



Queensland University of Technology
Brisbane Australia

This is the author's version of a work that was submitted/accepted for publication in the following source:

Stevens, Gabrielle, Thompson, Rachel, Kruske, Sue, Watson, Bernadette, & Miller, Yvette D.

(2014)

What are pregnant women told about models of maternity care in Australia? A retrospective study of women's reports.

Patient Education and Counseling, 97(1), pp. 114-121.

This file was downloaded from: <http://eprints.qut.edu.au/74560/>

© Copyright 2014 Elsevier Ireland Ltd.

NOTICE: this is the author's version of a work that was accepted for publication in *Patient Education and Counseling*. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in *Patient Education and Counseling*, VOL 97, ISSUE 1 (2014). DOI: 10.1016/j.pec.2014.07.010

Notice: *Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source:*

<http://doi.org/10.1016/j.pec.2014.07.010>

What are pregnant women told about models of maternity care in Australia? A retrospective study of women's reports

Gabrielle Stevens^{1*}, Rachel Thompson^{1,2}, Sue Kruske¹, Bernadette Watson¹, Yvette D Miller^{1,3}

¹School of Psychology, The University of Queensland, Brisbane, Australia

²The Dartmouth Center for Health Care Delivery Science, Dartmouth College, Hanover, USA

³School of Public Health & Social Work, Queensland University of Technology, Brisbane, Australia

*Corresponding author at:

School of Psychology, The University of Queensland, St Lucia 4072, Brisbane, Australia.

Email: g.stevens@uq.edu.au, Phone: + 61 (7) 3365 6230, Fax: + 61 (7) 3365 4466

Abstract

Objective: To describe women's reports of the model of care options General Practitioners (GPs) discussed with them at the first pregnancy consultation and women's self-reported role in decision-making about model of care.

Methods: Women who had recently given birth responded to survey items about the models of care GPs discussed, their role in final decision-making, and socio-demographic, obstetric history, and early pregnancy characteristics.

Results: The proportion of women with whom each model of care was discussed varied between 8.2% (for private midwifery care with home birth) and 64.4% (GP shared care). Only 7.7% of women reported that all seven models were discussed. Exclusive discussion about private obstetric care and about all public models was common, and women's health insurance status was the strongest predictor of the presence of discussions about each model. Most women (82.6%) reported active involvement in final decision-making about model of care.

Conclusion: Although most women report involvement in maternity model of care decisions, they remain largely uninformed about the breadth of available model of care options.

Practical Implications: Strategies that facilitate women's access to information on the differentiating features and outcomes for all models of care should be prioritized to better ensure equitable and quality decisions.

Keywords

Models of care, maternity care, information provision, decision support, primary care, patient participation, informed decision-making

1. Introduction

In Australia, as in the United States [1], Canada [2], and the UK [3], there are several available models of maternity care [4]. These models of care operate under a two-tier system that combines publicly funded universal health care with parallel privately funded health care accessible to those who have purchased private health insurance or can pay out-of-pocket [5]. Australian models of maternity care include both models managed by medical professionals (i.e., physicians) and models led by midwives (see Table 1 for examples). There remains wider acceptance of medically managed models of care, although there is growing acceptance of midwifery-led models [6 7] and a Government commitment to increasing their availability [4].

Private maternity care – where care is provided by a private practice obstetrician – is currently accessed by approximately one third of Australian women [8]. Most of the remainder access one of a number of public models including standard hospital care provided by doctors and midwives, midwifery-led hospital or birth centre care, and shared care between a hospital and a community-based primary care provider [4]. A very small number of women (<1%) choose to birth at home [8] where care is typically provided by a registered private practice midwife. Private midwifery care with birth in a public hospital has also been introduced recently but data on uptake are not yet available.

A recent national review of the Australian maternity care system [4] recommended improved access to information to facilitate women’s informed decision-making throughout the perinatal period. The importance of ensuring women can make informed decisions about where and with whom they birth specifically has been recognized in a number of recent documents in Australia [9-11] and elsewhere [12-14]. Facilitating informed model of care decisions is critical given that models differ in their

type of maternity care provider(s), location of care, philosophical orientation (e.g. 'medical' or 'natural') [15 16], degree of caregiver continuity [17 18], access to medical procedures, rates of intervention, and maternal and infant health outcomes (e.g. [19-22]).

When equipped with comprehensive information on available models of care, women are better able to make trade-offs between their perceived advantages and disadvantages and choose the model most closely aligned with their preferences, expectations, and circumstances [23 24]. Such alignment is associated with higher satisfaction with labor and birth care [15 25] and has potential to prevent unnecessary health system costs, through reductions in providing either under- or over- specialized care [4 26 27].

In Australia, General Practitioners (GPs, i.e. family physicians) are typically the first care provider seen by women in pregnancy [28 29]. GPs also provide initial referrals for maternity care in most cases [30] and, thus, play a key role in shaping women's awareness of model of care options and subsequent decision-making. However, evidence of GPs' provision of model of care information in Australia is limited. In a study that surveyed 93 GPs and 110 women in South Australia, only 19% of women reported receiving information about models of care from their GPs [31]. Moreover, almost half (43%) of the GPs surveyed said they were not supported to maintain up-to-date knowledge on models of care, and most (89%) reported that model of care referrals were influenced by whether women had private health insurance coverage [31]. Outside Australia, recent studies based in the UK have also suggested that many women receive limited information by care providers on their options for birthplace type [32-34]. We are aware of little other recent, quality evidence on this issue.

Further research examining how current primary care practice supports women to make informed decisions about model of care is needed. This paper describes a population level analysis of women's reports of the model of care options discussed by GPs in their first pregnancy consultation in Queensland, Australia, as well as their role in final decision-making about model of care.

