Infant Feeding Survey 2010: Early Results

A survey carried out on behalf of the NHS Information Centre by IFF Research in partnership with Professor Mary Renfrew, Mother and Infant Research Unit, Department of Health Sciences, University of York

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Author: The NHS Information Centre, IFF Research

Responsible Statistician: Paul Eastwood, Lifestyle Statistics Section Head

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Executive Summary

Initial incidence of breastfeeding

- The initial breastfeeding rate increased from 76% in 2005 to 81% in 2010 in the UK (62% in 1990, when the UK series began).
- Initial breastfeeding rates in 2010 were 83% in England, 74% in Scotland, 71% in Wales, and 64% in Northern Ireland. There was a significant increase in the incidence of breastfeeding since 2005 in England, Wales, and Scotland (when breastfeeding rates were 78%, 67% and 70% respectively).
- In Scotland the increase in breastfeeding rates between 2005 and 2010 can largely be explained by changes in the age and age at leaving full-time education of mothers. However, even after standardising the results to take account of these changes, breastfeeding rates in both England and in Wales increased between 2005 and 2010.
- The highest incidences of breastfeeding were found among mothers from managerial and professional occupations, those who were aged 18 when left full-time education, those aged 30 or over, and among first time mothers. These variations were evident in all countries and are consistent with the patterns found in previous surveys.

Smoking during pregnancy

- A quarter (26%) of mothers in the UK smoked at some point in the 12 months immediately before or during their pregnancy. Of these mothers who smoked before or during their pregnancy, just over half (54%) gave up at some point before the birth.
- One in eight of all mothers (12%) smoked throughout their pregnancy in the UK.
- Smoking levels before or during pregnancy were highest in Wales (33%) and lowest in England (26%).
- Mothers in Wales were most likely to smoke throughout their pregnancy (16%).
- The percentage of mothers smoking before or during pregnancy fell in all countries between 2005 and 2010.
- Those who did smoke before or during their pregnancy were more likely to quit in 2010 than they were in 2005. This meant that the percentage of mothers smoking throughout pregnancy also fell.
- The highest levels of smoking immediately before or during pregnancy were found in routine and manual occupations in England, Wales and Scotland and among mothers who had never worked in Northern Ireland.
- Levels of smoking before and during pregnancy were highest among mothers under the age of 20 in England and Scotland and in mothers aged 20-24 in Wales and Northern Ireland.

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1. Introduction

The 2010 Infant Feeding Survey (IFS) is the eighth national survey of infant feeding practices to be carried out. Surveys have been conducted every five years since 1975. The latest survey is being carried out by IFF Research, having been commissioned by the NHS Information Centre on behalf of all four UK health departments.

The main aim of the survey is to provide UK estimates on the incidence, prevalence and duration of breastfeeding and other feeding practices adopted by mothers from the birth of their baby up to around nine months. The survey also collects information on the smoking and drinking behaviour of mothers before, during and after pregnancy. As well as national estimates the survey is also designed to provide individual estimates for the four countries of the UK.

The survey uses a longitudinal panel design, with three stages of data collection being carried out over a 9-12 month period in order to capture feeding practices at different ages. Stage 1 is carried out when the babies are approximately 6-10 weeks old, Stage 2 when they are approximately 4-6 months old, and Stage 3 when they are approximately 8-10 months old.

The 2010 survey was based on an initial representative sample of 30,188 mothers of babies born in the UK between mid-August and late November 2010. At Stage 1 a total of 15,724 mothers returned the questionnaire, representing a response rate of 52%. Further details about the survey design and other aspects of the survey can be found in the Background Notes. There is also a set of data tables which accompanies this report.

This statistical publication presents early results from Stage 1 of the survey only and focuses on two key topics, the initial incidence of breastfeeding and smoking during pregnancy. The final stage of the survey is currently underway and a complete report is expected to be published in the summer of 2012.

In terms of making comparisons between the 2010 IFS and results from previous years in which the survey was conducted, separate data for Wales is only available from 2005 (when England and Wales were surveyed separately for the first time). To allow comparisons over time to be made, the data for England and Wales is combined in some figures and tables in this report.

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2. Incidence of breastfeeding

Incidence of breastfeeding is defined as the percentage of babies who were breastfed initially. This includes all babies who were put to the breast, even if this was only on one occasion.

