This manuscript describes, in detail, a protocol for a survey of women about their expectations and experiences of maternity care in NSW. The survey methodology includes two strategies aimed at increasing response rates, that have not been used previously in maternity surveys conducted elsewhere in Australia or internationally.


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ABSTRACT

Background: Over the past decade or so, recommendations for improvements in maternity care have emphasised the importance of providing woman-centred care. Feedback from women about existing maternity services can help to identify whether services are currently meeting women’s needs. The present study aims to capture women’s expectations of, and experiences with maternity care, and to explore whether maternal and birth characteristics are associated with those experiences.

Methods: A survey will be undertaken with a sample of approximately 2,000 women who have given birth over a 3-month period at seven public maternity units in two neighbouring health districts in New South Wales (NSW), Australia. The survey will be mailed out three-four months after birth. The study will also examine two strategies intended to increase survey response rates: use of two types of pre-notification letters, and request for consent from women to link survey responses with health information recorded at the time of birth. Data analysis will examine response rate, evidence of sample bias and effect of pre-notification letters; describe expectations and experiences with maternity care and associations with maternal and/or health characteristics; and where possible, compare results with maternity satisfaction data reported by others.

Discussion: This study will provide, for the first time in NSW, comprehensive information about women’s expectations, experiences and satisfaction with maternity services in two local health districts. It will identify aspects of care that are meeting women’s needs, and areas where care and service provision may be improved in line with the aspirations of Towards Normal Birth. The survey tool may also prove to be appropriate for use by other health districts and/or state-wide.

Keywords: maternity care, satisfaction, survey
BACKGROUND

In recent years, recommendations for health service improvements have emphasised the importance of re-orienting care systems to be more patient-centred. In maternity care, this has been paralleled by calls for services and programs to be more woman-centred. For example, in Australia the National Maternity Services Plan states that “… maternity care will be woman-centred, reflecting the needs of each woman within a safe and sustainable quality system” (p. iii). Similar standards are advocated in state-based policies including the NSW maternity policy, Towards Normal Birth.

In order to progress the philosophy of women-centred care into practice, a comprehensive understanding of women’s needs and preferences is required. A considerable body of research conducted overseas and elsewhere in Australia has explored women’s satisfaction with what is currently provided, predominantly through surveys of women who have recently given birth. Commonly, surveys address women’s overall satisfaction with the care received during pregnancy, labour and birth, and/or the early postnatal period; the responsiveness and communication from health care providers; the extent to which women’s own expectations and desires are met; the coordination and integration of care over time and between service providers; and the degree to which women are involved in decision-making about their care. Some of the topic areas have been framed in ways unique to the health care systems under study, so that results are not always generalisable.

Maternity surveys - international

In Canada, a national survey of women who had given birth in 2006 was undertaken to better understand their experiences, perceptions, knowledge and practices during pregnancy, birth and the early months after birth. A random stratified sample of 8,244 women was contacted primarily by phone to complete a 45-minute survey including more than 300 questions: 6,421 (78%) completed the survey 5-14 months after the birth of their baby. The majority of women received prenatal care from an obstetrician (58%) or GP (34%). Nearly 50% of women had the same care provider during pregnancy and at birth. Just over half of the women (54%) reported their overall experience of labour and birth as “very positive”, and 73% indicated they were very satisfied with their involvement in decision-making. Two-thirds (66%) reported being “very satisfied” with the health care they received after birth.

In the United States in 2005, 1,573 mothers, who had given birth to a single live-born infant in hospital, participated in the Listening to Mothers II (LTMII) survey, a combined online/telephone survey with two data collection periods at 1-12 months post-birth and 7-19 months post-birth. The study group included oversampling of Hispanic and black non-Hispanic women, who are often underrepresented in US population-based surveys. The survey contained 257 questions about women’s attitudes and experiences before conception, during pregnancy, birth and the postnatal period, and took approximately 30 minutes to complete. Responses were received from 903 women (response rate 57%), and showed that 35% rated the quality of the US maternity health system as “excellent” and a further 30% as “good” or “fair”. In 2012, 2,400 US mothers who had given birth to a singleton infant participated in Listening to Mothers III, a fully online maternity care survey. These results showed somewhat higher ratings, with 36% of mothers rating the quality of the US maternity care system as “excellent” and 47% as “good”.