2. Methods

2.1 Participants and sampling

Participants were women who completed the *Having a Baby in Queensland Survey, 2012* [35], a population-level, retrospective cross-sectional study of women's pregnancy, labour, birth, and post-birth experiences in Queensland, Australia. The survey was mailed by the Queensland Registry of Births, Deaths and Marriages to all women who gave birth in Queensland between October 2011 and January 2012 approximately 3-4 months after birth.

Eligible women were identified via compulsory birth notification records. Women with a stillbirth or neonatal death were mailed invitations with details for accessing an online tailored version of the survey. Women whose babies had died more than 28 days after birth were excluded. Women responded by completing either a written survey booklet returned by mail (with free postage), an online survey, or a telephone survey with a trained female interviewer (using a translator if required). Instructions for survey participation were provided in English and 19 other languages.

The current study analyzed responses from women who (i) had a live singleton or multiple birth, (ii) provided usable survey data, (iii) reported seeing a GP at their first visit with a care provider in pregnancy (as GPs are the professional group predominantly responsible for facilitating decision-making about, and providing

referral to, a model of maternity care), and (iv) provided at least a single response to the survey item assessing the model of maternity care options discussed.

2.2. Measures

2.2.1. Models of maternity care discussed

Women were asked, *'Women can have different types of maternity care. Did the first care provider you saw in pregnancy discuss with you the pros and cons (benefits and risks) of each of these types of pregnancy and labour/birth care?' A brief description of each of seven models of care was provided that focused on the location(s) of care during pregnancy, labour and birth, and typical type of care provider(s) (see Table 1). Women were able to respond separately for each different model by selecting (i) Yes, discussed this option, (ii) No, didn't discuss this option, or (iii) Not sure. Women also had the option of specifying an 'Other' discussed model of care via an open-ended question. The list and descriptions of models of care was informed by a review of Australian literature [4 36 37] and consultation with key stakeholders.*

2.2.2. Role in final decision-making about model of care

Women were asked, *'Who made the decision about the type of pregnancy and labour/birth care you would have?'* Response options were: (i) I made the final decision myself, from all my available options, (ii) My care provider(s) made the final decision and checked if it was OK with me, and (iii) My care provider(s) made the final decision without checking with me. This question comprised an adaptation of the Modified Control Preferences Scale (CPS) in which two response options (i.e., those pertaining to the patient deciding after considering the provider's opinion and the patient and provider sharing decision-making) were omitted to minimize misclassification bias

while preserving our ability to identify the presence of patient involvement in decision-making (see [38] for further detail).

2.2.3. Socio-demographic characteristics

A range of socio-demographic characteristics was assessed including maternal age, country of birth, language spoken at home, Aboriginal and Torres Strait Islander identification, and level of education (later collapsed into two groups). Remoteness of women's usual place of residence was derived by subjecting their town or suburb to the Accessibility/Remoteness Index of Australia (ARIA+) classification system. Women's status as either a private or public patient at the time of birth was used as a proxy measure of women's health insurance coverage in early pregnancy. In Australia, consumers must typically subscribe to insurance companies for a minimum of one year before they can claim for obstetric services. Thus, the vast majority of women who identified as private patients at birth would have had private health insurance coverage early in pregnancy. A small number of women who identified as public patients at birth may have had private health insurance and chosen not to use it for birth care.

2.2.4. Obstetric history

Parity, number of caesarean births (later dichotomized to previous caesarean birth(s) not including the most recent pregnancy 'yes or no'), and previous pregnancy complications ('yes' or 'no') were assessed.

2.2.5. Early pregnancy care

Women were asked about the type of care provider first seen in pregnancy from the following options: (i) General Practitioner (GP), (ii) Other (open-ended), and (iii) I did not go to a care provider in pregnancy. The nature of women's first visit with a care

provider was determined by asking women whether this visit included a pregnancy check-up, defined as an appointment to check pregnancy progress. Women were also asked to report their gestational age at this first visit.

2.3. Ethical approval

Ethical approval for the *Having a Baby in Queensland Survey, 2012* and subsequent analyses was obtained from The University of Queensland Behavioural & Social Sciences Ethical Review Committee (Clearance #2011001083).

2.4. Analytic strategy

We used descriptive statistics to determine the incidence of each model of care being discussed by GPs, patterns in combinations of options discussed, and women's role in model of care decision-making. We conducted a series of univariable and multivariable binary logistic regression analyses to determine associations between maternal/other characteristics and models of care discussed.

Eighty-two women checked that an 'Other' model of care was discussed and 56 elaborated with a qualitative response. Four responses clearly identified a listed model of care and were thus back-coded into the relevant category. The remaining qualitative responses comprised further discussion of models participants' had already checked, broad descriptions of care where a specific model could not be determined, or miscellaneous comments not pertaining to models of care discussed (e.g., statements that women "knew what they wanted"; descriptions of health status; descriptions of obstetric intervention). For these reasons, the 'Other' model of care item is not discussed further.

To simplify analyses, the seven model of care categories included in the survey were condensed to five categories for the description of patterns in models discussed and

logistic regression analyses (see Table 1). Categories were combined into a composite model if they represented the same model of care except for the location (e.g., midwifery-led care and birth centre care). Prior to regression analyses, responses for each of the resulting five model categories (outcome variables) were re-coded as either 'Recalled having this model of care discussed' (value of '1' if a 'Yes, discussed' response) or 'Did not recall having this model of care discussed' (value of '0' if a 'No, didn't discuss' or 'Not sure' response, or response was not stated). A composite model was coded as 1 if a 'yes, discussed' response was given for either combined category. Only cases with complete data on all predictor variables were included in univariable regression analyses.