2.1 Trends

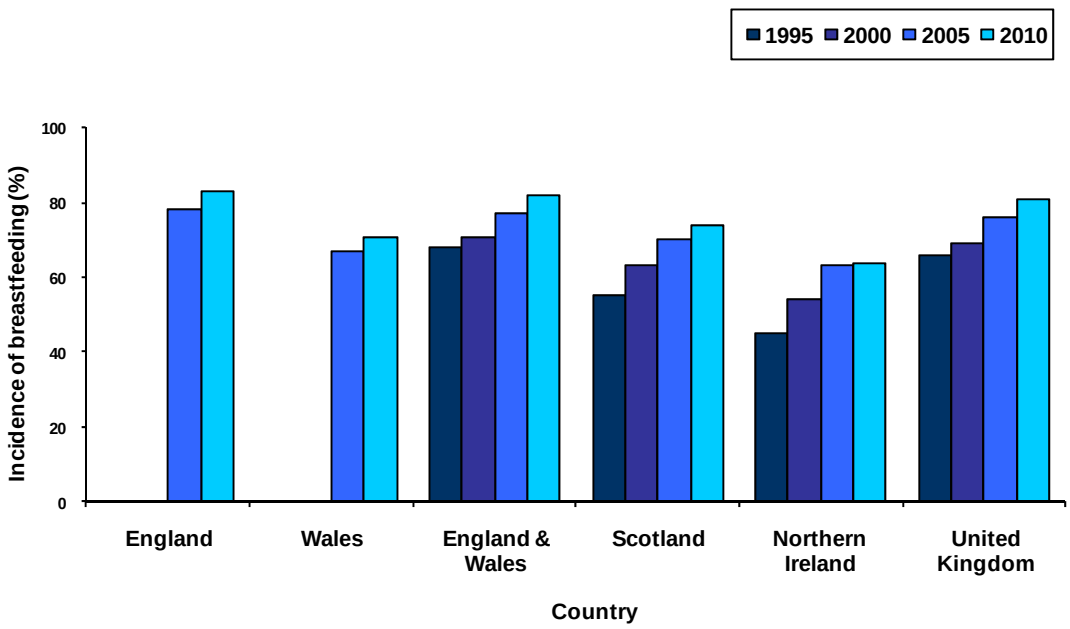
The initial breastfeeding rate increased from 76% in 2005 to 81% in 2010 in the UK (62% in 1990 when the UK series began).

Incidence of breastfeeding by country follows the same pattern as in 2005, with initial breastfeeding rates highest in England (83%).

Incidence of breastfeeding has continued to increase across Great Britain. Breastfeeding rates rose from 78% to 83% between 2005 and 2010 in England, from 67% to 71% in Wales and from 70% to 74% in Scotland. In Northern Ireland, the rate changed from 63% to 64%, which was not a large enough increase to be statistically significant at a 5% significance level.

See: **Figure 1, Table 1**

Figure 1: Incidence of breastfeeding by country (1995 to 2010)



Base: All Stage 1 mothers - weighted base (15,722)

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2.2 Variations in the incidence of breastfeeding

Previous surveys have shown a consistent pattern of variation in the incidence of breastfeeding according to socio-demographic characteristics of the mother such as socio-economic classification, age and age at time of leaving full-time education. Socio-demographic trends in the incidence of breastfeeding in 2010 were comparable to previous surveys and broadly consistent across countries.

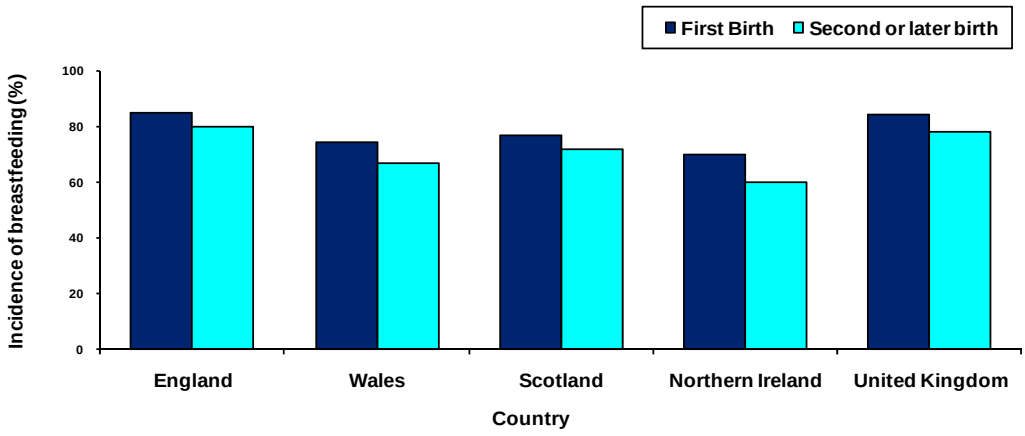
2.2.1 Birth Order

In 2010, UK breastfeeding rates among both mothers of first babies and mothers of later babies increased by a similar degree (from 79% to 84% and from 73% to 78% respectively). This is in comparison to the 2005 survey where mothers of later babies had increased their breastfeeding rates since 2000 by a greater degree than mothers of first babies (from 65% to 73% and from 74% to 79% respectively).

