

BMJ Open Is maternity care in Scotland equitable? Results of a national maternity care survey

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ABSTRACT

Objective High-quality maternity care is key to long-term improvements in population health. However, even within developed welfare systems, some mothers and babies experience poorer care and outcomes. This study aimed to explore whether women's experiences of maternity care in Scotland differs by their physical or sociodemographic characteristics.

Design Secondary analysis of the 2015 Scottish Maternity Care Experience Survey. The questionnaire was based on the Care Quality Commission English maternity survey.

Setting National Health Service maternity care in Scotland.

Participants The survey was distributed to 5025 women who gave birth in Scotland during February and March 2015 with 2036 respondents (41%).

Main outcome measures The questionnaire explored aspects of care processes and interpersonal care experienced from the first antenatal contact (booking) to 6 weeks following the birth. The analysis investigated whether experiences were related to age, parity, deprivation, rurality, self-reported general health or presence of a health condition that limited daily activities. Analysis used mixed effect multilevel models incorporating logistic regression.

Results There were associations between parity, age and deprivation with gestation at booking indicating that younger women, women from more deprived areas and multiparous women booked later. Women reporting generally poorer health were more likely to describe poorer care experiences in almost every domain including continuity, pain relief in labour, communication with staff, support and advice, involvement in decision making, confidence and trust and overall rating of care.

Conclusions We found few differences in maternity care experience for women based on their physical or socioeconomic characteristics. Our findings indicate that maternity care in Scotland is generally equitable. However, the link between poorer general health after childbirth and poorer experience of maternity care is an important finding requiring further study.

INTRODUCTION

High-quality universal maternity care is recognised worldwide as essential for the safety of mothers and babies through pregnancy and birth and for long-term improvement in population health. Almost 800 000

Strengths and limitations of this study

- The questionnaire used has been extensively tested and used in a series of large-scale national surveys.
- A large sample based on theoretical sampling methods.
- Analysis can reveal associations but not causation.
- Differences in reported experiences could reflect variation in the quality of services received and in subjective factors such as expectations or perceptions.
- Although a large sample overall, some minority groups did not have a large enough representation to be included in the analysis.

women give birth each year in the UK,¹⁻³ making childbirth the most common reason for engagement with the National Health Service (NHS).⁴ For many women, pregnancy is their first adult contact with health services and, as a universal service, maternity care is often viewed as providing a unique window of opportunity to mitigate some of the factors that perpetuate health and social inequalities and to contribute to improvements in population health. This may be achieved through early identification and intervention in cases of clinical or social concerns, promotion of positive health behaviour change, provision of the information, care and support necessary for recovery from birth, and advice and support for good parenting.⁵

Long-standing concerns have been expressed about persistent inequalities in health, attainment and life expectancies between the most and least advantaged groups even in affluent societies.⁵⁻⁷ The foundations of many health and social inequalities are laid during pregnancy, childbirth and in the first days and weeks following birth. This suggests that good maternity care is particularly important for women and babies who have greater healthcare needs or increased potential for disadvantage. The findings of large-scale surveys undertaken in the UK and

in other countries with developed welfare systems over two decades indicate that women generally report positive maternity care experiences.^{8–15} Yet, there is evidence that even within these healthcare systems, some groups of women consistently experience poorer quality of maternity care and outcomes. For example, secondary analyses were undertaken of the Care Quality Commission (CQC) national maternity experience surveys conducted in England in 2007 and 2010 and 2015. These analysis found that single women and women from ethnic minority groups^{16 17} were more likely to access services late, have poorer outcomes and report less positive care experiences, while women with self-reported disabilities experienced poorer care in relation to communication, trust, respect and support and involvement in decision making about their care.¹⁸ Similar findings have been reported in other countries. Surveys undertaken in Queensland, Australia¹⁹ and in Sweden²⁰ have found that younger women were less likely to report being treated with respect and kindness and being spoken to in a way that they could understand than older women¹⁹ and were less satisfied with their maternity care.²⁰ A systematic review of population-based surveys undertaken in five countries found that immigrant women had less positive maternity care experiences than non-immigrant women.²¹ It appears that even in developed welfare systems, not all women's experience of care is equal.

The Institute of Medicine (IOM) quality domains of safe, effective, efficient, timely, person centred and equitable are widely accepted indicators of health service quality.²² Frequently cited in policy and care guidance, their assessment is the focus of considerable effort within the NHS (eg, refs ^{23 24}). Yet, while service user's experiences of care are recognised as important, some clinicians may question their validity and relevance.^{25 26} Historically, quality care has typically been viewed as care that is *safe*, *effective* and *timely* (ie, the right care in the right way at the right time) as assessed objectively, for example, through monitoring of outcomes such as adherence to evidence-based protocols, adverse incidents, referral and treatment waiting times. While these may be measured to some extent objectively, many are not routinely or reliably recorded and some, such as hospital discharge rates, are at best proxy measures for care quality.

*The best window on safety and quality is through the eye of the patient.*²²

Across each of the IOM domains, many important elements of care quality can only be assessed by asking people about their experiences of care. This is most evident for *patient centeredness* with its focus on empathy, responsiveness and respect for individual need. However, being listened to and involved enough in care decisions are also important aspects of safe and effective care. Timely care is not only about procedures being undertaken as directed by guidelines, perceived accessibility of care and responsiveness of staff are equally important. The domain equitable is unique in that it cannot be

assessed at the level of the individual. The IOM defines equitable as providing (across each of the other domains) care that does not vary in quality because of a person's characteristics. Therefore, equity encompasses each of the other quality domains, but it can only be assessed in relation to comparison with the experiences of others.

In this paper, we report a secondary analysis of the findings of a national survey of maternity care experience undertaken in Scotland in 2015 asking the question: is maternity care in Scotland equitable? The specific objective was to consider whether women differed in the quality of care they experienced based on age, parity, geography as defined by urban or rural dwelling, health or index of multiple deprivation.