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In the UK, surveys of mothers have been conducted in 1995, 2006, 2010 and 2013. The surveys conducted in 2006, 2010 and 2013 were similar in design, allowing comparison of changes over time, although the 2013 survey gave greater attention to qualitative responses. All surveys asked mothers about the care they received during pregnancy, labour and birth, and postnatally. The survey was mailed approximately 2-4 months after birth. Women whose babies had died and new mothers less than 16 years of age were excluded. Although an online version of the survey was also offered in 2010, only 8% of respondents chose this option. The valid overall response rates to the surveys were: 67% in 1995, 63% in 2006, 54% in 2010, and 46% in 2013. Results from 2006 and 2010 showed relatively high levels of satisfaction with care (combining ratings of "very satisfied" and "quite satisfied"): during pregnancy 86-88%; during labour and birth 87-88%; and with postnatal care 76-80%. Comparable data were not reported in 1995 and 2013.

**Maternity surveys - Australia**

Closer to home, surveys of mothers about their maternity care experiences have been conducted in Victoria, South Australia and Queensland. In Victoria, three population-based surveys have been conducted with mothers who gave birth in 1989, 1993, and 1999 to assess satisfaction with maternity care in pregnancy, labour and birth, and the postnatal period, and their physical and emotional health. Another survey has been undertaken in Victoria in 2008 (for women birthing in 2007) and extended to include women from South Australia as well; only limited results have been published to date (http://www.mcri.edu.au/healthymothers).

In the three earlier Victorian surveys, forms were mailed approximately 5-9 months after birth to all women who gave birth in Victoria during a specified period (in 1989 one week; in 1993 and 1999 two weeks). The response rate for the 1989 survey was 71% (n=790); for 1993 63% (n=1,336); and for 1999 67% (n=1,616). In terms of satisfaction with care, the 1989 survey showed that 67% of women thought the labour and birth were “managed as they liked”. In the later surveys a different question was used to assess satisfaction with care, and the results indicated very high satisfaction: in the 1993 survey, 71% of women indicated that their care during labour and birth was “very good” and a further 21% said it was “good”; in the 1999 survey, 67% of women indicated that their care during labour and birth was “very good” and a further 24% said it was “good”. Further analyses identified a number of maternal characteristics and birth experiences that were consistently associated with women expressing greater dissatisfaction with care. They included women who were not born in Australia; who were attending a public hospital clinic or receiving shared care for their antenatal care; who perceived caregivers as not helpful; and who reported a lack of active involvement in decision-making about their care.

In the more recent survey conducted in 2008 in Victoria and South Australia with 4,366 women (representing an estimated 52% response rate), additional questions were included about stressful life events and social and mental health issues. These questions draw on similar items from the Pregnancy Risk Assessment and Monitoring Study (PRAMS) and a review of the impact of life events and social health issues on perinatal health conducted by Brown and colleagues. The PRAMS is a US-based surveillance system sponsored by the Centers for Disease Control and Prevention (CDC) to monitor maternal risk factors and infant outcomes. Central to the surveillance system is the PRAMS questionnaire, which covers a vast array of topics including psychosocial stressors and life events (see http://www.cdc.gov/prams/). Results from the 2008 survey with Victorian and South Australian women showed that those reporting three or more stressful life events or social issues during the antenatal period had a twofold increase of perceived
discrimination, suggesting compounding vulnerability and adverse experiences among these women.\textsuperscript{22} Furthermore, these women were also at increased risk of adverse outcomes such as giving birth to a low birthweight baby,\textsuperscript{23} and experiencing postnatal anxiety or depression.\textsuperscript{21} Analysis of the relationship between stressful life events and maternal satisfaction levels has not yet been published.