As was the case in 2005, breastfeeding rates among mothers of first babies were higher in 2010 than mothers of later babies, with 84% of first time mothers in the UK breastfeeding, compared to 78% of those having a second or later baby. This pattern was consistent across all countries: 85% of mothers of first babies in England had breastfed compared to 80% of mothers of later babies. In Wales the figures were 74% of first time mothers compared to 67% of mothers of later babies, and in Scotland 77% and 72% respectively. The discrepancy was most pronounced in Northern Ireland, where seven out of ten (70%) first time mothers had breastfed, compared to six out of ten mothers of later babies (60%).

See: **Figure 2, Table 2**

Figure 2: Incidence of breastfeeding by birth order and country (2010)



Base: All Stage 1 mothers - weighted base (15,722)

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2.2.2 Socio-economic classification (NS-SEC) of mother

Mothers were classified into socio-economic groups based on either their current or previous job. As with previous surveys, there was a clear association between breastfeeding and socio-economic status. Further details of the NS-SEC classification can be found in the Background Notes section.

Incidence of breastfeeding remains highest amongst mothers in managerial and professional occupations, a pattern which was consistent across all countries. Across the UK 90% of mothers in managerial and professional occupations breastfed, compared with 80% in intermediate occupations, 74% in routine and manual occupations and 71% among those who had never worked.

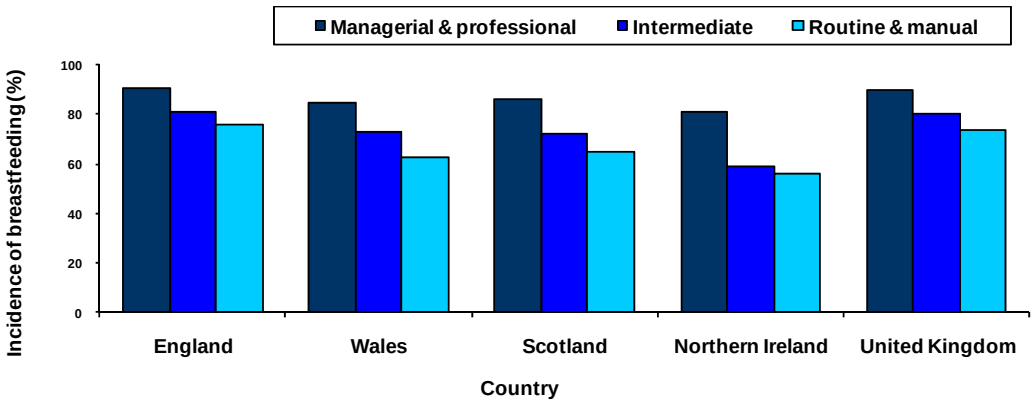
Across the UK as a whole, breastfeeding rates increased in all socio-economic groups. The largest increase in all countries occurred among mothers in routine and manual occupations, with UK breastfeeding rates among these mothers increasing from 65% in 2005 to 74% in 2010. This has narrowed the gap, compared to 2005, between those in the highest and lowest occupational groups.

In England, there was also a significant increase in incidence of breastfeeding among mothers who had never worked, from 68% in 2005 to 74% in 2010.

Compared with England, breastfeeding rates were lower in Scotland, Wales and Northern Ireland for mothers in every socio-economic group, reflecting the overall pattern of breastfeeding rates by country.

See: **Figure 3, Table 3**

Figure 3: Incidence of breastfeeding by mother's socio-economic classification (NS-SEC) and country (2010)



Base: All Stage 1 mothers - weighted base (15,722)

* This figure excludes the never worked category

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2.2.3 Age at which mother completed full-time education

Previous surveys have highlighted a correlation between incidence of breastfeeding and the age that the mother completed full-time education. As with previous surveys, incidence of breastfeeding was consistently higher among mothers who left full-time education when they were over 18 years of age. Across the UK as a whole, incidence of breastfeeding was 91% among mothers who left full-time education when they were over 18, compared to 75% who left education aged 17 or 18 and 63% who were 16 or under when they left full-time education.

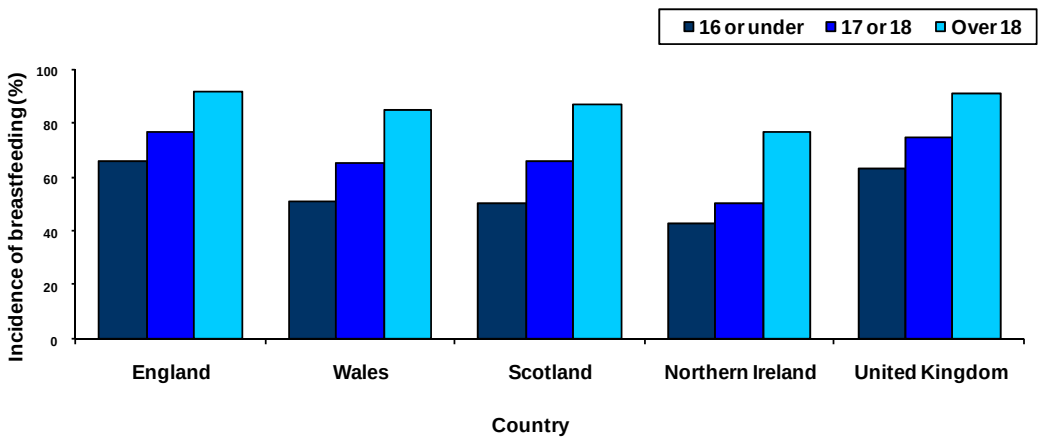
Breastfeeding rates among UK mothers who left education aged 16 or under increased from 59% in 2005 to 63% in 2010. Incidence of breastfeeding among mothers in this group increased in all countries.