METHODS

Design

The study involved secondary analysis of data collected in the 2015 Scottish national maternity care experience survey. The survey was undertaken as part of the Scottish Government's Care Experience survey programme.²⁷

Survey methods

Women who gave birth in Scotland during February and March 2015 were eligible for inclusion in the survey. A stratified random sample (60%) of these women were selected from a list of all births prepared by the NHS Central Register, using the birth registrations from the National Records of Scotland and the Community Health Index (CHI) database. The survey did not require NHS research ethics approval. Permission for access to identifiable patient data and to administer the questionnaire to mothers was granted by the Scottish Government CHI Advisory Group. Women were excluded if they were under 16 years of age or if their baby had died.

The survey was stratified by the hospital of birth (including a stratum for home births), using a disproportionate stratified sample design where some sites were over-sampled to achieve the minimum number of responses required for analysis.²⁸ The questionnaires were distributed, via an approved survey contractor, around 2 months after birth with two postal reminders. Women had the option to complete the questionnaire on paper, online or by telephone in a wide range of languages. Full details of survey methods and main results are available on the Scottish Government website.²⁹ The survey was distributed to 5025 women with 2036 returned giving a response rate of 41%. This sample size was in line with a target sample that would allow precision levels of 7% when reporting at individual hospital level. This analysis includes data from all 2036 women. The median response time was 16 weeks (range from 8 weeks to 28 weeks), with 80% of women responding between 10 weeks and 20 weeks. Respondents were more likely to be older; 10% of respondents were aged 24 years or under compared with 21% of all births in Scotland in 2015. The percentage of births that were

first births in Scotland was 57%, compared with 58% in the survey.²

The questionnaire

The survey instrument (online supplementary appendix 1) was the 2013 CQC national survey of women's experiences of maternity care,³⁰ adapted with permission, for use in Maternity Care Experience surveys in Scotland in 2013 and 2015. The questionnaire was developed by the National Perinatal Epidemiology Unit and the Picker Institute³¹ and used in the English national maternity survey programme in 2007 and subsequently in 2010, 2013 and 2015.³⁰ The questionnaire asked women to report on their experiences of maternity care at each stage of the planned maternity care journey from the first antenatal contact until 6 weeks postbirth, in relation to care process and interpersonal (relational) care. Questions addressed; access to services, appropriate care, continuity, involvement in decision making, personalised care, support and advice, communication, confidence and trust. These are enduring issues of importance to maternity service providers, policy makers and to service users^{23 24} and are key aspects intrinsic to each of the IOM quality domains.²² Questions on aspects of appropriate care were related to national care guidance, for example, being encouraged to move around and receiving adequate pain relief during labour.²⁹ Changes from the CQC questionnaire, described fully in the 2013 and 2015 technical reports,²⁹ were relatively minor and reflected issues pertinent to Scottish maternity services. For example, the 2013 CQC questionnaire asked: 'If your partner or someone else close to you was involved in your care during labour and birth, were they able to be involved as much as they wanted?' For the 2015 Scottish survey, this question was extended to include: 'were they able to stay with you as much as you wanted?' as many maternity units were starting to offer opportunities for women's partners to stay in the maternity hospital overnight following the birth. A new question was added about contacts with the health visitor (public health nurse) involvement reflecting the newly introduced health visiting pathway for Scotland. The

questions on personal and demographic characteristics and general health were also specific to the Scottish questionnaire. These questions were standardised across all of the Scottish Government patient experience surveys. This section asked about health: 'How would you rate your health in general?' and 'Do you have a physical or mental health condition or illness lasting or expected to last 12 months or more?' with a follow-up question 'Does your condition or illness reduce your ability to carry-out day-to-day activities?' and questions about religion, sexuality and ethnicity. A significant change to the CQC 2013 questionnaire was the inclusion of a rating of care question. While the focus of the questionnaire was on experience, rather than satisfaction with care, women were asked to rate their care overall for hospital care (antenatal, intrapartum and postnatal) and community-based postnatal care. The distinction between these concepts is that rating seeks a judgement about care quality, that is, my care was good or not good, based on both experience and expectation. Questions about experience ask for a description of specific aspects of care received, leaving the judgement about what constitutes 'good care' to those who design and analyse the questionnaire. For example, the question 'were you given enough time to ask questions or discuss your pregnancy?' assumes that being given enough time is an important element of good care.

We grouped survey questions into outcome subsets for each dimension of care quality described above, under the overall categories of care process and interpersonal care, along with general rating of care. Table 1 indicates how the groupings broadly correspond to almost all of the IOM domains of healthcare quality.²² Each subset included a suite of questions most relevant to that subset, although as with the quality domains, some questions could have applied to more than one subset. General rating of care differs as described above, in that it brings together experience and expectation and does not correspond specifically with the IOM quality domains.

Patient involvement

Service users were not directly involved in this study. However, maternity service users contributed to the

Table 1 Classification of questionnaire items and their relationships with Institute of Medicine (IOM) domains

Overall category	Outcome subset	IOM domain				
		Safe	Effective	Person centred	Timely	Equitable
Care process	Access to services	✓	✓	✓	✓	✓
	Appropriate treatment	✓	✓		✓	✓
	Continuity of care	✓	✓	✓		✓
Interpersonal care	Involvement in decision making	✓	✓	✓		✓
	Personalised care	✓	✓	✓	✓	✓
	Support and advice	✓	✓		✓	✓
	Communication	✓		✓	✓	✓
	Confidence and trust	✓		✓	✓	✓
General rating of care						

adaptation of the national maternity survey questionnaire through a survey advisory group that included an NHS Board Maternity Service Liaison Committee.

