

Appendix C. Logistic regression analysis

Summary

- Logistic regression analysis was undertaken in order to explore the factors associated with breastfeeding initiation and prevalence at two and six weeks. The analysis was based on mothers of full term babies only.
- The key interventions influencing mothers' likelihood to initiate breastfeeding were being helped to put the baby to the breast in the first few days after the birth and having skin-to-skin contact within 24 hours.
- In terms of other characteristics, the key factors were ethnicity and how the mother herself was fed as a baby. Mothers from a White ethnic background and those who had been fed entirely with infant formula as a baby were less likely than other mothers to initiate breastfeeding.
- Mothers of full term babies who initiated breastfeeding were more likely to be breastfeeding still at two weeks if they:
 - were breastfeeding exclusively at one week;
 - were from a non-White background;
 - had breastfed a previous child for six weeks or more;
 - had received help or information on breastfeeding from a breastfeeding support group, peer supporter, voluntary organisation or community group.
- The key factors affecting mothers' likelihood to still be breastfeeding when their baby was six weeks old (among those who were doing so at two weeks) were similar. Exclusive breastfeeding at five weeks, being from a non-White background and being aged 30 or over were particularly associated with breastfeeding at six weeks. Mothers of second or later babies who had breastfed their previous child for only a short period or not at all were less likely to be breastfeeding their new baby at six weeks.

Logistic regression analysis¹ was undertaken in order to explore the factors associated with:

- Breastfeeding initiation (among all mothers at Stage 1)
- Prevalence of breastfeeding when babies were two weeks old (among Stage 1 mothers who had initiated breastfeeding)
- Prevalence of breastfeeding when babies were six weeks old² (among Stage 1 mothers who were breastfeeding when their baby was two weeks old)

Only full term babies were included in the analysis since the factors affecting feeding can be different for premature babies. This analysis draws together themes discussed in Chapters 2, 3 and 4.³ Logistic regression analysis is particularly useful as it allows each factor to be considered separately by controlling for the effects of other, sometimes related, factors and to assess their relative influence in modelling the likelihood of a mother breastfeeding her child. This is the first time this type of analysis has been conducted in the Infant Feeding Survey.

C1 Breastfeeding initiation model

Eighty-one per cent of mothers of full-term babies breastfed initially. The characteristics and interventions associated with breastfeeding initiation are shown below, in order of influence in the model^{4 5}. Table C.1 illustrates this in more detail through cross-tabular analysis and Table C.2 shows the logistic regression model for breastfeeding initiation.

- **Whether the mother was helped to put the baby to the breast in the first few days** - Mothers who were helped to put the baby to the breast were more likely to initiate breastfeeding than those who were not (99% and 59% respectively)
- **Ethnicity** - Mothers from a non-White background (95%) were more likely to initiate breastfeeding than White mothers (79%)⁶
- **How the mother herself was fed as a baby** - Mothers who reported being fed entirely with infant formula as a baby (67%) were less likely to initiate breastfeeding than other mothers (92%)
- **Whether the mother had skin-to-skin contact with the baby within 24 hours of birth** - Mothers who had skin-to-skin contact within 24 hours of birth were more likely to initiate breastfeeding than those who did not (84% and 55% respectively)
- **How the mother's friends fed their babies** - Mothers who reported that most of their friends only breastfed their babies were most likely to initiate breastfeeding (95%) and those who reported that most of their friends only gave infant formula were least likely to initiate breastfeeding (66%). Other mothers fell in between (86%).
- **Awareness of the health benefits of breastfeeding** - Mothers who were aware of the health benefits were more likely to breastfeed than those who were not (84% and 63% respectively)
- **Region** - Mothers living in the South of England (London, East, South East and South West regions) (88%) were more likely to initiate breastfeeding than mothers living in other parts of the UK (75%)
- **Socio-economic classification** - Mothers from managerial or professional occupations (90%) were more likely to initiate breastfeeding than other mothers (76%)
- **The age of the mother** - Mothers aged 20-24 (68%) were less likely to initiate breastfeeding than other mothers (84%)
- **Whether anyone explained to the mother how to recognise that the baby was getting enough milk** - Mothers who were told how to recognise that the baby was getting enough milk were more likely to initiate breastfeeding than those who were not (91% and 74% respectively)

C2 Two week breastfeeding prevalence model

Once mothers have initiated breastfeeding, a wider range of influencing factors on whether the mother continues breastfeeding come into play, including whether or not mothers were breastfeeding exclusively and whether or not they received help with any problems they may have encountered.

The logistic regression model created for breastfeeding prevalence at two weeks was based on all Stage 1 mothers with full term babies who initiated breastfeeding. Eighty-three per cent of these mothers were still breastfeeding at two weeks. The characteristics and interventions associated with breastfeeding prevalence at two weeks are shown below in order of influence in the model⁷. Table C.3 illustrates this in more detail through cross-tabular analysis and Table C.4 shows the logistic regression model for breastfeeding prevalence at two weeks.