Prior to conducting multivariable analyses, potential multicollinearity was examined by conducting bivariate correlations amongst all predictors, with dummy coding of variables with more than two levels. Multicollinearity was excluded as a potential threat to analyses as no correlations exceeded 0.45. Bonferroni correction for potential Type 1 error associated with the inclusion of multiple models in the multivariable analysis resulted in a minimum significance criterion of $p < .002$ ($p < .01/5$ models).

3. Results

3.1. Population characteristics

Initially, 19,194 women were eligible to participate and were mailed a copy of the survey. A total of 5840 completed surveys were returned for women who had a live singleton or multiple birth (response rate of 30.4%). The final sample was approximately representative of all birthing women in Queensland in 2010 in terms of method of birth, previous caesarean, plurality of pregnancy, health district of residence, premature birth, and low infant birthweight. Aboriginal and/or Torres Strait Islander

women, women aged less than 20 years, and women who gave birth in public facilities were underrepresented in the sample [8 39].

A total of 5100 respondents reported visiting a GP as their first care provider in pregnancy (87.3% of total sample). Forty-two of these respondents were excluded due to completely missing data on the model of maternity care options discussed. The resulting sample size for all descriptive analyses presented was 5058 women. Logistic regression analyses utilized a further subsample of 4273 women who had provided data for all socio-demographic, obstetric history, and early pregnancy care variables.

3.2. Model of maternity care options discussed

Overall rates of discussion of each model of care option are presented in Table 2. GP shared care was discussed with women most frequently (64.4%) and private midwifery care with home birth least frequently (8.2%).

3.3. Patterns in model of maternity care options discussed

The number of models discussed by GPs ranged from zero to five ($M=2.26$, $SD=1.36$). Approximately one quarter of women (26.8%) reported that only one model of care option was discussed. Of these women, the models most frequently discussed were private obstetric care (61.1%), followed by GP shared care (22.3%). The most frequently reported combinations of models discussed are presented in Fig. 1. Very few women (7.7%) reported that all five models of care were discussed.

3.4. Predictors of discussion of model of care options

In the univariable analyses, all predictors had significant associations ($p < .01$) with the discussion of at least one model of care and were thus included in the multivariable models. In multivariable analyses, age was independently associated with discussions about both midwifery-led models of care (see Table 3). For both, the likelihood of

discussion was typically significantly lower among older women. For example, women aged 35 years and over had lower odds of having private midwifery care discussed than women aged under 25 years (OR=0.41, 99% CI: 0.26–0.62). Age was not associated with discussions about GP shared care, standard public care or private obstetric care. Only one association was found for remoteness of residence. Women who lived in outer regional areas had higher odds of having GP shared care discussed (OR=1.53, 99% CI: 1.16–2.02) than women who lived in a major city. No other socio-demographic characteristics (i.e., maternal country of birth, language spoken at home, Aboriginal and Torres Strait Islander identification and education) were found to be independently associated with discussions about any model.

Parity was the only obstetric history characteristic associated with discussions about models of care. Women having their second or subsequent child had significantly lower odds of having private obstetric care discussed than women having their first child (OR=0.55, 99% CI: 0.44–0.70). Neither previous caesarean section nor previous complications was associated with discussions about models of care.

Women whose first visit to a care provider in pregnancy included a pregnancy check-up had approximately twice the odds of having GP shared care discussed (OR=2.07, 99% CI: 1.71–2.51) and higher odds of having standard public care discussed (OR=1.30, CI: 99% 1.09–1.56), than women whose first visit did not involve a pregnancy check-up.

Women's health insurance status had the most consistent association with discussions about models of care. Private patients had 17 times higher odds of having private obstetric care discussed (OR=17.74, 99% CI: 14.09–22.34) than public patients, and significantly lower odds of having GP shared care (OR=0.12, 99% CI: 0.10–0.15), standard public care (OR=0.15, 99% CI 0.12–0.18), public midwifery-led care (OR=0.09,

99% CI: 0.07–0.11), and private midwifery care (OR=0.58, 99% CI: 0.43–0.77)

discussed.

3.5. Women's role in final decision-making

The majority of women (82.6%) reported that they made the final decision about their model of care (Table 4). A small proportion (14.6%) of women reported that their care provider(s) decided on their model of care but consulted them in decision-making. Very few women (<2%) reported that their care provider(s) made the decision autonomously without consulting them.

4. Discussion and conclusion

4.1. Discussion

Understanding how well women are supported to make informed decisions about their maternity model of care is an important step in ensuring equity in access to models of care and decisions consistent with women's preferences and circumstances. To address limited evidence on this topic, our study sought to explore women's reports of the model of care options discussed by GPs in early pregnancy consultations and their role in decision-making.

The model of care most frequently discussed by GPs was GP shared care. Comparatively low rates of discussion of other care options were reported, particularly for midwifery-led models. GPs in Australia have themselves reported experiencing difficulty in maintaining current knowledge of models of care [31]. As recent reforms have led to the increased availability of midwifery-led care in Australia [40 41], awareness of these models amongst GPs may simply be poor. Like any health professional group, GPs may also have vested interests in promoting models of care that they or their peers provide, or may have strong personal perspectives on the relative

benefits and risks of different models acquired through their training, practice, or other experiences. In Australia, private midwifery care with planned home birth is not formally supported by professional medical organizations and many of their members [4 42]. It is therefore unsurprising that this model was so infrequently discussed.

The entire range of model of care options was rarely discussed with women (7.7%), and over one-quarter of women reported discussions about only one option. It could be that this subsample of women had pre-existing preferences for a model of care based either on previous experience or their own discussions or research. However, even in such cases, it could be argued that providers are obliged to respectfully and collaboratively confirm that these preferences are fully informed, which can only truly be achieved through discussion of alternatives.