Statistical analysis

The purpose of the analysis was to investigate whether maternity care outcomes are dependent on demographic features (independent variables), specifically age in years, parity (primiparous or multiparous), deprivation, rurality, general health and the presence of health conditions or illnesses perceived to limit the ability to carry out day-to-day activities (limiting condition). Deprivation percentiles from the Scottish Index of Multiple Deprivation 2014³² were used as a proxy measure for socioeconomic status based on the postcode of the participant, where 1 is the most deprived and 100 is the least deprived. Rurality was based on the Scottish Government Urban/Rural Classification,³³ which measures the size of population and remoteness of the settlement of residence on an ordinal scale of 1 for most urban to 6 for most rural. Self-reported general health was categorised on an ordinal scale as (1) 'very good', (2) 'good' or (3) 'fair, bad or very bad', and self-reported presence of limiting conditions or illnesses was categorised on an ordinal scale as (1) no limiting condition, or (2) a limiting condition resulting in reduced activity either 'never', (3) 'a little' or (4) 'a lot'. Age and deprivation were treated as continuous variables. Demographic variables with nominal categories (sexual orientation and ethnicity) were not included in the analysis because of very small numbers in all categories apart from heterosexual (96.8%) and white (92.3%).

In order to account for potential bias resulting from the stratified design of the survey,²⁸ weights were applied to the survey responses, defined as the ratio of expected to observed numbers of responses. For this purpose, each outcome was categorised as either a hospital or community outcome. Observations for hospital outcomes from women attending under-represented hospitals were assigned a higher weight and, similarly, observations from over-represented hospitals were assigned a lower weight. For the weighting of community outcomes, an additional level was incorporated to allow for health board of residence. All analyses were adjusted for survey weights.

The outcome responses, independent variables and weights were analysed from a single cross-sectional dataset. The format of the outcome variables were variously binary (yes/no), nominal or ordinal. Where the survey had ordinal categorisations such as 'Yes, always', 'Yes, nearly always', 'No, almost never' and 'No, never', these questions were dichotomised to yes/no binary outcomes by making the first two in this example to simply 'Yes' and the latter two to 'No'. For nominal outcomes, responses were converted into separate binary (yes/no) outcomes. Responses recorded as 'don't know' were treated as missing and excluded from the analyses.

We carried out a prespecified plan to use linear mixed effect multilevel models with demographic covariates fitted as fixed effects and hospital (for hospital outcomes)

or health board level (for community outcomes) fitted as random effects. In this way, variability at the hospital or health board level was taken into account when estimating the effect of independent variables. Analyses were carried out to examine the sensitivity of fitting geographic variables as either fixed or random effects. Dichotomous responses were analysed using binary logistic regression and ordinal outcomes with ordered logistic regression, with ORs estimated with 95% CIs for all outcomes. Penalised likelihood logistic regression was used if there was perfect prediction.³⁴ Significance was determined to be at the 0.05 level, with no adjustment for multiple testing being considered necessary given the multilevel models used.³⁵ All analyses were conducted using Stata (StataCorp 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP).

RESULTS

For each outcome subset, we report here any statistically significant results relating to the independent variable with the largest number of significant associations. Although we highlight these findings in this section, we emphasise however that the majority of the effect estimates are not statistically significant indicating that the majority of maternity care outcomes explored were not dependent on demographic features.

Care process

For access to services (table 2), parity had the highest number of statistically significant associations. Evidence indicated that women who were having a baby for the first time (primiparous) had better access. Primiparous women saw their first health professional earlier than multiparous women (OR 1.65, 95% CI 1.23 to 2.21) and had their first antenatal care assessment (booking) earlier (OR 1.19, 95% CI 1.01 to 1.40). Other demographic factors, in addition to parity, were associated with time of booking, with older women booking earlier (OR 0.98, 95% CI 0.96 to 0.98, including adjustment for parity) and women in least deprived areas also booking earlier (OR 1.002, 95% CI 1.000 to 1.004). There was no association with either general health or having a limiting condition or illness.

General health was the main factor influencing appropriateness of treatment received (table 2) indicating that women in better health described better experiences of quality of care. During their labour, compared with women in good health, women who reported fair, bad or very bad health felt that they had been less able to choose the most comfortable position for themselves (OR 0.37, 95% CI 0.24 to 0.58) and that they experienced less support with pain management (OR 0.48, 95% CI 0.26 to 0.90). Immediately after giving birth, these women were less likely to have skin-to-skin contact (OR 0.35, 95% CI 0.20 to 0.64) with their baby. During postnatal care fewer women reporting fair, bad or very bad general health felt informed about the need for a maternal postnatal