- **Whether the mother was breastfeeding exclusively when their baby was one week old** – virtually all mothers who were exclusively breastfeeding at one week were still breastfeeding at two weeks (97%), compared with 65% of other mothers
- **Ethnicity** – Mothers from a non-White background (94%) were more likely to be breastfeeding still at two weeks than White mothers (80%)³
- **Experience of breastfeeding a previous child** - Mothers of second or later babies who had breastfed their previous child for six weeks or more were more likely to be breastfeeding still at two weeks (94%), than those who had not breastfed their previous child (59%) and those who had breastfed their previous child for less than six weeks (53%). The findings for first-time mothers were in line with the average (81%).
- **Use or awareness of help or information on breastfeeding from a peer supporter, breastfeeding support group, voluntary organisation or community group**⁸ – Mothers who had received help or information from one or more of these sources (90%) or were aware of this help even though they had not used it (85%) were more likely to be breastfeeding still at two weeks than other mothers (70%).
- **How the mother's friends fed their babies** - Mothers who reported that most of their friends only breastfed their babies were more likely than other mothers to be breastfeeding still at two weeks (94% and 80% respectively).
- **How the mother herself was fed as a baby** - Mothers who reported that they were fed entirely with infant formula as a baby (72%) were less likely to be breastfeeding still at two weeks than mothers reported being fed entirely with breastmilk or with infant formula and breastmilk (89%)
- **Region** - Mothers living in the South of England (London, East, South East and South West regions) (88%) were more likely to be breastfeeding still at two weeks than mothers living in other parts of the UK (78%)
- **Whether the mother received help or support with problems experienced after leaving the hospital, birth centre or unit** – Mothers who received this type of help were more likely to be breastfeeding still at two weeks than other mothers (88% and 80% respectively)
- **Socio-economic classification** - Mothers from managerial or professional occupations (88%) were more likely to be breastfeeding still at two weeks than other mothers (79%)

C3 Six week breastfeeding prevalence model

The logistic regression model created for breastfeeding prevalence at six weeks was based on all Stage 1 mothers with full term babies who were breastfeeding at two weeks and whose babies were at least six weeks old at the time of the survey. Eighty-four per cent of these mothers were still breastfeeding at six weeks. The characteristics and interventions associated with breastfeeding prevalence at six weeks are shown below in order of influence in the model.⁹ Table C.5 illustrates this in more detail through cross-tabular analysis and Table C.6 shows the logistic regression model for breastfeeding prevalence at six weeks.

- **Whether the mother was breastfeeding exclusively when their baby was five weeks old** – virtually all mothers who were exclusively breastfeeding at five weeks were still breastfeeding at six weeks (99%), compared with 74% of other mothers
- **Ethnicity** – Mothers from a non-White background (92%) were more likely to be breastfeeding still at six weeks than White mothers (81%)³
- **The age of the mother** – Mothers aged 30 or over were more likely to be breastfeeding still at six weeks (88%) than mothers aged 25-29 (82%), 20-24 (73%) and under 20 (68%)
- **Experience of breastfeeding a previous child** - Mothers of second or later babies who had breastfed their previous child for six weeks or more were more likely to be breastfeeding still at six weeks (90%), than those who had not breastfed their previous child (65%) and those who had breastfed their previous child for less than six weeks (62%). The findings for first-time mothers were in line with the average (82%).
- **Whether the mother received help or support with problems experienced after leaving the hospital, birth centre or unit** – Mothers who had problems but did not receive help or support were less likely to be breastfeeding still at six weeks than other mothers (68% and 85% respectively)
- **How the mother herself was fed as a baby** - Mothers who reported being entirely breastfed as a baby (90%) were more likely to be breastfeeding still at six weeks than mothers who reported being fed entirely with infant formula or with infant formula and breastmilk (80%)
- **How the mother's friends fed their babies** - Mothers who reported that most of their friends only breastfed their babies were more likely than other mothers to be breastfeeding still at six weeks (92% and 82% respectively).

Tables C.5 and C.6

Notes and references

¹ Logistic regression is a method of multiple regression used when the dependent variable is a categorical dichotomy (for example, whether a mother initiated breastfeeding or not). Predictor variables (in this case, demographics, types of intervention etc.) are all continuous or categorical variables which are converted into binary variables (for example, a scale with five age bands has to be converted into five separate variables showing whether a mother was aged under 20 or not, aged 20-24 or not etc, where 'aged under 20' is given a value of 1 and everyone else is given a value of 0). Missing values were included as 0. In logistic regression, the probability of an event occurring (for example, initiating breastfeeding or not) is predicted given known values of the **predictor/s** (e.g. being helped to put the baby to the breast in the first few days after the birth). A value close to 0 means that the event (such as initiating breastfeeding) is very unlikely to have occurred, and a value close to 1 means that the event is very likely to have occurred. The chosen model will be the one that, when values of the predictor variables from the dataset are placed in it, results in the values of the dependent variable closest to the observed values in the dataset. For example, the model which makes the highest percentage of correct predictions for whether a mother initiated breastfeeding or not will be chosen.

