**Which mothers receive a post partum home visit in Queensland, Australia? A cross-sectional retrospective study**

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**Abstract**

**Objective**: While home visiting in the early postpartum period appears to have increased, there are limited data defining which women receive a visit and none that include Queensland. We aimed to investigate patterns of postpartum home visiting in the public and private sectors in Queensland.

**Methods:** Data were collected via a retrospective cross-sectional survey of women birthing in Queensland between 1st February and 31st May 2010 at 4 months postpartum (N = 6948). Logistic regression was used to assess associations between receiving a home visit and sociodemographic, clinical and hospital variables. Analyses were stratified by public and private birthing sector because of significant differences between sectors.

**Results:** Public sector women were more likely to receive a visit from a nurse or midwife (from the hospital or child health sector) within 10 days of hospital discharge (67.2%) than private sector women (7.2%). Length of hospital stay was associated with home visiting in both sectors. Some vulnerable sub-populations in both sectors were more likely to be visited, while others were not.

**Conclusions:** Home visiting in Queensland varies markedly between the public and private sector and is less common in some vulnerable populations. Further consideration to improving the equity of community postpartum care in Queensland is needed.

**What is known about the topic?**

A recent paper found that most women from the public sector in Victoria and South Australia receive an early postpartum home visit from a midwife or nurse. Queensland only recently implemented a program to increase postpartum home visiting but who receives visits is still unknown.

**What does this paper add?**

No previous study has investigated which women receive early postpartum home visits in Queensland, nor home visiting rates within the private sector. This paper also examines whether specific subpopulations of vulnerable postpartum women are receiving home visits so that patterns of inequity or unmet needs can be identified.

**What are the implications for practitioners?**

Home visiting by nurses or midwives in the postpartum period in Queensland was less common than in other Australian states, and varies markedly between the public and private sector. These differences highlight inequities in community postpartum care that need to be addressed if women are to receive the most cost-effective and clinically appropriate care and support in the postpartum period.

**Introduction**

In Australia, home visiting for postpartum women was first introduced to ensure ongoing care for women and their infants who were discharged 'early' from hospital following the birth. [1] In the early 1990s a relatively small proportion of Australian women (38.2%) were discharged before five days – the minimum recommended time for postpartum care (either in hospital or at home) at the time,[1] and 3.2% were discharged in less than 2 days.[2] Subsequently 'early' discharge became the norm with more than 80% of women (89.2% in public sector hospitals and 61.3% in private sector hospitals) leaving hospital in less than 5 days in 2010. Of these, 17.7% were discharged before 48 hours with a further 21.0% discharged before day 3.[3] In countries such as the UK, Sweden and the USA the majority of women are discharged within 48 hours, some with ongoing postpartum care at home and others without.[4, 5] There are several reasons for reducing the length-of-stay including the financial benefits of discharging women,[6] constraints of physical infrastructure and workforce in hospitals[1] and the familiarity of the home environment compared to a hospital.

Alongside programs to promote early discharge, programs to provide universal home visiting by a nurse or midwife in the immediate postpartum period are common in most health jurisdictions in Australia.[7] Biro et. al. recently reported that the majority of women who birthed in publicly funded hospitals in South Australia (88.0%) and Victoria (76.0%) received a home visit by a midwife.[8]

In Queensland, many publicly funded hospitals have had home visiting programs that specifically targeted women who were discharged early, but in 2008 the State Government began the rollout of the Universal Postnatal Contact Service to provide contact by a midwife or child and family health nurse (who held a midwifery qualification) for all women within 10 days of hospital discharge.[9] This contact was primarily by a home visit, but may have also been by telephone or letter.[9] Although termed a universal program, home visiting was often limited by geographic location or length-of-stay and was only available to women who birthed in publicly funded hospitals.[3] No program existed for women who birthed in private hospitals where they received care from a private obstetrician and usually had a longer length-of-stay.

Furthermore, the emphasis continued to be on providing care for women discharged early.[9] This may mean that more vulnerable women and infants, who stayed in hospital longer, may not have been eligible to receive a home visit. Vulnerable women and infants included mothers birthing for the first time or with socioeconomic disadvantage, lower level of education, a history of depression, medical problems during labour and birth and significant breastfeeding issues. They may also not have been confident in caring for their infant or had infants who were preterm, low birth-weight or required intensive care.