Distinct patterns in the combinations of models discussed were evident. Equally high rates of exclusive discussion about private obstetric care (16.4%) or only public models (18.7%) were reported, suggesting that assumptions about women's health sector (private or public) preferences shaped the content of discussions. Women's health insurance status was also the strongest and most consistent predictor of the content of discussions about models of care. Women with private health insurance had significantly greater odds of having private obstetric care discussed than women without private health insurance, even though the latter are not restricted from paying for such care out of pocket. The remaining model of care options were less likely to be discussed with women with private health insurance, despite their access to these models. These findings are consistent with previous research in which 89% of GPs reported that a woman's health insurance status influenced their maternity care referrals [31].

Expanding the focus of discussions from a simple private/public dichotomy is essential if women are to be supported in making truly informed decisions. Greater emphasis on the features (e.g., choice of primary provider, access to services), processes (e.g., rates of medical intervention), and outcomes (e.g., maternal and infant health outcomes) associated with all available maternity care options could maximize decision quality. Information transparency is particularly important given that recent Government incentives in Australia have encouraged young people to take up private health insurance [43] and may be leading increasing numbers of women to choose private obstetric care by default, without sufficient knowledge of alternatives.

Other patient characteristics were also associated with the content of discussions. Women of higher maternal age were less likely to report that both midwifery-led models of care were discussed, women having their second or subsequent baby were less likely to report that private obstetric care was discussed, women living in outer regional areas were more likely to report that GP shared care was discussed, and women whose visits involved a first pregnancy check-up were more likely to report GP shared care and standard care being discussed. Some of these findings are more easily interpreted than others.

For example, the increased risk of adverse pregnancy outcomes associated with higher maternal age [44] may reduce GPs' comfort with providing information about midwifery-led care if they have concerns about its safety. Midwifery-led care in Australia has been previously restricted to low risk pregnant women, however, access to this model (with specialist collaboration as appropriate) is increasingly available to women of any risk status. Greater awareness of this, and underlying evidence of the relative safety of this care option [45], may improve the frequency with which GPs make women aware of this model. Similarly, fewer local model of care options for women

living rurally could result in discussions biased towards GP shared care for these women due to greater availability of (and current demand for) this model. While understandable, these patterns in options discussed may not constitute quality care. GPs' assumptions about women's preferences or choices may be accurate at times, but evidence of considerable mismatch between the values of patients and health care providers [46] highlights the importance of eliciting women's preferences and perspectives directly.

It is encouraging that the majority of women in our sample (>80%) reported making the final decision about model of care themselves. This suggests willingness on the part of providers to facilitate or support women's active participation in model of care decisions. However, this finding must be interpreted in the context of women's other reports. First, supporting women to make autonomous model of care decisions in the absence of discussing all available options is not conducive to quality decisions and may result in women choosing care based on their naïve (i.e., uninformed) preferences. Second, it is possible that GPs' apparent support for women's participation is contingent on their control over the options discussed. We are unable to confirm or refute this possibility with available data, and suggest this as a line of further investigation.

4.1.1. Strengths and limitations

While our survey had a moderate response rate, our sample adequately represented the population on several demographic characteristics, moderating concerns about the generalisability of findings. Moreover, subgroups underrepresented in our study (e.g., younger women, women who identify with a cultural minority) have previously reported lower levels of participation in health decision-making [47 48]. Consequently, any bias introduced by sampling would likely have resulted in our findings only

overestimating the true extent of information provision and decision-making involvement in the population [38].

While a strength of our study is its population-level sample, our approach also necessitated reliance on women's recall and use of measures that potentially oversimplify women's experiences of information provision and decision-making. We could not capture the full extent of information on models of care provided by GPs; reports of models 'discussed' could have ranged from mere description through to comprehensive explanation of a model's features, processes, and outcomes. Similarly, although most women responded to our single-item measure of decision-making involvement, for some this may have been a complex process that occurred across different time-points and providers during pregnancy. Thus, an important direction for future investigation is to triangulate these findings through real-time observational research.

4.2. Conclusion

Support for women to make informed decisions about their maternity model of care appears lacking within current primary care practice in Australia. In particular, it is concerning that so many women reported decisional autonomy despite having insufficient information on options to make an informed choice. It is critical that quality improvement efforts be directed at overcoming these limitations in the delivery of health care.

4.3. Practice implications

The low frequency with which women reported receiving information on all models of care highlights an important target for practice improvement. GPs are under enormous pressure to keep abreast of developments across a broad range of general

health issues [49] and have reported lacking information about new models of maternity care [31]. Improving GPs' access to information through strategies such as education workshops [50] or electronic resources easily accessed during consultations [51] may facilitate more effective information sharing with women.

For women, simple but comprehensive information on models of care freely accessible either before or between consultations could also address current limitations in care. In particular, independent development and certification of decision support tools could balance biases in information provided by individual providers who are inevitably affected by their own beliefs, experiences and values [52] and facilitate alignment between each woman's preferences and circumstances and her chosen model of care. Encouraged by the development of such tools in the United States [12] and the UK [53], we have recently completed a study of Australian women's informational and decision support needs with a view to developing and evaluating a decision support tool on Australian models of maternity care.

Conflicts of interest

Sue Kruske is the President of the Australian College of Midwives. The authors declare no other conflicts of interest.

Acknowledgements

The research on which this paper is based was conducted on behalf of the Having a Baby in Queensland Survey Program of the Queensland Centre for Mothers & Babies at The University of Queensland. We are grateful to Queensland Government for funding (Queensland Health tender # QCMB08-01) and to the women who provided survey data. The Queensland Registry of Births, Deaths and Marriages contacted women to

invite them to participate on behalf of the Queensland Centre for Mothers & Babies to ensure women's privacy was protected.