Table 2 Care process and general rating of care

Question subset (survey question number)	General health (cat 3)			Limiting condition			Age			Primiparous		
	OR	LCI	UCI	OR	LCI	UCI	OR	LCI	UCI	OR	LCI	UCI
	Access to services											
First health professional seen (B1)*	1.48	0.93	2.36	2.12 †	1.27	3.54	1.00	0.98	1.03	2.39 †	1.59	3.61
Gestation at first contact (B2)*	1.30 †	1.01	1.68	1.80 †	1.07	3.02	1.00	0.98	1.01	1.65 †	1.23	2.21
Gestation at booking (B3)*	1.04	0.76	1.44	1.28	0.74	2.21	0.98 †	0.96	0.99	1.19 †	1.01	1.40
Given midwifery contact number – antenatal (B15)‡	0.45	0.12	1.72	3.12	0.17	55.8	1.03	0.95	1.11	0.89	0.39	2.05
Given midwifery contact number – postnatal (F1)‡	0.38	0.11	1.29	5.67	0.32	100.18	1.08 †	1.02	1.16	0.92	0.47	1.83
Midwife home visit – postnatal (F3)	0.67	0.16	2.81	3.42	0.47	25.09	1.01	0.95	1.07	0.71	0.39	1.28
Midwife clinic visit – postnatal (F4)	1.17	0.78	1.75	1.05	0.67	1.66	0.99	0.96	1.01	1.26 †	1.12	1.42
Told who to contact for advice on emotional changes (F20)	0.74	0.50	1.08	0.50	0.23	1.11	1.05 †	1.03	1.07	1.10	0.95	1.28
Appropriate treatment												
Able to move around in labour (C2)	0.37 †	0.24	0.58	0.84	0.55	1.28	0.97 †	0.94	1.00	0.77	0.59	1.02
Help to cope with labour pain (C4)	0.48 †	0.26	0.90	0.77	0.50	1.20	0.98	0.95	1.01	0.87	0.71	1.07
Skin-to-skin contact after birth (C9)	0.35 †	0.20	0.64	1.52	0.55	4.23	0.98	0.94	1.02	0.56 †	0.39	0.82
Left alone when it worried you, early labour (C12_1)*	1.12	0.66	1.88	0.95	0.44	2.05	1.02	1.00	1.05	0.56 †	0.39	0.80
Later labour (C12_2)*	0.78	0.38	1.58	0.89	0.30	2.63	1.00	0.96	1.04	0.99	0.69	1.42
During the birth (C12_3)*‡	0.66	0.13	3.43	2.37	0.13	44.14	0.96	0.90	1.03	0.81	0.38	1.73
Shortly after the birth (C12_4)*	0.75	0.26	2.13	1.61	0.55	4.75	1.06 †	1.03	1.09	1.27	0.87	1.85
Advised to arrange a 6 week postnatal check (F17)	0.47 †	0.27	0.84	0.80	0.34	1.88	1.02	0.98	1.06	0.77	0.54	1.09
Continuity of care												
Saw the same midwife – antenatal (B9)	0.51 †	0.30	0.89	0.72	0.49	1.04	0.99	0.96	1.01	0.97	0.81	1.18
Had a named midwife (B10)	0.93	0.34	2.55	0.30 †	0.18	0.53	0.97 †	0.94	0.99	1.72 †	1.27	2.32
Saw the same midwife – community postnatal (F7)	0.93	0.65	1.34	0.92	0.52	1.63	0.99	0.96	1.01	1.04	0.92	1.18
Saw the same midwife – antenatal and postnatal (F14)	0.45 †	0.33	0.61	1.07	0.77	1.49	0.99	0.97	1.00	0.89	0.75	1.06
Saw named midwife – postnatal (F8)	0.69 †	0.49	0.99	1.11	0.63	1.97	0.99	0.97	1.01	1.00	0.86	1.16
General rating of care												
Antenatal care (B19)	0.26 †	0.16	0.40	1.07	0.52	2.17	1.01	1.00	1.03	0.88	0.77	1.00
Care in labour (C19)	0.32 †	0.22	0.47	0.90	0.61	1.33	1.01	1.00	1.03	0.88	0.72	1.08
Postnatal care – hospital (D8)	0.43 †	0.28	0.67	0.83	0.41	1.67	1.00	0.98	1.03	0.68 †	0.54	0.86
Postnatal care – community (F22)	0.36 †	0.22	0.59	0.76	0.48	1.19	1.00	0.98	1.01	0.73 †	0.64	0.84

*Questions were reworded so that they were positive care when answered in the affirmative.

†Statistically significant result at the 95% confidence level.

‡These runs all required the use of 'firth' regression to avoid 'empty' answers due to perfect prediction; for all analyses, baselines were taken as: general health: very good; limiting condition: no limiting condition; primiparous, multiparous; age was a continuous (increasing) variable.

LCI, Lower Confidence Interval (bound); UCI, Upper Confidence Interval (bound).

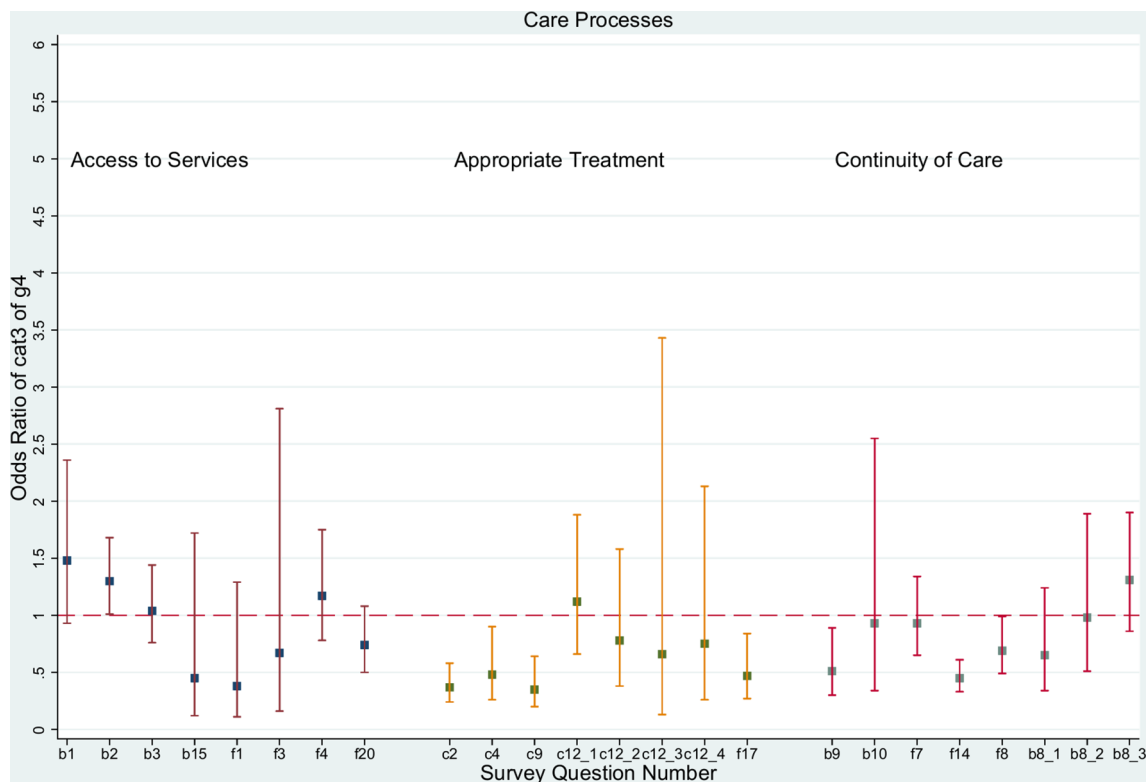


Figure 1 This shows OR and CI for a given question in each of the three care process groups of access to services, appropriate treatment and continuity of care. Where the CI lies entirely above the $y=1$ line, experience is rated as positive (good care) for that question or negative (poor care) if it lies entirely below that line.