Incidence of breastfeeding among mothers who left education aged 17 or 18 also increased slightly overall from 73% to 75%, although variations by country were not large enough to be statistically significant.

The 2010 breastfeeding rates among mothers who left full-time education when they were over 18 years of age remained similar to 2005.

See: **Figure 4, Table 4**

Figure 4: Incidence of breastfeeding by age completed full-time education and country (2010)



Base: All Stage 1 mothers - weighted base (15,722)

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2.2.4 Age of mother

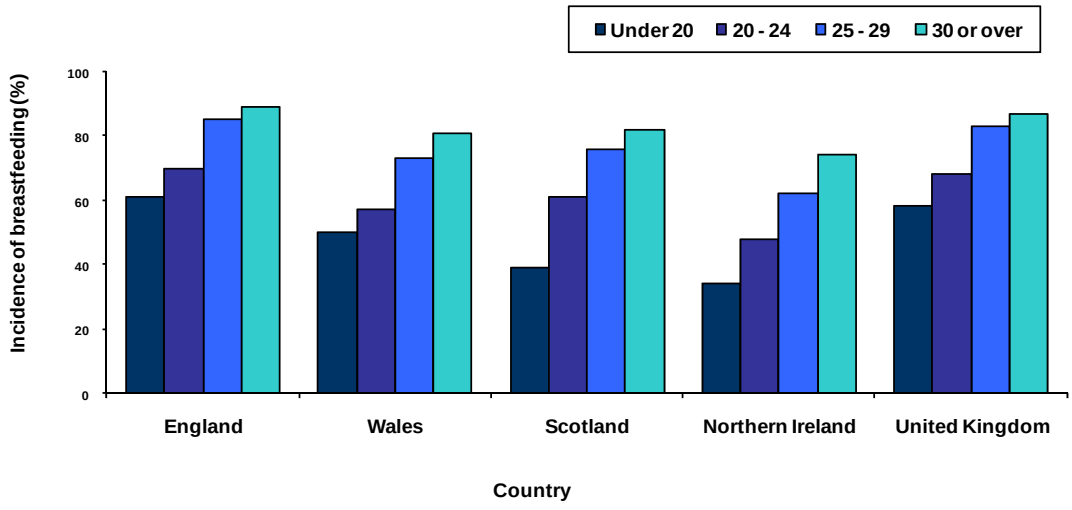
As in previous surveys there was a strong association across all countries between breastfeeding and the age of the mother. Previous surveys have shown that older mothers are more likely to breastfeed, a pattern that was repeated in 2010. Across the UK as a whole breastfeeding rates were lowest among mothers under the age of 20 (58%) and highest among mothers aged 30 and over (87%).

Mothers under the age of 20 were least likely to breastfeed in all countries but the percentage of mothers in this group who had breastfed varied between countries. Breastfeeding rates among mothers under the age of 20 were highest in England (61%), followed by Wales (50%), Scotland (39%) and Northern Ireland (34%). Moreover, breastfeeding rates for this group increased from 2005 in England and Wales, whereas in Scotland and Northern Ireland there was a slight decrease.

At a UK level, increases in breastfeeding rates were seen in all age groups. In Northern Ireland there was an increase in breastfeeding among mothers aged 30 or over (from 70% in 2005 to 74% in 2010), but in all the younger age groups breastfeeding rates had decreased slightly since 2005.

See: **Figure 5, Table 5**

Figure 5: Incidence of breastfeeding by age and country (2010)



Base: All Stage 1 mothers - weighted base (15,722)

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2.3 Standardisation of breastfeeding rates

To assess whether increases in the incidence of breastfeeding are solely due to changes in the demographic composition of the sample over time (e.g. mothers are now generally older and more educated, and older and more educated mothers are more likely to breastfeed) a statistical technique known as standardisation can be used.

Previous Infant Feeding Surveys have shown increasing percentages of mothers aged 30 or over and mothers who have continued in full-time education beyond the age of 18. Standardisation to the age of mother and what age the mother left full-time education in 1985 (or 1990 for Northern Ireland) allows us to see whether there is an element of 'real' change in the incidence of breastfeeding, which cannot be attributed to changes in the sample.

Table 6 shows the standardised incidence of breastfeeding by country. It is only possible to show this for England and Wales combined as standalone data for Wales does not exist before 2005.