References

- [1] Declercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. Listening to mothers III: report of the third National U.S. Survey of Women's Childbearing Experiences. Childbirth Connection; 2013.
- [2] Canadian Institute for Health Information. Giving birth in Canada: providers of maternity and infant care. Ontario: CIHI; 2004.
- [3] Redshaw M, Rowe R, Schroeder L, Puddicombe D, Macfarlane A, Newburn M, et al. Mapping maternity care: the configuration of maternity care in England Birthplace in England research programme. Final report part 3. NIHR Service Delivery and Organisation Programme; 2011.
- [4] Bryant R. Improving maternity services in Australia: the report of the maternity services review. Commonwealth of Australia; 2009.
- [5] Duckett SJ. Living in the parallel universe in Australia: public medicare and private hospitals. *Can Med Assoc J* 2005;173:745-7.
- [6] McIntyre M, Francis K, Chapman Y. Primary maternity care reform: whose influence is driving the change? *Midwifery* 2012;28:e705-11.
- [7] Donnellan-Fenandez R, Newman L, Reiger K, Tracy SK. Identifying better systems design in Australian maternity care: a Boundary Critique analysis. *Health Syst* 2013;2:213-25.
- [8] Li Z, Zeki R, Hilder L, Sullivan EA. Australia's mothers and babies 2010. Perinatal statistics series no. 27. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit; 2012.

- [9] The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Standards of maternity care in Australia and New Zealand. East Melbourne, Victoria: RANZCOG Publications; 2011.
- [10] Queensland Health. Guide to informed decision-making in healthcare. Queensland: Centre for Healthcare Improvement; 2012.
- [11] Australian Health Ministers' Advisory Council. Clinical practice guidelines: antenatal care – module 1. Canberra: Australian Government Department of Health and Ageing; 2012 , Available at: <http://www.health.gov.au/internet/publications/publishing.nsf/Content/clinical-practice-guidelines-ac-mod1> [accessed 25.10.13].
- [12] Romano A. The first National Maternity Care Shared Decision Making Initiative. The Informed Medical Decisions Foundation and Childbirth Connection; 2013.
- [13] National Institute for Health and Clinical Wellness. Antenatal care. NICE clinical guideline 62; 2010, Available at: <http://guidance.nice.org.uk/CG62> [accessed 02.11.13].
- [14] National Institute for Health and Clinical Wellness. Intrapartum care: care of healthy women and their babies during childbirth. NICE clinical guideline 55; 2007, Available at: <http://guidance.nice.org.uk/cg55> [accessed 02.11.13].
- [15] Wilson KL, Sirois FM. Birth attendant choice and satisfaction with antenatal care: the role of birth philosophy, relational style, and health self-efficacy. *J Reprod Infant Psychol* 2010;28:69–83.
- [16] Howell-White S. Choosing a birth attendant: the influence of a woman's childbirth definition. *Soc Sci Med* 1997;45:925–36.
- [17] Davey M, Brown SJ, Bruinsma F. What is it about antenatal continuity of caregiver that matters to women? *Birth* 2005;32:262–71.

- [18] Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Data-base Syst. Rev.* 2013. <http://dx.doi.org/10.1002/14651858.CD004667.pub3>. Art. No.: CD004667.
- [19] Biro MA, Waldenstrom U, Pannifex JH. Team midwifery care in a tertiary level obstetric service: a randomized controlled trial. *Birth* 2000;27:168–73.
- [20] McLachlan HL, Forster DA, Davey MA, Farrell T, Gold L, Biro MA, et al. Effects of continuity of care by a primary midwife (caseload midwifery) on cesarean section rates in women of low obstetric risk: the COSMOS randomised controlled trial. *Br J Obstet Gynaecol* 2012;119:1483–92.
- [21] Dahlen HG, Tracy S, Tracy M, Bisits A, Brown C, Thornton C. Rates of obstetric intervention among low-risk women giving birth in private and public hospitals in NSW: a population-based descriptive study. *Br Med J Open* 2012;2:5. <http://dx.doi.org/10.1136/bmjopen-2012-001723>.
- [22] Shorten A, Shorten B. What happens when a private hospital comes to town? The impact of the ‘public’ to ‘private’ hospital shift on regional birthing outcomes. *Women Birth* 2007;20:49–55.
- [23] Hundley V, Ryan M, Graham W. Assessing women’s preferences for intrapartum care. *Birth* 2001;28:254–63.
- [24] Pavlova M, Hendrix M, Nouwens E, Nijhuis J, van Merode G. The choice of obstetric care by low-risk pregnant women in the Netherlands: implications for policy and management. *Health Policy* 2009;93:27–34.
- [25] Christiaens W, Bracke P. Assessment of social psychological determinants of satisfaction with childbirth in a cross-national perspective. *BMC Pregnancy Childbirth* 2007;7:26. <http://dx.doi.org/10.1186/1471-2393-7-26>.

- [26] McIntyre MJ, Chapman Y, Francis K. Hidden costs associated with the universal application of risk management in maternity care. *Aust Health Rev* 2011; 35:211–5.
- [27] Sakala C, Corry MP. Evidence-based maternity care: what it is and what it can achieve. New York: Milbank Memorial Fund; 2008.
- [28] Miller Y, Thompson R, Porter J, Prosser S. Findings from the Having a Baby in Queensland Survey, 2010. Queensland Centre for Mothers & Babies; 2011.
- [29] Zadoroznyj M. Midwife-led maternity services and consumer ‘choice’ in an Australian metropolitan region. *Midwifery* 2000;16:177–85.
- [30] Queensland Centre for Mothers & Babies. Birthplace; 2012, Available at: <http://www.havingababy.org.au/birthplace> [accessed 20.09.13].
- [31] Donaghey C, Reid K. GPs and maternity care services. In: Paper presented at the Primary Health Care Research Evaluation and Development (PHCRED) Tri- State Pogram Conference; 2010.
- [32] Barber T, Rogers J, Marsh S. The Birth Place Choices Project: Phase one. *Br J Midwifery* 2006;14:609–13.
- [33] Pitchforth E, van Teijlingen E, Watson V, Tucker J, Kiger A, Ireland J, et al. “Choice” and place of delivery: a qualitative study of women in remote and rural Scotland. *Qual Saf Health Care* 2009;18:42–8.
- [34] Redshaw M, Heikkila K. Delivered with care: a national survey of women’s experience of maternity care. Oxford: National Perinatology Epidemiology Unit; 2010.
- [35] Miller Y, Thompson R, Prosser S, Armanasco A, Porter J. The Having a Baby in Queensland Survey, 2012. Queensland Centre for Mothers & Babies; 2012.