In South Australia, an earlier telephone-based survey was conducted in 2006 with a sample of 1,086 women who had given birth in public hospitals over a one-month period.\textsuperscript{24} Women aged 16 years and over who had at least one live birth were followed-up 3-4 months after discharge. The response rate was 78.1\%. The overall satisfaction score was 87.2, indicating ‘moderate’ satisfaction, with room for improvement. Women were asked to rank seven key areas in terms of importance: the area ranked highest was ‘patient’s right to be involved in their care and treatment’; this area was ranked second lowest for satisfaction. The survey results also showed that 90.1\% of women ranked antenatal care as “excellent” or “good”; separate satisfaction scores for care during labour and birth, or the postnatal period were not reported.

Finally, two population-based surveys of women in Queensland were conducted in 2010 and 2012 to assess maternity care experiences.\textsuperscript{25, 26} In both surveys, approximately 20,000 women who gave birth to a live singleton baby over a 4-month period were invited by mail to participate in a survey 4-5 months after birth. An online version of the survey was offered in 2010, and 16\% of overall respondents chose this option. This figure is twice as high as the proportion of UK women choosing an online survey option,\textsuperscript{14} but both figures are relatively low. The overall response rate for the Queensland survey in 2010 was 35\% and in 2012 30\%. A higher response rate was obtained from women who birthed in private facilities than those who birthed in public facilities. Analyses showed that women who were overweight or obese during pregnancy were more likely to report negative care experiences during pregnancy and after birth.\textsuperscript{27} The results also showed that the perceived quality of postnatal care was poor relative to the perceived quality of care during pregnancy, labour and birth: 64-68\% of women said they were cared for “very well” during pregnancy; 71-74\% during labour and birth; and only 51-55\% postnatally.

To date, maternity care surveys of this kind have not been conducted in NSW. General patient satisfaction surveys have been undertaken annually across NSW hospitals since 2007, including women admitted for maternity care (for details see http://www.bhi.nsw.gov.au/publications/nsw_patient_survey_reports). However, women attending health services for pregnancy and childbirth are notably different from the general hospital population. They are comparatively young, healthy, usually attend for a relatively short time, and the majority leave with a healthy newborn. Compared with other patients, maternity patients are thought to have different expectations and criteria for evaluating their hospital experiences.\textsuperscript{28} Levels of satisfaction with health services are often high among this patient group (as borne out in the studies above). Nonetheless, research has also shown that ratings of satisfaction are lower for postnatal care compared with care during labour and birth,\textsuperscript{10, 14, 25} suggesting this as an area for improvement.

Postal surveys

Postal surveys represent a cost-efficient form of data collection for large populations, however achieving an adequate response rate is essential to securing reliable results. Of the maternity care surveys above, those conducted by post (the UK, Victoria and Queensland) had response rates between 35\% and 71\%. Two of the maternity care surveys combined postal surveys with an online version, however
uptake of the online option was comparatively low (respectively 8% and 16% of all responses). Response rates to surveys conducted by telephone can be higher (e.g., the 2006 Canadian survey response rate was 78%) but this option is significantly more expensive.

Various strategies and factors have been shown to be effective in increasing response rates to postal surveys. A Cochrane review identified 481 randomised controlled trials that had tested 110 different ways of increasing response rates to postal surveys. Examples of more effective strategies included: monetary incentives; shorter rather than longer surveys; surveys that addressed topics salient to the responder; avoidance of sensitive questions; assurance of confidentiality; pre-notification letters; reminders; providing a second copy of the survey at follow-up; personalised letters/surveys; and a university being the survey sponsor (rather than a government agency or commercial organisation). Factors that did not appear to influence response rates included survey paper colour; font size; colour printing versus black and white; or including a consent form. The 481 trials comprised health and non-health studies, and survey participants included the general public, consumers, hospital and clinic patients, health professionals, and business and other commercial operators. The investigators reported substantial heterogeneity among trial results for half of the strategies, perhaps not surprising given the large number of trials and diverse populations involved. Interestingly, of the 481 trials, only two involved women who had recently given birth.