Between 2005 and 2010, the survey estimates showed that incidence of breastfeeding had increased in England and Wales combined and Scotland but had not increased significantly in Northern Ireland. The standardised rates show the same pattern for Northern Ireland and for the combined standardised figures for England and Wales. However, in Scotland the standardised rates went from 57% in 2005 to 58% in 2010 compared to the unstandardised rates which went from 70% to 74%. This suggests that the increase in Scottish breastfeeding can be largely attributed to changes in the sample composition rather than 'real' change over time.

See: **Table 6**

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3. Smoking

3.1 Smoking during pregnancy

At Stage 1 of the survey, mothers were asked a number of questions about their smoking behaviour including whether they currently smoked at all, whether they had smoked at all in the two years before the survey and whether they had ever smoked. Measures were derived to establish the percentage of mothers who smoked at all before or during pregnancy, the percentage who smoked throughout their pregnancy; and the percentage of smokers who gave up before or during pregnancy. The precise definitions of these categories can be found in the background notes.

3.2 Variations in smoking during pregnancy

In 2010, around a quarter (26%) of mothers in the UK smoked directly before or during their pregnancy. Smoking levels before or during pregnancy were highest in Wales (33%) and lowest in England (26%).

Among mothers who smoked immediately before or during pregnancy, over half (54%) gave up at some stage before the birth. Mothers in England were most likely to give up smoking before or during pregnancy (55%), whereas those in Northern Ireland were least likely to give up (47%).

Across the UK, one in eight mothers (12%) continued to smoke throughout pregnancy, and were still smoking after the baby was born. Mothers in Wales were most likely to smoke throughout their pregnancy (16%).

The Department of Health's (DH) Tobacco Control Plan for England includes a national target to reduce smoking during pregnancy to 11% or less by the end of 2015 (baseline measure of 14.1% in 2009/10). This target is to be specifically measured by the smoking status at time of delivery statistical collection (SSATOD, recorded at the time of giving birth) published by DH. This data (which is also available quarterly) shows that the percentage of mothers smoking at delivery in England was 13.5% in 2010/11, lower than the 2009/10 outturn (14.1%) and 2008/09 outturn (14.4%).The nearest IFS estimate which could be used as a proxy measure, the percentage of mothers who smoked throughout pregnancy, shows that between 2005 and 2010 the percentage decreased from 17% to 12% in England and is in line with the downward trend of the SSATOD data and set target.

For further information on SSATOD, please see:
http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/StatisticalWorkAreas/Statisticalpublichealth/DH_123765

See: **Figure 6, Table 7**

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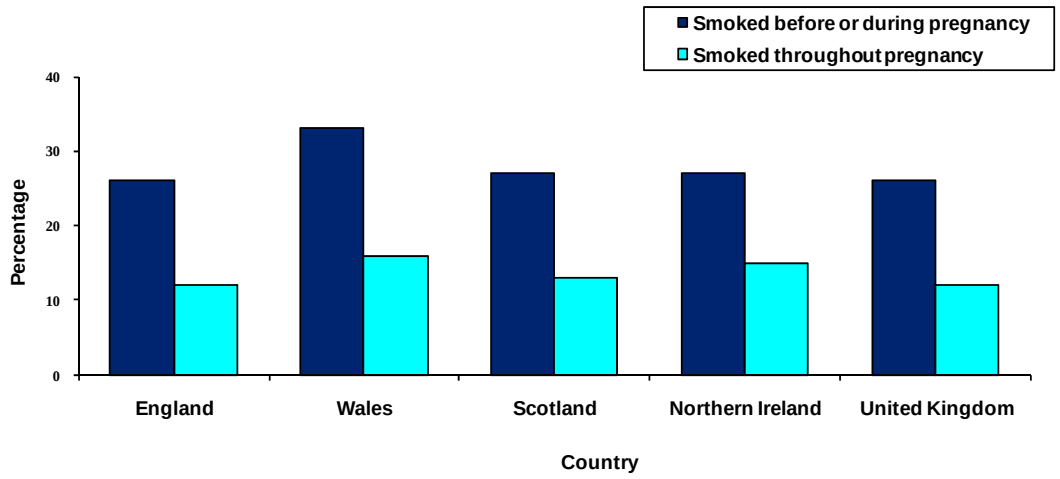
Figure 6: Smoking and pregnancy by country (2010)



Base: All Stage 1 mothers - weighted base (15,722)

Across the UK, the percentage of mothers smoking before or during pregnancy fell from 33% to 26% between 2005 and 2010. Lower levels of smoking were seen in all countries in 2010 compared to 2005. The most significant decreases in smoking levels before or during pregnancy were in Scotland, where smoking levels fell from 35% to 27%, and in England, where they fell from 32% to 26%.

Mothers who smoked were more likely to give up before or during pregnancy in 2010 than in 2005 (54% and 48% respectively). Hence, a smaller percentage of all mothers smoked throughout pregnancy in 2010 (12% compared to 17% in 2005). This is true for all countries where time trend data are available.