- [36] Hirst C. Re-birthing: report of the review of maternity services in Queensland; 2005.
- [37] Brown SJ, Davey M, Bruinsma FJ. Women's views and experiences of postnatal hospital care in the Victorian Survey of Recent Mothers 2000. *Midwifery* 2005;21:109–26.
- [38] Thompson R, Miller YD. Birth control: to what extent do Australian women report being informed and involved in decisions about pregnancy and birth procedures? *BMC Pregnancy Childbirth* 2014;14:62. <http://dx.doi.org/10.1186/1471-2393-14-62>.
- [39] Prosser SJ, Miller YD, Armanasco A, Hennegan J, Porter J, Thompson R. Findings from the Having a Baby in Queensland Survey, 2012. Queensland Centre for Mothers & Babies; 2013.
- [40] Australian Health Practitioner Regulation Agency. Regulating health practitioners in the public interest: annual report 2012/13; 2013.
- [41] Queensland Government. Delivering continuity of midwifery care to Queensland women: a guide to implementation. Brisbane: Queensland Government; 2012.
- [42] The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Home births (C-Obs 2). RANZCOG; 2011.
- [43] Shorten B, Shorten A. Impact of private health insurance incentives on obstetric outcomes in NSW hospitals. *Aust Health Rev* 2004;27:27–38.
- [44] Cleary-Goldman J, Malone FD, Vidaver J, Ball RH, Nyberg DA, Comstock CH, et al. Impact of maternal age on obstetric outcome. *Obstet Gynecol* 2005; 105:983–90.
- [45] Tracy SK, Hartz DL, Tracy MB, Allen J, Forti A, Hall B, et al. Caseload midwifery care versus standard maternity care for women of any risk: M@NGO, a

- randomised controlled trial. *Lancet* 2013. [http://dx.doi.org/10.1016/S0140-6736\(13\)61406-3](http://dx.doi.org/10.1016/S0140-6736(13)61406-3).
- [46] Mulley AG, Trimble C, Elwyn G. Stop the silent misdiagnosis: patients' preferences matter. *Brit Med J* 2012;345. <http://dx.doi.org/10.1136/bmj.e6572>.
- [47] Fullwood C, Kennedy A, Rogers A, Eden M, Gardner C, Protheroe J, et al. Patients' experiences of shared decision making in primary care practices in the United Kingdom. *Med Decis Mak* 2013;33:26–36.
- [48] Kaplan SH, Gandek B, Greenfield S, Rogers W, Ware JE. Patient and visit characteristics related to physicians' participatory decision-making style: results from the medical outcomes study. *Med Care* 1995;33:1176–87.
- [49] Gething L, Fethney J. The need for disability awareness training among rurally based Australian general medical practitioners. *Disabil Rehabil* 1997;19:249–59.
- [50] Metcalfe S, Seipolt M, Aitken M, Flouris A. Educating general practitioners about prenatal testing: approaches and challenges. *Prenat Diagn* 2005;25:592–601.
- [51] Varonen H, Jousimaa J, Helin-Salmivaara A, Kunnamo I. Electronic primary care guidelines with links to Cochrane reviews – EBM guidelines. *Fam Pract* 2005;22:465–9.
- [52] Thompson R, Miller Y, Gallois C. Learning how to share: challenges in implementing decision aids in routine maternity care. In: Paper presented at the International Shared Decision Making Conference; 2011.
- [53] The Health Foundation. Portsmouth Hospitals NHS Trust: developing a computerised decision making tool to help with decision making around place of birth; 2012, Available at: <http://www.health.org.uk/areas-of-work/programmes/shine-twelve/related-projects/portsmouth-hospitals-nhs-trust/> [accessed 15.10.13].

Table 1

Model of maternity care categories featured in the *Having a Baby in Queensland Survey, 2012* and study analyses

Model categories in survey	Category description in survey	Model categories in study analyses
GP shared care	Regular pregnancy check-ups with your GP and some check-ups with midwives and/or obstetricians in the public hospital or in a community clinic. Labour and birth in a public hospital.	GP shared care
Standard care in a public hospital	Pregnancy check-ups with midwives and/or obstetricians in the public hospital or in a community clinic. Labour and birth in a public hospital.	Standard public care
Midwifery-led care (team or caseload midwifery)	Pregnancy check-ups with one midwife or a small team of midwives who work in a public hospital. Labour and birth in a public hospital (with the midwife or midwives that cared for you in pregnancy).	Public midwifery-led care
Birth centre care	Pregnancy check-ups with one midwife or a small team of midwives who work in a birth centre. Labour and birth in the birth centre.	
Private obstetric care	Pregnancy check-ups with a private obstetrician (who you chose). Labour and birth in a private hospital with care provided by your obstetrician and/or hospital midwives.	Private obstetric care
Private midwifery care with birth at home	Pregnancy check-ups at home with a private midwife (who you chose). Labour and birth at home with care provided by your midwife.	
Private midwifery care with birth in hospital	Pregnancy check-ups at home with a private midwife (who you chose). Labour and birth in a public hospital (with care provided by your midwife or hospital midwives).	Private midwifery care