A recent postal survey with Swedish parents of 3 year old children tested the effect of three different types of initial contact on response rates: one group received a cover letter, consent form and survey (Direct Delivery); a second group received a pre-notification letter and were asked to send a consent form back to receive the main survey (Actively Agree); and a third group received a pre-notification letter and were asked to respond within 7 days if they did not want to participate (Actively Decline). The response rates varied significantly between the groups: the Direct Delivery group had the lowest final response rate of 47%; the Actively Agree group was 61%; and the Actively Decline group had the highest final response rate of 72%.

**STUDY AIMS**

The main aim of this project is to gather information about women’s expectations of, and experiences with maternity care during pregnancy, birth and in the first weeks after birth. Unique to our study is the proposal to link maternity survey data with health information collected at the time of birth about the mother and baby (subject to consent). We will also test the effect of two types of pre-notification letters on response rates: one giving women the option of actively declining to participate, and the other requiring no action.

*The over-arching research questions of this study are:*

1) What are women’s expectations of maternity care during the antenatal period, during labour and birth, and in the first postnatal weeks?

2) How satisfied are women with the maternity care they receive during the antenatal period, during labour and birth, and in the first postnatal weeks?

3) Are women’s expectations and satisfaction with care associated with maternal characteristics, birth experiences, maternity service level and/or maternal and infant outcomes?
4) What implications do the results have for the planning, design and provision of maternity services in the future?

**Methodological objectives**

5) Are there significant differences between survey responders and non-responders in demographic and/or clinical characteristics?

6) Does the response rate differ for women who receive a pre-notification letter with the option of actively declining to participate versus a letter requiring no action?

7) Is the approach of linking survey data with data previously recorded at the time of birth feasible and effective?

**METHODS**

**Study population**

We intend to survey all women who have given birth over a three-month period in the seven public maternity units of the Northern Sydney and Central Coast Local Health Districts: Royal North Shore Hospital, Hornsby Hospital, Manly Hospital, Mona Vale Hospital, Ryde Hospital, Gosford Hospital and Wyong Hospital. This represents a sample of approximately 2,000 women. Eligible women will be identified from the ObstetriX database, which records personal contact details and clinical information about women’s pregnancy and birth. While other maternity surveys have excluded women having a stillbirth or early neonatal death, in this study all women will be given the same opportunity to participate or decline. We anticipate a survey response rate in the vicinity of 50-60% (n=1,000-1,200). The study has been approved by the NSW Population & Health Services Research Ethics Committee.

**Study design**

We propose a cross-sectional study combining two sources of data:

- self-report data obtained from women by a postal survey approximately 3-4 months after birth, capturing information about their expectations, experiences and satisfaction with the maternity services they received;

- existing health information recorded in the hospital clinical obstetric database, ObstetriX, for women giving birth in the specified period.

We will also conduct a within-study randomised trial of whether two different pre-notification letters can influence the survey response rate. Based on results from a previous study, we hypothesise that the *Actively Decline* letter will increase the response rate by at least 10% compared with the *No Action* letter.

With the consent of the participating women, survey responses and health data will be merged, using a unique study number (assigned to each woman). Personal identifying information will be used to contact women by mail, and will only be accessible to one research officer not otherwise involved in this study.
The merging of the data will:

- provide access to reliable and valid maternal and birth information recorded in the ObstetriX database (collection of these data are required by the NSW Public Act for surveillance of all births in NSW); the quality of this kind of information would likely suffer recall bias if it were to be collected via the survey.

- reduce survey participant burden by not asking a range of questions about information that has already been collected and is available in ObstetriX.

- allow sophisticated analyses that can elucidate whether the expectations and satisfaction of women with maternity care are associated with maternal demographic characteristics, birthing experiences, and/or maternal and infant outcomes.

- allow limited comparisons of data recorded in ObstetriX about those women who respond to the survey and those who do not, to determine whether the women responding to the survey are representative of the total sample, or differ in systematic ways from those women who do not participate (i.e., selection bias). These analyses are necessary to assess the reliability and generalisability of the survey results.