Although direct comparisons are not possible with surveys prior to 2000 because of changes to the questions, the 2010 results continue the general downward trend in smoking during pregnancy seen since around 1990.

3.2.1 Socio-economic classification (NS-SEC) of mother

As previous surveys have shown, there is a strong association between smoking levels and socio-economic status.

Across the UK, mothers in managerial and professional occupations were the least likely to have smoked before or during pregnancy (14%) whilst those in routine and manual occupations were the most likely to have done so (40%). Among mothers who did smoke, those in managerial and professional occupations were more likely than those in routine and manual occupations to have given up at some point before or during pregnancy (72% and 50% respectively).

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Mothers in routine and manual occupations were five times more likely than those in managerial and professional occupations to have smoked throughout pregnancy (20% and 4% respectively).

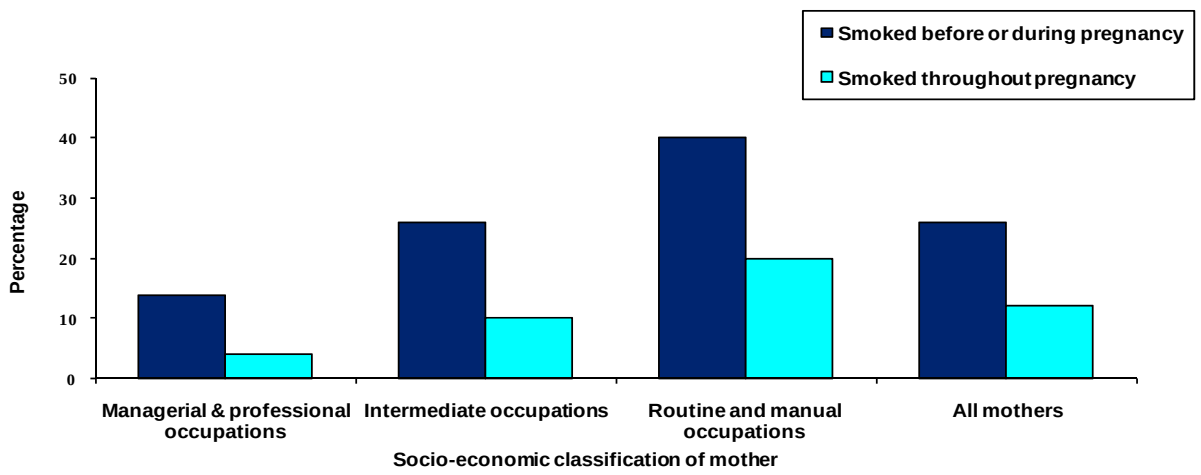
For the UK as a whole, levels of smoking before or during pregnancy across all socio-economic groups fell between 2005 and 2010. Although mothers in routine and manual occupations had the highest levels of smoking in 2010 (40%); this group also had the largest decrease in smoking rates from 2005 compared to 2010 (down eight percentage points, from 48% to 40% respectively).

See: **Table 8A, Figure 7**

All countries in the UK show a broadly similar pattern of smoking by socio-economic classification and broadly similar patterns of change between 2005 and 2010.

See: **Tables 8B-8F**

Figure 7: Smoking and pregnancy by mother's socio-economic classification (NS-SEC) (2010)



Base: All Stage 1 mothers - weighted base (15,722)

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3.2.2 Age of mother

There is an association between the age of the mother and smoking status. For the UK as a whole, mothers under the age of 20 were nearly four times as likely to smoke before or during pregnancy, than mothers aged 35 or over (57% compared with 15%). As well as being more likely to smoke in the first place, younger mothers were less likely to quit before or during pregnancy: 38% of mothers under the age of 20 did so compared with 58% of mothers aged 35 or above. Mothers under the age of 20 were therefore almost six times as likely as those aged 35 or over to have smoked throughout pregnancy (35% and 6% respectively).