check-up (OR 0.47, 95% CI 0.27 to 0.84). There were no associations with either limiting illness or deprivation.

Although all factors had a link with at least one continuity outcome (table 2), general health had the highest number of significant associations. Fewer women in poorer general health saw the same midwife at each antenatal appointment (OR 0.51, 95% CI 0.30 to 0.89), fewer had the same midwife for both antenatal and postnatal care (OR 0.45, 95% CI 0.33 to 0.61) and fewer saw their named midwife postnatally (OR 0.69, 95% CI 0.49 to 0.99) (figure 1).

Interpersonal care

There were many communication outcomes (table 3) for which a strong association was observed with general health, indicating that less healthy women experienced worse communication from maternity service providers (figure 2). Only general health and age showed any associations with confidence and trust (table 3 and figure 2). Women with poorer health reported that they had experienced less respect and dignity during labour (OR 0.44, 95% CI 0.24 to 0.83) and had less confidence and trust in the midwifery team after discharge (OR 0.29, 95% CI 0.18 to 0.70). Conversely, older mothers had more confidence and trust both in the staff providing care during labour (OR 1.06, 95% CI 1.01 to 1.11) and the midwifery team after discharge (OR 1.10, 95% CI 1.05 to 1.15) (table 3).

Parity had the greatest amount of association with involvement in decision making (table 3). Primiparous

women were more likely to report that they were offered a choice of hospital (OR 1.34, 95% CI 1.11 to 1.61), a choice of giving birth in midwife led unit or birth centre (OR 1.84, 95% CI 1.49 to 2.26) and the choice of having a home birth (OR 1.71, 95% CI 1.31 to 2.24). Mothers who had not previously had a baby also felt more sufficiently informed in order to make a decision about where to give birth (OR 1.35, 95% CI 1.08 to 1.67). However, first-time mothers reported that they were less able to involve a birth partner as much as they wanted (OR 0.52, 95% CI 0.35 to 0.77). General health and deprivation also had some associations with decision-making outcomes but not limiting illness or age.

For personalised care outcomes (table 3), there was a small amount evidence of dependency on all factors (except limiting illness), with general health (figure 3) and parity having the most number of significant associations. Women in poorer health were less likely to have had their personal circumstances taken into account at antenatal consultations (0.22, 95% CI 0.08 to 0.58) and, when they were in hospital, they reported that their partners were more restricted to visiting hours (OR 1.54, 95% CI 1.08 to 2.17). The partners of primiparous women were also more restricted to visiting hours (OR 1.72, 95% CI 1.23 to 2.38), and these women felt that their decisions about feeding were respected less (OR 0.6, 95% CI 0.41 to 0.87).