**Data sources**

*Survey: Maternity Care in NSW – Having Your Say*

A survey instrument, Maternity Care in NSW – Having Your Say, has been developed specifically for this study. An in depth review and analysis of similar survey tools was undertaken to identify content areas and validated questions within those areas. As a result of that analysis, survey questions were structured in the three maternity periods – antenatal, labour and birth, and postnatal. Our analysis showed that questions about women’s experiences of maternity care tended to address the following topics: women’s overall satisfaction with the care received during pregnancy, labour and birth, and in the early postnatal months; the responsiveness and communication from health care providers; the extent to which women’s own expectations and desires are met; and the degree to which women are involved in decision-making about their care. We therefore included questions about these topics in the three maternity periods. We drew on questions used in previous studies, although sometimes changing specific words or using a different rating scale for greater consistency within our survey. Comparable questions would allow us to contrast the responses of women in NSW with those of women in other studies.

We included a combination of structured multiple-choice questions as well as open-ended questions that would give women an opportunity to provide personal comments. We circulated a draft survey to stakeholders – perinatal researchers, clinicians, midwives, health service administrators, policy-makers, survey staff of the Bureau of Health Information, a consumer representative from Childbirth Australia, and Dr Maggie Redshaw (lead on the UK Maternity Survey) – seeking views about structure, content, and the language used. This process highlighted important differences in the way women speak about pregnancy and care compared with the ways that health professionals do. In addition, the language used for models of care is somewhat inconsistent, so the survey uses descriptors rather than labels to
understand a woman’s care experience (e.g., types of professionals providing care, continuity of care (or not), etc.).

The survey was pilot tested with 30 women aged 19-43 years who had recently given birth, resulting in further changes. The final version of the survey comprises 123 questions and takes approximately 20-30 minutes to complete. In order to reduce participant burden and improve accuracy of clinical items, the survey also seeks consent from each woman to merge health information recorded by the maternity unit at the time of the pregnancy and birth (ObstetriX database) with her survey responses. Due to budgetary constraints, all survey materials will be available in English only.

A brief cover letter has been developed, which invites women to participate in the survey. A participant information pamphlet explains the purpose and nature of the survey, the benefits and risks to the woman of participating in the survey, the efforts to protect information and ensure confidentiality, and the intent to link survey responses with health information about the woman and her baby recorded at the time of birth (subject to consent from the woman). Because no identifying information is being collected by the survey, we are not seeking signed consent with the woman’s name and signature, but rather only a tick box response indicating informed consent. All women will receive a unique study number so that survey data and ObstetriX data can be matched.

**ObstetriX database**

The ObstetriX database is a clinical data collection system designed to capture health information by a large number of public maternity units in NSW. The system is managed by the ObstetriX Consortium, based at Northern Sydney Local Health District, and allows real time data to be securely accessed from geographically separated facilities. It includes personal identifying information (mother’s name and address at time of birth), maternal demographic characteristics, maternal and infant health outcomes, and medical information in relation to pregnancy, labour, and birth.

Historically, a ‘parallel’ version of the database was designed for each participating member of the ObstetriX Consortium. One version was developed to serve the former Northern Sydney and Central Coast Area Health Service. Although the Area Health Service has since been subdivided into the two local health districts, Northern Sydney, and Central Coast, the database has not been divided. Thus, the eligible women for this study will be drawn from the one ObstetriX database.

Using existing health information from the ObstetriX database has several advantages. The investigators propose to use the database to select all women giving birth in a specified period across seven maternity units. Access to health data about these women will allow testing of response bias by comparing the demographic factors, birth characteristics and health outcomes of responders and non-responders to the survey. Most importantly, information about labour and birth already recorded in ObstetriX will not be asked of women again via the survey. Approval has been granted to access the following types of health information:

- maternal characteristics (age, postcode (for metro/regional and socioeconomic status) country of birth, previous pregnancies)
- antenatal information (e.g., commencement of antenatal care, maternal preexisting and pregnancy medical conditions, smoking)
- labour and birth information (length of stay, model of care, hospital level and place of birth)
- infant details (gender, plurality, birthweight, gestational age, Apgar score, admission to SCN/NICU)
- mother and baby discharge information.