Table 2
Model of maternity care options discussed (*N* = 5058)

Model of Care (in order from most frequently discussed)	Discussed this option <i>N</i> (%)	Did not discuss this option <i>N</i> (%)	Not sure <i>N</i> (%)	Not stated <i>N</i> (%)
GP shared care	3258 (64.4)	1519 (30.0)	71 (1.4)	210 (4.2)
Standard public care	2697 (53.3)	1773 (35.1)	129 (2.6)	459 (9.1)
Private obstetric care	2408 (47.6)	2021 (40.0)	190 (3.8)	439 (8.7)
Midwifery-led care	2220 (43.9)	2237 (44.2)	189 (3.7)	412 (8.1)
Birth centre care	1099 (21.7)	3132 (61.9)	215 (4.3)	612 (12.1)
Private midwifery care (hospital birth)	609 (12.0)	3581 (70.8)	226 (4.5)	642 (12.7)
Private midwifery care (home birth)	413 (8.2)	3795 (75.0)	197 (3.9)	653 (12.9)

Table 3Influence of patient characteristics on model of maternity care options discussed, multivariable logistic regression analyses ($N = 4273$)

Patient Characteristics	n	Model of Care Discussed														
		GP Shared Care			Standard Public Care			Public Midwifery-led Care			Private Obstetric Care			Private Midwifery Care		
		OR	%	99% CI	OR	%	99% CI	OR	%	99% CI	OR	%	99% CI	OR	%	99% CI
Maternal age																
Less than 25 years	621	1.00	77.0		1.00	70.9		1.00	68.4		1.00	28.7		1.00	25.3	
25-29 years	1323	1.15	69.4	0.83-1.60	0.86	57.7	0.64-1.16	0.78	52.5	0.58-1.06	1.26	46.0	0.92-1.74	0.61**	14.4	0.44-0.84
30-34 years	1457	0.92	57.5	0.66-1.29	0.80	48.0	0.59-1.08	0.63**	39.5	0.46-0.86	1.34	55.5	0.96-1.85	0.45**	9.7	0.31-0.64
35 years and over	872	0.99	58.3	0.69-1.43	0.69	44.4	0.50-0.97	0.58**	36.8	0.41-0.82	1.21	53.6	0.84-1.76	0.41**	8.6	0.26-0.62
Maternal country of birth																
Australia	3460	1.00	63.1		1.00	52.4		1.00	45.8		1.00	49.5		1.00	13.3	
Other	813	1.07	68.8	0.81-1.42	1.05	58.8	0.81-1.36	1.01	52.9	0.77-1.32	1.05	43.1	0.79-1.39	0.85	12.9	0.59-1.21
Language spoken at home																
English only	4001	1.00	64.0		1.00	53.1		1.00	46.4		1.00	48.9		1.00	12.9	
Other language (with or without English)	272	0.73	67.3	0.47-1.14	1.05	61.4	0.70-1.58	1.27	58.5	0.83-1.93	0.82	39.0	0.52-1.27	1.48	17.3	0.89-2.47
Indigenous identification^a																
No	4203	1.00	63.9		1.00	53.3		1.00	46.8		1.00	48.6		1.00	13.0	
Yes	70	1.26	80.0	0.54-2.94	1.30	71.4	0.62-2.71	1.39	68.6	0.67-2.90	0.96	28.6	0.44-2.08	1.57	24.3	0.73-3.36
Education																
Did not complete year 12	372	1.00	73.1		1.00	64.2		1.00	55.1		1.00	25.8		1.00	18.8	
Completed year 12	3901	1.23	63.3	0.86-1.75	1.06	52.6	0.77-1.47	1.35	46.4	0.98-1.86	1.35	50.4	0.93-1.96	0.82	12.7	0.56-1.21
Remoteness of residence																
Major City	2653	1.00	61.2		1.00	51.8		1.00	45.6		1.00	50.5		1.00	13.2	
Inner Regional	829	1.32	69.0	1.03-1.71	1.12	56.8	0.89-1.42	0.93	47.0	0.73-1.19	0.89	44.4	0.69-1.16	0.81	12.2	0.58-1.11
Outer Regional	674	1.53**	70.8	1.16-2.02	1.17	57.1	0.91-1.51	1.33	53.1	1.02-1.74	1.01	46.9	0.76-1.34	1.02	14.7	0.74-1.42
Remote & very remote	117	0.68	59.0	0.39-1.19	0.83	52.1	0.48-1.43	0.99	49.6	0.56-1.74	0.56	34.2	0.29-1.08	0.79	12.8	0.37-1.69