Table 3 Interpersonal care

Subset (survey question number)	General health (cat 3)				Limiting condition (cat 3)				Age				Primiparous			
	OR	LCI	UCI		OR	LCI	UCI		OR	LCI	UCI		OR	LCI	UCI	
Communication																
Time to ask questions/discuss pregnancy (B11)	0.22*	0.09	0.51	1.06	0.48	2.36	1.08*	1.01	1.15	0.75	0.36	1.53				
Listened to – antenatal (B12)	0.22*	0.05	0.92	0.45	0.10	2.02	1.08	0.95	1.22	1.58	0.74	3.37				
Staff introduced themselves – in labour (C10)	0.31	0.07	1.46	0.59	0.11	3.32	1.03	0.92	1.16	1.95	0.95	3.97				
Concerns taken seriously – in labour (C13)	0.53	0.25	1.15	0.58	0.26	1.29	1.02	0.97	1.07	0.98	0.80	1.20				
Spoken to understandably – in labour (C15)	0.15*	0.03	0.76	2.44	0.19	32.1	0.99	0.90	1.08	1.27	0.37	4.38				
Listened to – postnatal (F11)	0.23*	0.09	0.58	0.92	0.12	6.93	1.07*	1.03	1.12	0.55*	0.39	0.78				
Confidence and trust																
Treated with respect/dignity in labour (C17)	0.44*	0.24	0.83	0.73	0.11	4.95	1.01	0.93	1.10	0.77	0.48	1.23				
Had confidence/trust in staff in labour (C18)	0.49	0.24	1.00	0.44	0.15	1.32	1.06*	1.01	1.11	1.19	0.73	1.92				
Confidence/trust in midwives – postnatal at home (F13)	0.29*	0.18	0.70	0.85	0.35	2.06	1.10*	1.05	1.15	1.09	0.65	1.82				
Involvement in decisions																
Choices about place of birth (PoB)																
Hospital (B4_1)	1.49	0.75	2.95	0.95	0.46	1.97	0.99	0.97	1.00	1.34*	1.11	1.61				
Midwife led unit (B4_2)	0.37*	0.20	0.68	0.64	0.26	1.58	1.02	0.99	1.05	1.84*	1.49	2.26				
Consultant led unit (B4_3)	0.46*	0.22	0.99	1.36	0.57	3.25	1.04	1.02	1.06	1.20	0.89	1.62				
Home birth (B4_4)	0.60	0.34	1.07	0.52	0.26	1.02	1.00	0.98	1.02	1.71*	1.31	2.24				
Information to make choice of PoB (B6)	0.72	0.39	1.31	0.98	0.63	1.52	1.00	0.97	1.02	1.35*	1.08	1.67				
Involvement in decisions – antenatal (B18)	0.12*	0.06	0.25	3.01	0.53	17.17	1.04	0.97	1.11	0.94	0.52	1.67				
Partner involvement – labour/birth (C11)	0.44	0.16	1.25	0.80	0.36	1.79	1.01	0.95	1.06	0.52*	0.35	0.77				
Involvement in decisions – labour/birth (C16)	0.29*	0.16	0.54	1.32	0.37	4.74	1.02	0.97	1.06	1.13	0.68	1.88				
Personalised care																
Attention to personal circumstances – antenatal (B13)	0.22*	0.08	0.58	0.72	0.17	3.00	1.06	0.98	1.14	1.62	0.81	3.23				
Kindness/understanding – postnatal hospital (D4)	0.45	0.19	1.09	0.58	0.20	1.65	1.04	1.00	1.09	0.57	0.30	1.06				
Partner able to stay – postnatal hospital D5	0.55*	0.46	0.93	0.60	0.34	1.06	1.04*	1.02	1.06	0.58*	0.42	0.81				
Feeding decisions respected (E4)	0.51	0.15	1.77	0.59	0.22	1.63	1.05	0.99	1.11	0.60*	0.41	0.87				
Attention to personal circumstances-postnatal (F12)	1.05	0.34	3.27	0.62	0.15	2.55	1.04	0.96	1.11	0.67	0.34	1.34				
Support and advice																
Information/explanation – postnatal hospital (D3)	0.32*	0.16	0.68	0.85	0.37	1.93	1.02	0.99	1.06	0.50*	0.33	0.76				
Consistent feeding advice (E5)	0.53*	0.31	0.91	0.53*	0.30	0.93	0.99	0.96	1.03	0.52*	0.34	0.79				
Feeding support/encouragement (E6)	0.35*	0.18	0.68	0.71	0.39	1.30	1.03	0.99	1.08	0.51*	0.36	0.73				
Advice on babies health/progress 6weeks after birth (F15)	0.63	0.16	2.55	1.41	0.11	18.59	1.09*	1.02	1.17	1.87	0.81	4.3				
Information on your physical recovery (F18)	0.71	0.42	1.21	0.61	0.26	1.44	1.00	0.97	1.04	0.39*	0.31	0.50				
Information on your emotional changes (F19)	0.48*	0.34	0.69	0.59	0.25	1.39	1.01	0.99	1.04	0.67*	0.50	0.91				

Baselines were taken as: general health: very good; limiting condition: no limiting condition; primiparous: multiparous; age was a continuous (increasing) variable.

LCI, lower CI (bound); UCI, upper CI (bound).
*statistically significant result at the 95% confidence level.

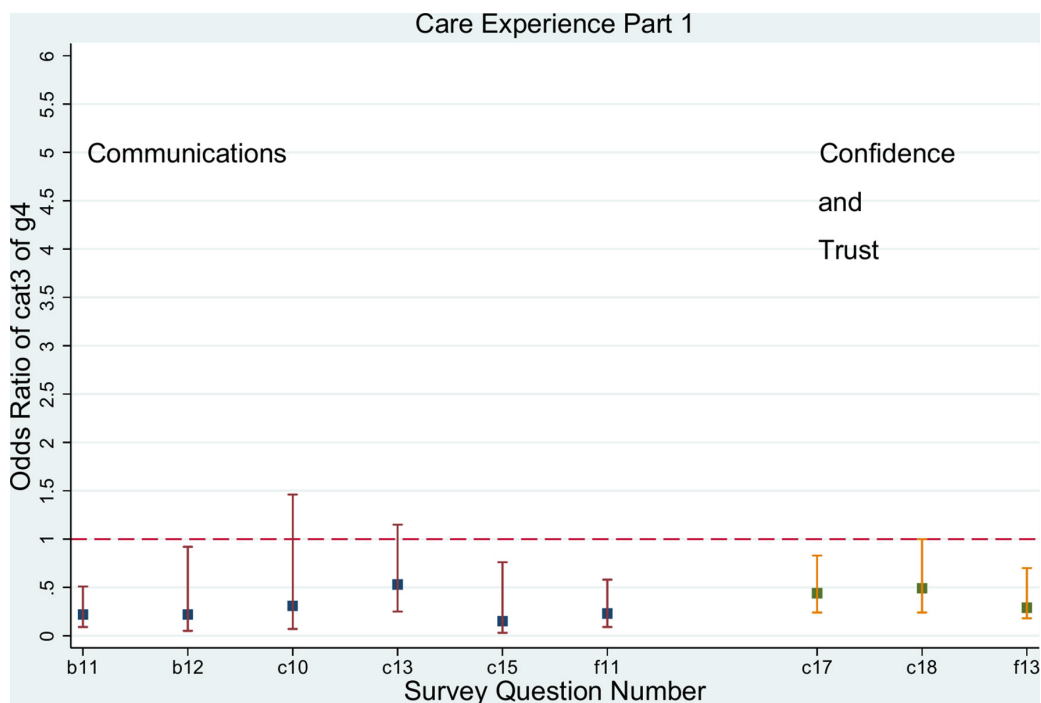


Figure 2 This shows ORs and CIs for a given question in each of the first part of the care experience groups, namely communications and confidence and trust. Where the CI lies entirely above the $y=1$ line, experience is rated as positive (good care) for that question or negative (poor care) if it lies entirely below that line.