The main purposes for accessing these data items are to:
- compare survey responders and non-responders to check the representativeness of the sample
- assess to what extent women’s expectations of, and satisfaction with maternity services might be associated with maternal characteristics, birth experiences, maternity service level and/or maternal and infant outcomes
- control for factors known to influence patient satisfaction ratings

We propose to receive de-identified unit record health data for the responders who have consented to have survey responses linked with their health information (from ObstetriX); and to receive aggregated summary health information (from ObstetriX) for the non-responders.

**Survey process**

The Data Custodian of ObstetriX, based at Royal North Shore Hospital, will oversee the sample identification process, assignment of a unique study number to each woman selected for the survey sample, and extraction of personal and health data (see Figure 1).

At the beginning of the study, women eligible to participate in the survey (that is, women giving birth in a specified three-month period) will be identified via ObstetriX.

A person not otherwise involved in the study will coordinate mail-out of pre-notification letters and survey packages. This person, the mail-out coordinator, will have access to the names and addresses of the women, but not their health information. Approximately 3-4 months after the date of birth, women will be sent a personalised pre-notification letter. The mail-out coordinator will prepare and administer the randomisation schedule. The allocation (Actively Decline letter versus No Action letter) will be randomly generated by computer (1:1 randomisation using Excel) and stratified by hospital.

Approximately two weeks after sending the pre-notification letter, a survey package will be sent to all women, except those who have actively declined to participate or whose letter has been returned as undeliverable (e.g., no longer at the same address). The survey package will contain a cover letter, participant information pamphlet, survey (with the unique study number assigned by the Data Custodian), and reply paid envelope for return of the survey. A reminder letter with survey and reply paid envelope will be sent 3 weeks later to women who have not responded. All completed surveys will be returned to the researchers.
Some evidence suggests relatively high levels of residential mobility during pregnancy and following birth. One study found 19% of women having a first birth had moved residence between their pregnancy and 12 months postpartum. In contrast, only 1.5% of mailed surveys were returned as undeliverable in the UK maternity care survey, nearly 3% in the Queensland survey, and 4-6% in the Victorian maternity surveys. We therefore anticipate some sample attrition resulting from undelivered letters; these women will not be sent reminders.

The researchers will be responsible for constructing the survey database and entering the survey data. At the close of the survey, the researcher coordinating the mail-out activities will provide the Data Custodian with a final list of unique study numbers for the Responders and Non-responders. The Data Custodian will then

Figure 1: Linking of health data available in ObstetriX with maternity survey data

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**Identify eligible women in ObstetriX database, assign unique study number to each woman, and create two separate files**

**Identifying details and unique study number used to contact women (pre-notification letter, survey package, reminders)**

**Health information and unique study number only**

**Randomise and send pre-notification letters, survey packages, reminders**

**Decline to participate or complete and return survey**

**Receive responses from women**

**Forward surveys to Researchers**

**Compile list of unique study numbers of Responders and Non-responders**

**Provide unit record health data with unique study number for Responders**

**Provide aggregate health information for Non-responders**

**Create survey database**

**Merge survey and unit record health data for Responders**

**Aggregate health information used to test for response bias**

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*Figure 1:* Linking of health data available in ObstetriX with maternity survey data
provide the researchers with a data extract from ObstetriX for the approved data items for those women who have given consent to link their survey responses with their health data. The unique study number will be used by the researchers to link the two data sources (see Figure 1). The health information from ObstetriX provided to the researchers will not include any personal identifiers other than the unique study number.

The Data Custodian will also generate aggregate descriptive statistics from ObstetriX for the Non-responders, to allow for testing of sample bias by comparing Responders with Non-responders on maternal characteristics, birth characteristics, and maternal and infant outcomes (see Figure 1).