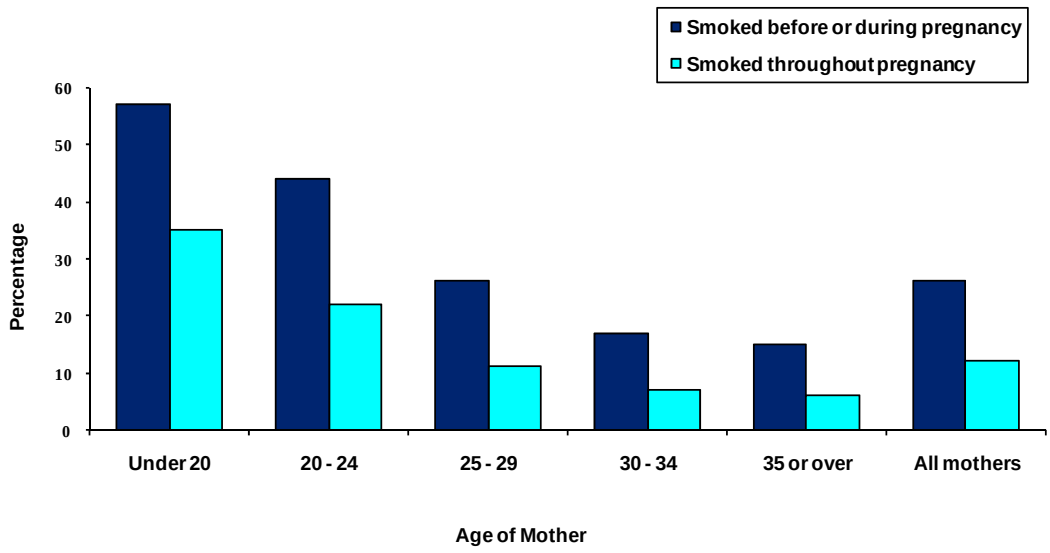
Between 2000 and 2005, the percentage of mothers who smoked before or during pregnancy fell among mothers of all ages, except for those under the age of 20. Between 2005 and 2010, however, the percentage of mothers who smoked before or during pregnancy fell amongst mothers of all ages but particularly amongst mothers under the age of 20, with levels falling for this group from 68% in 2005 to 57% in 2010.

See: **Table 9A, Figure 8**

All countries in the UK show a broadly similar pattern of smoking by age of mother.

See: **Tables 9B-9F**

Figure 8: Smoking and pregnancy by age of mother (2010)



Base: All Stage 1 mothers - weighted base (15,722)

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Background notes

1. *Sample design*

The sample design was broadly similar to that used in 2005 and previous surveys (differences between 2005 and previous surveys can be found in the comparable Early Release results from 2005).

The samples were drawn from birth registration records. The length of the sampling period varied by each country of the UK because of the need to achieve robust base sizes in each country. Sampling periods were as follows:

- England: 16 August – 26 September 2010
- Wales: 9 August – 17 October 2010
- Scotland: 16 August – 21 November 2010
- Northern Ireland: 9 August – 24 October 2010

Another effect of needing to achieve base sizes which allow analysis at an individual country level was that births in Scotland, Wales and Northern Ireland had a greater chance of being selected as part of the sample compared to births in England. In fact, in Wales and Northern Ireland all births in the sample period were selected (i.e. the survey was a census in these countries).

In 2005, births where no partner details were recorded at registration were over-sampled. This was on the grounds that mothers who do not register a partner are likely to be younger and from a lower socio-economic group and both of these groups required sufficient numbers for analysis. In 2010, this approach was rejected on the basis that the correlation between having no partner and a low socio-economic group was not strong enough. It was decided instead to over-sample mothers from the most deprived quintile of each country's Index of Multiple Deprivation. As response was predicted to be lower amongst deprived mothers, and because deprived mothers are known to be less likely to breastfeed, over-sampling them ensured that we would have a sufficient numbers of mothers in this group (particularly important as previous studies point to deprived mothers being less likely to breastfeed). Over-sampling of deprived mothers occurred only in England and Scotland because, as mentioned, all births in Wales and Northern Ireland were sampled.

The data were weighted to take account of the over-sampling by country and by deprivation (see section 4 of the background notes).

2. *Fieldwork procedures and response rate*

The main Stage 1 fieldwork period was from September to December 2010, with the despatch of the initial questionnaire being staggered on a weekly basis to ensure it reached the mother when the baby was approximately six weeks old. Up to three reminders were sent out where necessary.

The fieldwork procedures used in 2010 were broadly the same as in previous surveys, however, for the first time in 2010, mothers could respond online if they wished (although all were also sent a paper questionnaire). In terms of method of completion 649 mothers chose to complete the Stage 1 survey online and 15,075 completed a paper questionnaire.

The Stage 1 questionnaire was 150 questions in length and the estimated completion time was 25-30 minutes.

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A total of 15,724 mothers returned the first stage questionnaire, representing an overall response rate of 52%. The response rate varied slightly by country:

- Northern Ireland 54%
- England 53%
- Scotland 51%
- Wales 49%

A total of 22,400 questionnaires were sent out initially but as initial response was lower than hoped, a further 7,788 questionnaires were sent out (to a new batch of mothers) mid-way through fieldwork. In Wales, Scotland and Northern Ireland only one questionnaire and one reminder letter was sent to the mothers in this 'contingency' batch, due to time constraints. The contingency mailing therefore depressed the response rate overall (more questionnaires were sent out compared to the number of mothers who responded than in the main mailing batches) but it ensured that the target base sizes for Stage 1 were achieved.

Refusal to take part in the survey was extremely low with just 125 mothers explicitly opting out of the research. Mothers who simply did not respond to the initial mailing or subsequent remainders accounted for the majority of non-response.