There is limited evidence that universal postpartum home visiting benefits mothers or infants [10] and no apparent consensus about who should receive a home visit. It may be more appropriate to ensure women who are more 'at risk' of developing problems in the postpartum period are prioritised, although there is no evidence for the extent to which women at risk in both public and private sectors are being served through current systems of postpartum home visiting.

The aim of this paper was to assess patterns in the provision of home visiting for Queensland women within the first 10 days of hospital discharge in both the public and private sector, and to assess whether vulnerable women were more likely to receive a home visit.

## Methods

### *Participants*

Participants were women who completed the *Having a Baby in Queensland Survey 2010*, a retrospective cross-sectional, self-report study based in Queensland, Australia. All women who had a live birth in Queensland between 1st February and 31st May 2010, had a complete mailing address with the Registrar of Births, Deaths and Marriages and did not have a neonatal death recorded were posted a survey 4 months postpartum. The survey could be completed in hard copy (and returned in a reply paid envelope), via a secure online survey system or by telephone (with interpreters if needed). Two weeks after the initial survey, reminder/thank you cards were sent to all participants. Further details can be found elsewhere.[11]

Ethics approval for the survey was obtained from the Behavioural and Social Sciences Ethical Review Committee of the University of Queensland.

***Measures***

*Home visits*

Women were asked whether they were visited at home by a nurse/midwife in the first 10 days post-discharge (yes/no). No distinction was made in the survey between a midwife or a child and family health nurse.

*Maternal and infant characteristics*

Maternal age at the time of the birth was grouped in 5-year intervals from <20 years to 40 and over. Parity was dichotomised as either primiparous or multiparous. Women were asked to nominate their country of birth, ('Australia' or 'other'). Level of education was dichotomised as 'didn't complete high school' and 'completed high school'. Area of residence was classified using the Accessibility/Remoteness Index of Australia (ARIA) classification as; major city, inner regional, outer regional, rural and remote.[12] Based on deciles of Socioeconomic Index for Areas (SEIFA) three categories for relative socioeconomic disadvantage were derived: high (1-4 deciles), medium (5-7 deciles) and low (8-10 deciles).[13]

*Clinical variables*

Dichotomous variables were derived for infant gestational age at birth (< 37 weeks or ≥ 37 weeks), birth weight (<2500g or ≥ 2500g) and method of birth (vaginal or caesarean).

Women also indicated whether they had been told by a health professional that they were experiencing depression during their pregnancy or had experienced complications during labour, such as emergency transfer or admission to intensive care of the mother, or infant admission to the special care nursery (SCN).

*Hospital variables*

Sector of birth facility was recorded as either public or private, based on reported facility for birth. Length of hospital stay after birth was recoded into three categories: 0-2 nights, 3-4 nights and 5 or more nights.

***Statistical analysis***

Results were analysed using SPSS for Windows (version 21.0).[14] Sociodemographic characteristics of participants were presented as numbers and percentages and compared to data for all birthing women in Queensland[3] using Chi Square test for discrete variables. Chi-square analysis was used to determine differences between the proportion of women who received a postpartum home visit and who birthed in the private and public sectors.

Univariate logistic regression analysis was used to determine the association between receiving a home visit and length of hospital stay, maternal and infant characteristics, and clinical variables known to affect maternal and infant well-being in the postpartum period. Associations between receiving a home visit and other variables after adjusting for length of hospital stay were also determined, to understand patterns in receiving home visits after accounting for differences in early or later discharge from hospital.

Because of the large sample size, Alpha was set at 0.01 for all analyses.

**Results**

In total 20,364 women were sent a survey and 7193 returned usable data (response rate of 35.3%). After excluding 245 women because their infant did not come home from hospital with them (43) or they did not provide data for home visiting (124) or birthing facility (78) the final cohort for this analysis was 6948 women.

Participant demographics and comparison with the Queensland birthing population in 2010[3] are found in Table 1. Participants were older and more likely to be primiparous, born in Australia, live in a major city, give birth by caesarean section in a private hospital and stay in hospital longer than the Queensland birthing population.