² Only babies who were at least six weeks old at the time of the Stage 1 survey were included in this analysis.

³ The figures quoted in this Appendix may not be quite the same as those shown in other chapters, since other chapters present findings based on all mothers, not full term babies only. Also, these findings are based on Stage 1, whereas prevalence of breastfeeding in Chapter 2 is based on all Stage 3 mothers since prevalence at later ages is also included.

⁴ The extent of influence of each variable in the model does not directly relate to the cross-tabular analysis, since some variables are inter-correlated (i.e. even though a high percentage of a particular subgroup may have breastfed initially, they may not have a correspondingly high influence in the model as some of the data from this variable may have already been taken into account).

⁵ Other variables tried in the logistic regression analysis for the initiation model were:

- Index of Multiple Deprivation
- birth order
- whether feeding was discussed at antenatal check-ups or classes
- whether the mother was taught positioning and attachment during pregnancy
- whether the mother gave birth in a hospital with full BFI accreditation
- type of delivery
- whether the mother felt she got enough help and support with feeding the baby in hospital.

These variables were not kept in the model because they did not seem to influence the likelihood of breastfeeding beyond the combined effect of the group of variables already included. Note that the mother's experience of breastfeeding previous children was included in the two week and six week prevalence models, but not in the initiation model.

⁶ Ethnicity was only asked in Great Britain. Since the 2001 Census showed that 99% of mothers in Northern Ireland were from a White background, all mothers in Northern Ireland were assumed to be White.

⁷ Other variables tried in the logistic regression analysis for the two week prevalence model were:

- Index of Multiple Deprivation
- age of mother
- birth order
- whether feeding was discussed at antenatal check-ups or classes
- whether the mother was taught positioning and attachment during pregnancy
- awareness of the health benefits of breastfeeding
- whether the mother was told how to recognise the baby was getting enough milk
- whether the mother gave birth in a hospital with full BFI accreditation
- whether the mother had skin-to-skin contact soon after the birth

- whether the mother was helped to put the baby to the breast soon after the birth
- when the mother first put the baby to the breast
- Whether the mother experienced problems with breastfeeding in the hospital, birth centre or unit and whether she received help with these problems
- Whether the mother was breastfeeding exclusively at one day
- Whether gave additional fluids in hospital and why
- Usage and awareness of the National Breastfeeding Helpline
- Whether the mother received help or information on breastfeeding from a voluntary organisation, community group, peer supporter or breastfeeding support group
- Usage and awareness of the National Breastfeeding Helpline

These variables were not kept in the model because they did not seem to influence the likelihood of breastfeeding beyond the combined effect of the group of variables already included.

⁸ This was a composite measure defined from a number of questions at Stage 1. 'Usage' included any mention of receiving help or support from a voluntary or charitable organisation, peer supporter or breastfeeding support group with putting the baby to the breast during the first few days or with problems feeding the baby while in the hospital, birth centre or unit or after leaving. It also included mothers who had been given contact details of a voluntary organisation or community group which helps new mothers with infant feeding and who said they had used them. 'Aware but not used' was defined from mothers who had been given contact details of a voluntary organisation or community group which helps new mothers with infant feeding and said they had not used them and also had not mentioned receiving help or support from a voluntary or charitable organisation, peer supporter or breastfeeding support group elsewhere.

⁹ Other variables tried in the logistic regression analysis for the six week prevalence model were:

- Index of Multiple Deprivation
- socio-economic classification
- birth order
- country and Government Office Region in England
- whether feeding was discussed at antenatal check ups or classes
- whether the mother was taught positioning and attachment during pregnancy
- awareness of the health benefits of breastfeeding
- whether the mother was told how to recognise the baby was getting enough milk
- whether the mother gave birth in a hospital with full BFI accreditation
- whether the mother had skin-to-skin contact soon after the birth
- whether the mother was helped to put the baby to the breast soon after the birth
- when the mother first put the baby to the breast
- whether the mother experienced problems with breastfeeding in the hospital, birth centre or unit and whether she received help with these problems
- whether the mother was breastfeeding exclusively at one and two weeks
- usage and awareness of the National Breastfeeding Helpline
- whether the mother received help or information on breastfeeding from a voluntary organisation, community group, peer supporter or breastfeeding support group
- whether the mother was aware of this type of help but did not use it

These variables were not kept in the model because they did not seem to influence the likelihood of breastfeeding beyond the combined effect of the group of variables already included.