**Data analysis**

**Representativeness of sample**

The first stage of analysis will be to determine the survey response rate and assess the representativeness of the survey respondents. We will have access to unit record data for the Responders, and aggregate summary information for the Non-responders (provided by the Data Custodian). The two groups will be compared on: maternal characteristics (e.g., demographic factors, parity, pre-pregnancy medical conditions), birth characteristics (e.g., type of birth, gestation at birth, obstetric interventions) and maternal and infant outcomes (e.g., length of stay, maternal complications, neonatal complications). Determining the representativeness of the survey respondents, and any evidence of selection bias, is critical to interpretation of the survey results and their generalisability. For these analyses, comparisons will be made using Chi-squared tests or non-parametric tests as appropriate.

**Impact of pre-notification letter on response rate**

Following linkage of the two data sources (survey information and ObstetriX data), comparisons will be made between women in the Actively Decline versus No Action groups to test for any difference in response rates. We will test for systematic bias, by comparing the two groups on maternal characteristics, birth characteristics and maternal and infant outcomes. Comparisons will be made using Chi-squared tests or non-parametric tests as appropriate.

**Women’s views about maternity care**

We will analyse the survey data to provide overall information about women’s views of the maternity care they received. Descriptive statistics (percentages, means, medians) will help to answer questions such as:

- What expectations do women have about maternity services?
- How satisfied are women with the maternity services they are receiving?
- To what extent are women receiving continuous care antenatally, during labour and birth, and postnatally?
- Do women feel they are involved in decision-making to the extent they want?
- Do women feel they are being treated with kindness and respect by health staff?

We will also use the linked survey/ObstetriX data to look for associations between women’s views about maternity services and factors such as maternal characteristics (e.g., demographic factors, pre-pregnancy medical conditions), birth characteristics (e.g., parity, type of birth, gestation at birth, various obstetric interventions) and
maternal and infant outcomes (e.g., length of stay, maternal complications, neonatal complications). These analyses will use univariate and multivariate techniques as appropriate. These subgroup analyses will help to answer questions such as:

- Are there some subgroups of women who are particularly satisfied with the maternity care they receive? For example:
  o Are women who give birth in smaller hospitals more satisfied with maternity services than women who give birth in larger hospitals?
  o Are first-time mothers more satisfied with maternity care than mothers having a second or subsequent baby?
- Are there some subgroups of women who are particularly dissatisfied with the maternity care they receive?
  o Are there characteristics common to those women who report the greatest dissatisfaction?
  o Do women who have more obstetric interventions (e.g., inductions, caesarean sections) feel less involved in the decision-making and/or less satisfied?
- Are there characteristics common to women who report a greater continuity of care?

Comparisons with other maternity surveys

Our final analyses will compare the results we obtain for women in the seven maternity units in NSW with those reported by previous studies, using frequencies (e.g. percentages) and other summary data (e.g. means) where comparable data exist. This will answer important questions such as:

- Do women in NSW report levels of satisfaction with maternity care that are comparable to levels reported by women in other surveys?
- Are the factors associated with high satisfaction or dissatisfaction with maternity care in NSW similar to those reported in other studies?
- Are there findings from the study in NSW that are unique compared with studies conducted elsewhere?

The investigators have links with Dr Maggie Redshaw from the National Perinatal Epidemiology Unit at the University of Oxford, responsible for the UK maternity surveys 2006-2010, and Associate Prof Stephanie Brown, Murdoch Children’s Research Institute, who has led the Victorian maternity surveys. Thus there may be scope to extend the above analyses.

Sample size

The sample of approximately 2,000 women will allow us to determine the characteristics of women’s maternity care experiences with precision, even for an overall response rate as low as 40%. For example, if 40% of women respond to the survey, and 50% of these women are satisfied with their care, the 95% confidence interval would be 46.5% to 53.5%. A higher response rate will increase the precision (i.e., narrow the 95% CI).