All factors had some association with support and advice outcomes (table 3), with parity having the most number of associations. Women with worse health were less likely to receive sufficient information following birth (OR 0.32, 95% CI 0.16 to 0.68), received less consistent feeding advice (OR 0.53, 95% CI 0.31 to 0.91) and less

support and encouragement about feeding (OR 0.35, 95% CI 0.18 to 0.68) (figure 3). Mothers in poorer general health also reported receiving less sufficient information postnatally regarding both their physical recovery (OR 0.71, 95% CI 0.42 to 1.21) and their emotional recovery (OR 0.48, 95% CI 0.34 to 0.69) (table 3).

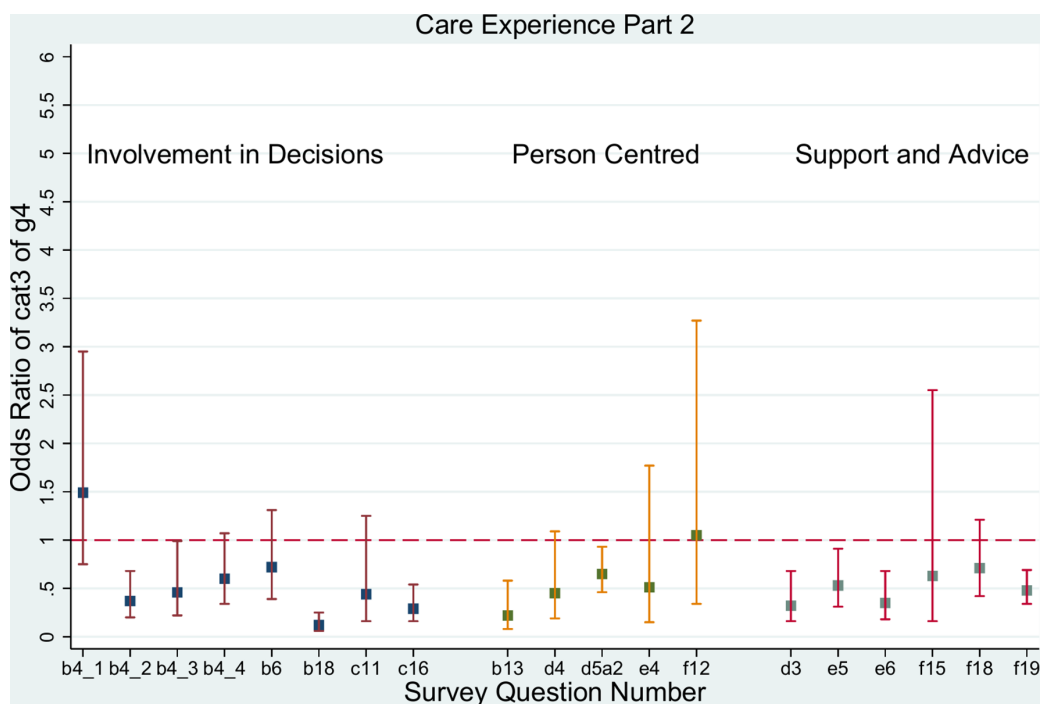


Figure 3 This shows OR and CI for a given question in each of the second part of the care experience groups, namely involvement in decisions, person centred and support and advice. Where the CI lies entirely above the $y=1$ line, experience is rated as positive (good care) for that question or negative (poor care) if it lies entirely below that line.

General rating

Only general health and parity showed any associations with general ratings of care (table 2), with health status having more significant associations. Women with poorer health provided worse ratings for each stage of their maternity care journey: antenatal care (OR 0.26, 95% CI 0.16 to 0.40), care during labour (OR 0.32, 95% CI 0.22 to 0.47), postnatal hospital care (OR 0.43, 95% CI 0.28 to 0.67) and postnatal care at home (OR 0.36, 95% CI 0.22 to 0.59).

The sensitivity analyses to examine geographic variables either as fixed or random effects produced very similar results, with only minor differences relating to rurality (there were slightly fewer significant associations between rurality and outcomes when geographic variables were fitted as random effects).

DISCUSSION

This paper reports on the results of a reanalysis of data from a national survey of women's maternity care experiences that aimed to examine associations between women's demographic characteristics and their experiences of maternity care. The characteristics included were: age, parity (first or subsequent birth), socioeconomic deprivation, urban or rural dwelling, general health and presence of a health condition that limits daily activities.

The survey included questions about women's experiences of key aspects of the process of care they received including early access to services, knowing who to contact in case of concerns, being given adequate pain relief during labour and receiving continuity of care. Relational aspects of care experience included important questions about communication between women and their care providers, receiving the advice and support that they needed and being involved in decisions about their care. These are all important indicators of care that is safe, effective, person centred and timely, and all are best assessed through directly asking the recipients of maternity care. Across most of the outcomes and demographic characteristics examined, there were few consistent associations identified. This means that there was no evidence that women's experience of maternity care in Scotland varied systematically by age, parity, socioeconomic status, geography as defined by urban or rural dwelling or having a health condition that limited daily activities. This suggests that, in general, maternity care in Scotland is equitable.

However, there were some important exceptions. Women living in the most deprived areas booked for their antenatal care significantly later than women living in the least deprived areas. These women were also less involved in aspects of decision making about their care. In contrast, first time mothers tended to access care earlier and feel more involved in choices and care decisions; however, these women had poorer experiences in some aspects of person-centred care in particular in relation to involvement of their partner during labour and postnatal care in

hospital. There were some associations across all aspects of personalised care and support and advice indicating that some groups of women experienced poorer care for at least some aspects of these domains. However, there was no evidence of consistent or systematic detriment experienced by any particular group.