A nurse or midwife visited 57.7% of the participants in the first 10 days following hospital discharge. Women who birthed in the public sector were significantly more likely to receive a home visit (67.2%) than women who birthed in the private sector (7.2%; $p<0.001$) and this difference was apparent for all lengths of hospital stay (0-2 nights $p<0.001$, 3-4 nights $p<0.001$, 5 or more nights $p<0.001$) (See Table 2). Therefore, all further analyses were stratified by sector of birth facility.

*Associations with receiving a home visit*

Using univariate logistic regression, women in the public sector were more likely to be visited if they stayed in hospital 0-2 nights or were born outside Australia. They had lower odds of being visited if they had high socio-economic disadvantage, lived in locations other than a major city, stayed in hospital 5 or more nights, or if their infant was admitted to a SCN (See Table 2).

Women who birthed in the private sector were more likely to have a home visit if they stayed in hospital for 2 nights or less (See Table 2).

*Adjustment for length of hospital stay*

After adjustment for length of hospital stay, women who birthed in the public sector had higher odds of a home visit if they were primiparous or were born outside Australia. They had lower odds of a home visit if they lived in locations other than a major city, or had high socio-economic disadvantage (See Table 2).

Women who birthed in the private sector had higher odds of being visited if they had a caesarean birth or their infant was preterm (See Table 2).

**Discussion**

This is the first study to report on patterns of postpartum home visiting in Queensland, and for both the public and private sector in Australia.

Overall, fewer Queensland women who birthed in the public sector (67.2%) received a home visit in the first 10 days after hospital discharge compared to similar women from Victoria (76.0%) and South Australia (88.0%) in 2007,[8] and reflects differences in publicly funded health services in Australia. Victoria's Maternity Services Program requires all women to be offered at least one domiciliary visit,[8] and government policy dictates that all women receive a visit from the maternal and child health service within two weeks of hospital discharge.[15] In South Australia, women are offered a domiciliary visit in line with local hospital policy as well as a universal visit by the Child and Family Health Service within 2 weeks.[16] Only recently has

there been an initiative from Queensland Health to encourage either a home visit or telephone contact for all women who birth in the public sector.[9]

There are no data to compare home visit rates for women who birth in the private sector, but in this study only 7.2% of these women received a home visit within 10 days of hospital discharge. Differences in home visiting rates between the public and private sector is often thought to be due to the longer length of hospital stay common among women in the private sector.[17] However, we found that women who birthed in the public sector were more likely to receive a home visit regardless of length of hospital stay; more than 50% of women from the public sector who stayed 5 nights or more received a home visit compared to only 6.1% of women from the private sector. It would appear, therefore, that these differences relate to differences in health system organisation and funding rather than perceived clinical need. Private sector maternity services are usually provided on a user pays basis with most costs reimbursed by health insurance funds. However, hospital provided initiatives rarely extend into the community and only a few nursing/midwifery community services are reimbursed by health funds, reducing the availability of private sector home visiting. Most Australian community health services (including child and family health nursing services) are funded by State and Federal Governments and are available to all, irrespective of health insurance or socioeconomic status and many community-based services provide home visits to women regardless of where they birth. However, in Queensland, these services often require mothers to proactively seek assistance following discharge before a home visit can be arranged. Even for women who make contact, the timing of the visit is often delayed. In contrast, public sector health providers proactively arrange home visits for the majority of mothers who birth in their facilities.

Regardless of sector, length of hospital stay was consistently associated with receiving a home visit. Women who stayed 0-2 nights had 1.3 and 3.6 times higher odds of a home visit in the public and private sector respectively compared to women who stayed 3-4 nights. In the public sector, increasing length of stay decreased the odds of a home visit while there was no difference in odds in the private sector for those who stayed 3-4 nights or 5 or more nights. These findings contradict those of Biro's study that found length of stay made no difference to the proportion of women who received a home visit in South

Australia, and only made a difference for women who stayed longer than 5 days in Victoria.[8] In Queensland, more than other states, there appears to be increased emphasis on providing home visits for women who are discharged early (within 48 hours) than on providing a universal service.