3. *Survey definitions*

Incidence of breastfeeding: This refers to the percentage of babies who were breastfed initially. This definition includes all babies who were put to the breast at all, even if it was only once. This definition of incidence of breastfeeding has remained unchanged since the first survey in 1975.

Prevalence of breastfeeding: This is defined as the percentage of all babies who are being breastfed at specific ages, even if they are also receiving infant formula or solid food (prevalence information will be available in the main publication which will be published in 2012).

Smoking during pregnancy: Three categories of smoking behaviour are used in the tables as follows:

- ***Smoking before or during pregnancy*** is the percentage of women who smoked at all in the two years before they completed the survey. This roughly covers the period of their pregnancy plus the year before conception.

- ***Smoking throughout pregnancy*** is the percentage of women who smoked in the two years before they completed the survey, and who were smoking at the time of their baby's birth. It included women who may have given up smoking before or during their pregnancy, but who had restarted before the birth.

- ***Gave up smoking before or during pregnancy*** is the percentage of women who smoked in the two years before they completed the survey and who gave up during this period and had not restarted before the birth of the baby.

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It should be noted that the key interest of the survey is to measure smoking behaviour immediately before or during pregnancy and any changes that occur over this period. Therefore, the measures reported are not directly comparable with other surveys which tend to report current smoking status (i.e. whether the respondent is smoking at the time the data is collected) or smoking status at the time of delivery (SSATOD). For further information on SSATOD, please see: http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/StatisticalWorkAreas/Statisticalpublichealth/DH_123765
There were 356 women who responded to the survey but who did not provide sufficient information on the questionnaire to classify their smoking status. These respondents have been excluded from all analysis of smoking and pregnancy.

National Statistics socio-economic classification (NS-SEC): From 2001 the National Statistics socio-economic classification (NS-SEC) was introduced for all official surveys and statistics. It replaced Social Class based on occupation and socioeconomic group (SEG). This classification aims to differentiate occupations in terms of their employment relations, rather than skill level and so the distinction between manual and non-manual is no longer used. NS-SEC consists of eight, five and three class versions, and the version used here is the three class version. This consists of three groups as follows:

- Managerial and professional occupations
- Intermediate occupations
- Routine and manual occupations

Additionally, there are two residual categories consisting of those who have never worked and those where NS-SEC could not be classified because of insufficient information.

As in 2005, the 2010 survey collected occupational information needed to code NS-SEC for mothers only. It did not collect occupational information for partners, as was the case on surveys prior to 2005. This means that all analysis by socio-economic classification is based on the mother, and not on her partner.

Details of how NS-SEC is derived and the different analysis categories can be found on the National Statistics website at http://www.statistics.gov.uk/methods_quality/ns_sec

4. *Weighting*

The data presented in this report has been weighted to be representative of all mothers who gave birth in the sampling period within each country by age of mother and deprivation status of mother ('deprived' was defined as being in the lowest quintile of deprivation according to the Indices of Multiple Deprivation). Weighting in this way corrects for differential non-response (historically, younger and deprived mothers have been less likely to participate in the survey) and also corrects for the over-sampling of deprived mothers.

It should be noted that in Wales, age of mother population data was only available until the end of September (rather than until the 17th of October which was the end of the sampling period) so the eight weeks of data which are available have been used as a proxy for the 10 weeks which would have been ideal.

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There are different weights for:

- England
- Wales
- England and Wales combined
- Scotland
- Northern Ireland
- UK

Where results are reported at UK level, an additional weight has been applied to compensate for the fact that births in Scotland, Wales and Northern Ireland had a greater chance of being selected as part of the sample compared to births in England (an effect of needing to achieve base sizes which allow analysis at an individual country level).

As in previous surveys, all weights have been scaled to the unweighted sample sizes for each country and for the UK as a whole.

5. *Comparisons of survey coverage*

Prior to 1990, survey data was collected for England, Wales and Scotland. However, base sizes were not sufficiently robust to allow for the data from Wales to be reported separately and so the data for England and Wales were combined for analysis.

In 1990, the survey was expanded to cover the whole of the UK, with data for Northern Ireland being available for the first time.

In 2005, increased base sizes allowed the data from Wales to be reported separately for the first time.

Although it is now possible to show data for each country individually, to allow comparisons over time all the tables in this early release publication also show combined figures for England and Wales.

6. Notes on tables

Base numbers are shown in italics. Weighted bases are shown for data from 2005 and before and weighted and unweighted bases are shown for 2010.

The **conventions** used in the tables are as follows:

- No cases

* Percentage less than 0.5%

[] Percentages based on less than 50 cases

Percentages: Row or column percentage totals may not sum to 100% due to rounding.

Statistical significance: Unless otherwise stated, changes and differences mentioned in the text are statistically significant at the 5% significance level.

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Responsible Statistician
Paul Eastwood, Lifestyle Statistics Section Head

For further information:
www.ic.nhs.uk
0845 300 6016
enquiries@ic.nhs.uk

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