The clear exception and most striking finding was that women who reported having poorer general health also reported consistently poorer experiences of care. This was apparent across all outcome areas and across the majority of questions within each of the themes with the exception of access to services. Women who had poorer general health also experienced less continuity of care, had less positive care experiences during labour and birth, including pain management, and being treated with respect and dignity. This group of women had less confidence and trust in staff, felt less involved in decisions about their care and experienced poorer communications with staff. They also felt that their infant feeding decisions were not respected, that they received less support and advice in the postnatal period and they were more likely than women reporting good health to report receiving enough information about their own physical or emotional health in the 6 weeks after giving birth. It is interesting that these associations were consistent and evident across all of the domains explored, while there were no similar findings for women who reported having a condition or illness that limited their daily activities. Caution, however, should be exercised when interpreting these results, given the multiplicity of analyses and potential for some chance findings.

The maternity survey national report found that women were generally highly satisfied with their care, and this reanalysis has found that this did not vary across the demographic or health dimensions examined with the exception of women who reported poorer general health. This fits with the findings of other studies of maternity care satisfaction that have indicated that women are generally satisfied with the care they have received and suggests that experience broadly matches expectations.^{36 37}

The findings of this study do not fully reflect the findings of other similar studies. Several studies have found that women from ethnic minority groups or immigrant women had poor experiences of care,^{16 17 21} for example, that they accessed services later, experienced less effective pain relief during labour and had poorer experiences of interpersonal care. The current study was not able to include ethnicity in the analysis due to smaller overall sample size and the very low numbers of women from minority groups completing the survey. This partly reflects that Scotland is not so ethnically diverse as other countries in the UK and Europe; however, the maternity survey also received proportionately fewer responses from women in minority groups. More focused research is needed to understand the maternity care experiences of women from ethnic minority groups in Scotland.

This study differed from the findings of several studies reporting inequalities in care experienced

by younger women and women from lower income groups.^{16 19 20} This study found no consistently negative associations with age or socioeconomic status. There has been considerable effort through Scotland's health and social care policies over the last decade³⁸ to reduce the impact of inequality. Furthermore, improving early access to maternity care for women across different levels of deprivation was an NHS Scotland national performance target up until 2015 when evidence indicated that the target had been achieved.³⁹ The findings of this study suggest that to some extent maternity services have been successful in providing equitable care to the demographic groups that were traditionally considered less likely to engage with maternity services: younger women and women from poorer areas. While this study found that women from lower socioeconomic groups continue to access services significantly later than women from higher socioeconomic groups, this was still within the national target of antenatal booking by 12 weeks of pregnancy. There was no evidence of poorer care experience for these women across the other dimensions studied.

The clear finding that women who had poorer general health tended to report poorer care experiences is consistent both with other analysis of the Scottish Care Experience surveys^{40 41} and wider studies that have explored the influence of health status.⁴² Although this finding has not been reported in other similar studies of maternity care experience, this may in part be due to differences in health characteristics included the survey instruments. For example, although Scottish survey is based on the CQC questionnaire, the demographic and health questions differ. While the CQC questionnaire contains a range of options relating to long-standing health conditions and disability,¹⁸ the Scottish survey included only three questions relating to general health and long-term physical or mental illness. These differences may limit comparability of findings between studies.

Strengths and limitations

A strength of the study is that the questionnaire used was based on the English National Survey questionnaire. This was subject to rigorous cognitive and field testing and successfully used in a series of large-scale English national surveys prior to its use in the Scottish national survey.^{31 32} A rigorous stratified random sampling strategy was used, and this included all maternity units and all NHS Boards in Scotland resulting in a sample likely to be largely representative of the maternity population in Scotland. However, large-scale surveys have some limitations related to design and methods. The response rate to the survey was low at 41%, and younger women were under-represented among respondents potentially limiting the generalisability of the findings. However, weighting and the rigorous analytical techniques employed accounts for these issues to some extent. The questionnaire

contains a mixture of closed, structured questions and four open questions where women were able to provide more context to their responses. These open comments were analysed and presented alongside the quantitative data in the national report for the survey.²⁹ However, the structured wording does limit our understanding of findings. In particular, wording of the general health question means that it is not possible to say whether women experienced poorer general health as a result of experiencing poorer maternity care, or whether women who had poorer general health then experienced poorer maternity care. While there is a clear association between poorer general health and poorer care experience, cause and effect cannot be inferred. This will be addressed in future iterations of the Scottish national maternity survey. Small numbers of women in some demographic groups, in particular, for ethnic groups, meant that it was not possible to include this factor in the analysis. This may mean that some important areas of inequity have not been uncovered. In common with most large-scale maternity experience surveys, the Scottish maternity experience survey was targeted specifically at women who had recently used maternity care. While a small number of questions addressed the involvement of partners, these do not address the important issue of partner, or wider family experience of involvement in maternity care or care needs in the early weeks and months following birth. This is an issue that should be addressed in future research.

The findings of this study indicate that women's experience of maternity care matters. There is a clear association between poorer general health at 2 months postbirth and poorer experience of maternity care. This association was found across almost all dimensions of care process and interpersonal care examined indicating that women who report poorer general health also are more likely to experience poorer quality of maternity care across all of the IOM quality dimensions. Further research is required to explain this finding. Data linkage and longer term follow-up studies that link women's experiences of maternity care with subsequent health and well-being outcomes is also required to more fully explore the links between maternity care experience and longer term health and well-being.

Maternity care clinicians need to be aware of the potential long-term impacts of poor care experiences on women's general health and to understand that women's experience of care provides important indicators of care that is safe, effective and equitable as well as person centred and should seek to adopt models of care that have been demonstrated to be effective in improving women's experiences across these domains such as continuity of care.⁴³

Well-conducted surveys of the healthcare experience should be considered central to patient safety programmes and not considered to be merely 'nice to have' but secondary to measures traditionally considered to be more objective. The findings of this study

suggest that there are previously unrecognised areas of concern relation to women who report poorer general health following childbirth. Although this analysis could not establish whether these women experience poorer health as a result of experiencing poorer quality maternity care or if their poorer general health resulted in them experiencing poorer care, either option is concerning, and the needs of these women require further research.

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