While some mothers are happy to be discharged early, there is often a discrepancy between when hospital staff think a mother is ready for discharge and when the mother feels ready.[18, 19] Mothers are often anxious and not confident about caring for themselves or their infant.[20] For many, home visits do not compensate for early hospital discharge with the lack of the physical presence of medical or nursing staff to assist with difficulties and answer concerns.[20] Home visits following early discharge are thought to improve the identification of previously unrecognised infant and maternal morbidity [18] and provide education and support for parenting and breastfeeding that could not be accomplished during the short time in hospital.[20]

However, an emphasis on providing home visiting for women discharged early may result in mothers with increased needs who may stay in hospital longer (e.g. young or first time mothers, mothers with socioeconomic disadvantage or born outside Australia and mothers and infants with peripartum complications [21-23]) missing out. Our findings indicate this is not the case for primiparous women and women born outside Australia in the public sector, or women who gave birth by caesarean section or prematurely in the private sector. These sub-populations had higher odds of receiving a home visit even after adjusting for length of hospital stay.

Nevertheless, consistent with results from previous studies[8] results of our univariate analysis showed that women who birthed in the public sector had lower odds of having a home visit if their infants were admitted to the SCN even though mothers were only included in this analysis if the infant came home with the mother. This finding indicates that the extra needs of women whose infants have been in SCN (e.g. a more vulnerable infant or less confident mother) may not be adequately considered in discharge planning.

Although it appears that women with higher socioeconomic disadvantage are at higher risk of poorer health outcomes, [22] disadvantaged women from the public sector were less likely to receive a home visit, regardless of length-of-stay. In addition, women who lived outside major cities were less likely to receive a

home visit. These women, particularly if they lived in rural and remote locations, were already disadvantaged by less access to medical, nursing and peer-support services [24] commonly found in major cities, and may have already travelled considerable distances to give birth with decreased local support. While it is not surprising that women who lived in regional, rural and remote areas in Queensland received fewer home visits because of the long distances a nurse/midwife may need to travel, birthing facilities should consider other initiatives to provide support for these women.

In summary, many women who birthed in the public sector received a home visit and some more vulnerable sub-populations were more likely to receive one. However, other vulnerable sub-populations were less likely to be visited, which may perpetuate health inequities. In the private sector, very few women received a visit, but these visits seemed to target women and/or infants who are potentially at higher risk.

Considering the very large and significant differences in home visiting rates between sectors, even after accounting for length of hospital stay, one must consider the intended purpose of home visiting and question whether some women in the public sector are receiving unnecessary home visits or if the care of women in the private sector is substandard. There is a lack of good evidence about the effect of universal postpartum home visiting on maternal or neonatal mortality or maternal health. There is some evidence of a reduction in health service utilisation by infants and that more home visits positively affect exclusive breastfeeding rates.[10] Our other research also found that women who received a home visit were no more likely to be breastfeeding at 3 months than women who did not receive a visit.[25] Results for increased maternal satisfaction with home visiting are also inconclusive, with one randomised controlled trial finding improved satisfaction with more visits[26] and another, from Syria, finding no difference.[27]

As there is a significant investment (both financial and in personnel) in postpartum home visiting, further thought must be given to the purpose of the visit and the expected outcomes. Only then can the inequities in postpartum home visits, apparent in this analysis, be addressed so that the most cost-effective and clinically appropriate support is provided to all postpartum women.

**Study limitations**

Although sampling via birth notifications with minimal exclusions in this study allowed us to reduce biases associated with sample selection, the low response rate highlights the importance of careful consideration of potential response bias. Survey respondents were not wholly representative of all Queensland birthing women on some indicators (e.g. mode of birth and gestational age) and so the findings may not be generalisable to women who were under-represented.

The retrospective nature of the survey also relies on maternal recall of receiving a home visit, especially so soon after the incident/s. However, it is unlikely that women would forget whether or not a visit from a health professional was received, and the accuracy of women's self-reports about childbirth-related experiences relative to clinical data collection is well supported.[28]

**Conclusion**

Home visiting by midwives and child health nurses from the maternity and child health sector in the postpartum period in Queensland is less common than in other Australian states, varies markedly between the public and private sector and is less likely for specific potentially vulnerable sub-populations. Until these inequities are addressed, the most appropriate care for an individual woman should depend on her risk factors, social circumstances, birth experience and personal preference rather than using arbitrary guidelines such as length-of-stay or other sociodemographic factors including sector of birthing facility.

**Conflicts of interest**

The Authors declare they have no conflicts of interest.

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