Health insurance status																
Public	2597	1.00	82.4		1.00	71.7		1.00	67.7		1.00	24.5		1.00	16.6	
Private	1676	0.12**	35.9	0.10-0.15	0.15**	25.6	0.12-0.18	0.09**	15.3	0.07-0.11	17.74**	85.1	14.09-22.34	0.58**	8.1	0.43-0.77
Parity																
Primiparous	1934	1.00	65.6		1.00	56.4		1.00	50.8		1.00	53.2		1.00	16.3	
Multiparous	2339	0.95	63.0	0.76-1.19	0.85	51.3	0.69-1.05	0.82	44.2	0.65-1.02	0.55**	44.2	0.44-0.70	0.78	10.7	0.59-1.03
Previous caesarean																
No	3592	1.00	65.6		1.00	55.5		1.00	49.5		1.00	47.9		1.00	14.2	
Yes	681	1.00	56.8	0.75-1.33	0.83	43.3	0.63-1.10	0.74	34.7	0.55-0.99	0.92	50.5	0.67-1.26	0.80	7.9	0.52-1.25
Previous complications																
No	2785	1.00	65.5		1.00	54.9		1.00	48.5		1.00	48.8		1.00	14.9	
Yes	1488	0.84	61.8	0.66-1.05	1.00	51.2	0.81-1.25	1.07	44.6	0.85-1.34	1.17	47.3	0.92-1.49	0.85	10.1	0.63-1.16
Nature of visit																
No pregnancy check-up	1879	1.00	54.4		1.00	48.3		1.00	42.5		1.00	49.8		1.00	11.4	
Pregnancy check-up	2394	2.07**	71.8	1.71-2.51	1.30**	57.8	1.09-1.56	1.22	50.8	1.01-1.48	1.21	47.1	0.99-1.48	1.28	14.6	1.00-1.64
Weeks gestation at visit																
0-6 weeks	3094	1.00	63.3		1.00	52.8		1.00	46.7		1.00	49.8		1.00	12.0	
7-12 weeks	1087	0.92	66.0	0.73-1.15	0.95	54.8	0.77-1.16	0.88	47.8	0.71-1.10	1.03	45.5	0.82-1.29	1.35	16.1	1.03-1.76
13+ weeks	92	0.85	73.9	0.42-1.69	1.07	66.3	0.57-2.01	0.80	55.4	0.44-1.47	0.89	28.3	0.44-1.82	1.43	19.6	0.70-2.95

Note: Reference category for DV is 'Did not recall having this model of care discussed'

^a Women identifying as Aboriginal and/or Torres Strait Islander

** p<.0002

Table 4Women's role in final decision-making about their model of maternity care (*N* = 5058)

Role in decision-making	Frequency (%)
I made the final decision myself, from all my available options	4176 (82.6)
My care provider(s) made the final decision and checked if it was OK with me	737 (14.6)
My care provider(s) made the final decision without checking with me	98 (1.9)
Not Stated	47 (0.9)

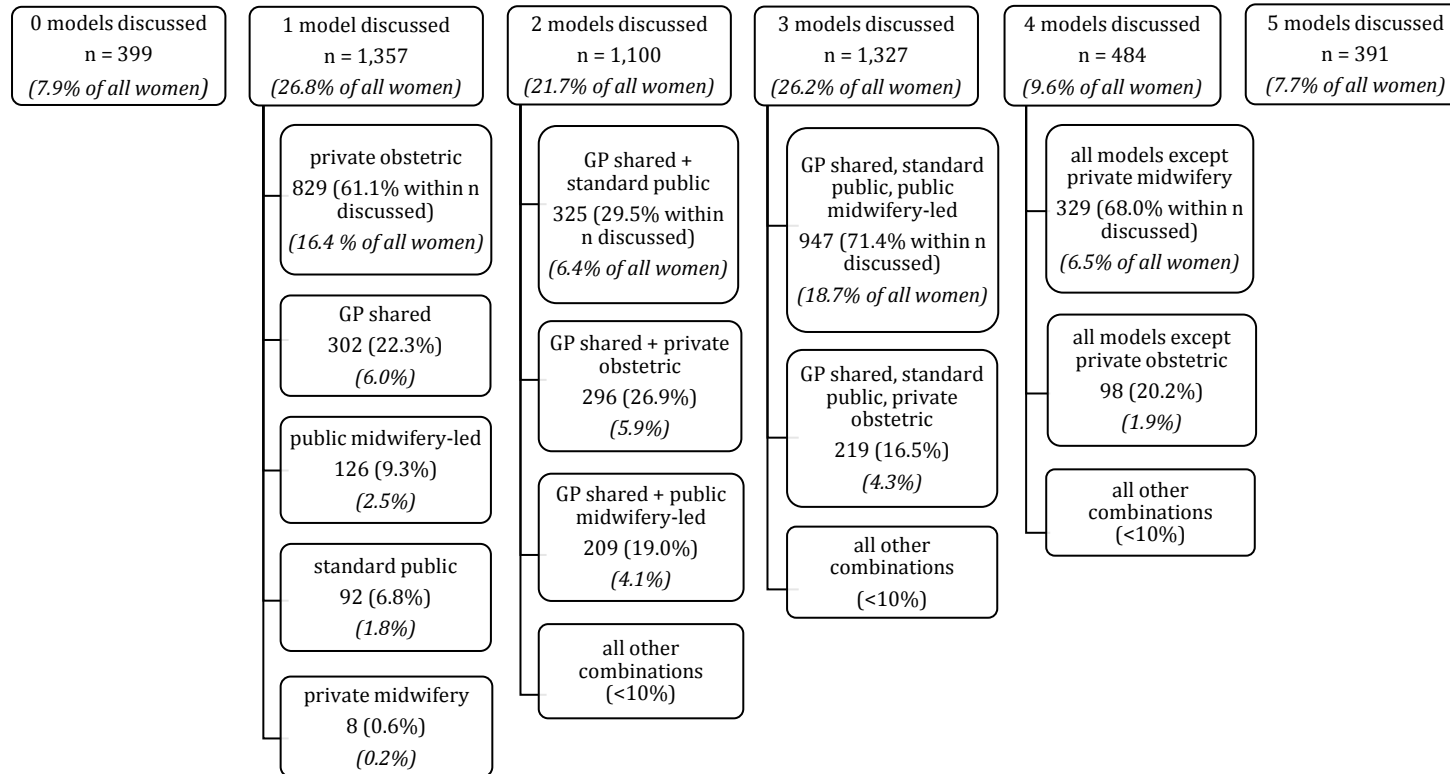


Fig. 1. Patterns in model of maternity care options discussed ($N = 5058$)