in the care of maternity patients. Furthermore the results of this study demonstrate how cost reduction can be achieved through a radical system change in the way midwifery services are provided. A hypothetical scenario of the closure of two MGPs (320 women per annum) would increase the average cost of care at our hospital by \$619,267.20 per year (\$95% CI 520,032.00 - 718,580.00).

Childbirth is the single most important reason for hospitalisation and accounts for the highest number of occupied bed days [34]; however, the current structure of our maternity system makes it challenging to deliver value for money. Financing arrangements, combined with the traditional case mix approach to public hospital funding, direct maternity care in Australia towards an acute care setting that uses specialist care and limits the role of midwives [35]. Large cost differences among women receiving care for similar conditions reveal additional opportunities for cost reduction [2,16]. Midwifery group practice models could play a major role in the future reducing the public health burden by increasing normal outcomes and promoting more efficient use of funds.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

ST was responsible for the conceptual design of the study, drafted the manuscript and gave final approval of the version to be published. DH, AW, AB, AL and JW participated in the design of the study; helped draft the manuscript and participated in the day to day management and coordination of the study. MT participated in the study design; helped draft the manuscript performed the statistical analysis. JW is the overall manager of the midwifery group practices and participated in the study. BH participated in the design of the study; helped draft the manuscript and undertook the cost data linkages. All authors read and approved the final manuscript.

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Author details

¹Midwifery and Women's Health Research Unit, Royal Hospital for Women, Barker Street, Randwick, New South Wales 2031, Australia. ²Department of Maternal Fetal Medicine, University of New South Wales, Randwick, New South Wales 2031, Australia. ³Royal Hospital for Women, Barker Street, Randwick, New South Wales 2031, Australia. ⁴Centre for Newborn Care, Westmead Hospital, Cnr Hawkesbury & Darcy Roads, Westmead, New South Wales 2145, Australia. ⁵University of Sydney, Sydney, New South Wales 2006, Australia.

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