With respect to testing two pre-notification approaches, our proposed survey sample size of 2,000 women is ample to assess the effect of the randomised trial. This sample would allow us to detect, with 90% power, an absolute increase in response rate of 7% from a baseline rate anywhere between 35% and 70% (response relative risks of 1.20 and 1.10 respectively).
ETHICAL CONSIDERATIONS

Recruitment and selection of participants

All women who gave birth at one of the public maternity units in the former Northern Sydney and Central Coast Area Health Service during a three-month period will be included in the study; no women will be excluded from this sample. Other surveys have sometimes excluded women who have had a stillbirth or early neonatal death. Our research group recently collaborated in the Sydney Stillbirth Study, which found that women with stillborn babies want the opportunity to participate in perinatal research, particularly where they feel the research may benefit others and where they can comment on the maternity care they received. Consequently, we are keen to give all women the same opportunity to express their views and to make their own decision about participating in the study or not. We do not anticipate that the questions will cause any distress to women, but have provided contact details of services that can assist women in such an event in the Patient Information pamphlet.

Informed consent

Together with the survey, women will be sent a Participant Information pamphlet that provides details about the purpose and nature of the survey and what participation involves (see Appendix 1). The pamphlet indicates that participation in the survey is entirely voluntary, and that all responses will remain anonymous. The pamphlet also informs the women that by consenting to participate in the study, they are also giving consent for the researchers to have access to health information about their pregnancy and birth, for the purpose of understanding whether women’s views about their maternity care experiences are linked to maternal characteristics (such as age, country of birth, etc.) or birth experiences (first versus subsequent birth, premature versus full-term birth, etc.).

We have assumed that women who have given birth have the capacity to consent to participate in the study, including women aged <18 years. It is anticipated that if women do not wish to participate they will actively decline, not return the survey, or return a blank survey, and accordingly self-select not to take part in this research. The survey questions seek to elicit information about women’s expectations and experiences of maternity care. We have drawn heavily on questions that have been used by others in similar maternity surveys, supporting the validity and acceptability of the questions. However, following ethics approval, we will pilot test the survey with a sample of approximately 30 women who have recently given birth to confirm the final version. The survey format also provides multiple opportunities for women who may wish to provide detailed qualitative information about their experiences of maternity care.

Confidentiality and privacy

Participation in this study will be entirely voluntary. Significant steps have been taken to protect the anonymity and privacy of survey participants by processes that separate access to identifying information about the women from the researchers. The Data Custodian will oversee the identification of the population sample of women and allocation of unique study numbers. A person not otherwise involved in this study will coordinate mail-out of pre-notification letters and survey packages, thus protecting the women’s identities from the researchers. This person will also coordinate receipt of the surveys and construct separate lists of the unique study numbers of Responders and Non-responders. These lists will then be sent to the Data Custodian, who will provide health information, excluding personally identifying
details, to the research team. Individual women will only be ‘identifiable’ to the researchers by the allocated unique number. Unit record health data will supplied for the Responders who have given consent, and aggregate health summary tables for the Non-responders.

DISCUSSION

A significant plank in the NSW maternity health policy, Towards Normal Birth, is the delivery of woman-centred care. The results of this survey will provide important insights into the expectations and health care experiences of women who have recently given birth in seven maternity units in NSW. The findings may assist clinical and administrative leaders within Northern Sydney and Central Coast Local Health Districts in future planning decisions about maternity care, in identifying potential workforce training needs and opportunities to improve communication and service delivery for pregnant women in NSW.

It is recognised that this survey is a first step for NSW in better understanding women’s experiences of maternity care. The survey thus will provide baseline information for maternity units in the Northern Sydney and Central Coast Local Health Districts that could be compared in the future with repeat surveys, to assess changes in women’s experiences with maternity care over time. The study also offers a test of the effectiveness of survey methods not used previously with this population (pre-notification and the option of actively declining participation; linkage of survey data with population-based perinatal data), that could be extended to other health services. The response rates to this survey, and the comparison of two approaches, is of particular interest to one of our study collaborators, the NSW Bureau of Health Information. Comparison of responders and non-responders could also identify subgroups of women who may be less likely to respond to survey techniques, and whose views and experiences may need to be captured by alternate means.
REFERENCES


34. Gordon A. Personal email communication. 21 April, 2012.