Papers produced from the Health Inequalities Audit Process for DG Sante at European Commission
Diet, Nutrition and Obesity Task 3. Infant Feeding (Breastfeeding & Complimentary Feeding) by Socioeconomic Status
Robertson, Aileen

Publication date: 2014

Link to publication

Citation for published version (APA):

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

• Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal

Download policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.
Infant Feeding By SES produced from the Health Inequalities Audit Process Nutrition and Obesity Diet, Nutrition and Obesity Task 3. Infant Feeding (Breastfeeding and Complimentary Feed...
Papers produced from the Health Inequalities Audit Process

Diet, Nutrition and Obesity

Task 3. Infant Feeding (Breastfeeding and Complimentary Feeding) by Socio-Economic Status
The attached paper has been produced as part of the Health Inequalities Audit process, within the scope of the Joint Action on Health Inequalities – Equity Action.

Diet, nutrition and obesity were identified as priority subjects by an iterative process, considering a range of health and non-health policy areas within the EC which were potentially amendable to a review process considering their contribution to the socio-economic gradient in health status. The review is to inform future discussions in the relevant policy areas of what would help to tackle differences in behaviours, and outcomes across the socio-economic gradient.

The areas covered in this paper were identified in a discussion between the Head of Service, Nutrition and Physical Activity and the lead on Health Inequalities both within DG Health and Consumers (European Commission), and with Chris Brookes, Coordinator of Equity Action, Tim Lobstein of the World Obesity Federation and Aileen Robertson, Public Health Nutritionist at the Metropolitan University College, Copenhagen.

The outcomes are intended to provide a review of the contribution of SES inequalities in aspects of diet, nutrition and obesity and helping to identify the scale of the inequalities, and therefore some of the benefits of addressing them.
Task 3. Infant Feeding: (BREASTFEEDING & Complementary feeding) BY SOCIO-ECONOMIC STATUS

By Aileen Robertson and Nathali L. Schumann

Author’s Profiles

Dr Aileen Robertson, PhD, RNutr. (Public Health)

is a Public Health Nutritionist responsible for international research and lecturing at Metropolitan University College, Copenhagen, Denmark. Previously Dr Robertson was Regional Adviser for the Nutrition and Food Security Programme at the WHO European Regional Office where she was employed, from 1992 until 2004, to advise more than 50 Member States how to develop and implement their multi-sectoral food and nutrition policies and action plans. From 2005 Dr Robertson is one of the key experts developing a BSc in Global Nutrition and Health, specifically in Public Health Nutrition and Food Policy. The Department of Global Nutrition and Health was designated as a WHO Collaborating Centre for Nutrition in 2010. Dr Robertson is a partner in the European Union’s DG Research and DG SANCO funded projects in addition to carrying out a variety of consultancies, with WHO and DANIDA, related to public health nutrition and food policy.

Nathali Lehmann Schumann, MSc. Public Health

is a Public Health Professional with a MSc in Public Health from the London School of Hygiene and Tropical Medicine. Currently, she is a project consultant for the Division of Non-Communicable Diseases and Life Course at the WHO Regional Office for Europe. Ms. Schumann is providing technical support to the Division for the development of a guidance package to improve pregnancy outcomes and reduce the risk of maternal and child later NCDs.

Acknowledgements

The authors would like to thank the following people, who have provided helpful comments and valuable insights: Dr. Adriano Cattaneo, Institute for Maternal and Child Health 'IRCCS Burlo Garofolo', Triste, Italy; Dr. Carmen Casanovas, WHO HQ, Switzerland; Maryse Arendt, Initiative Lieuensufank, Luxembourg; Dr. Mojca Gabrijelčič Blenkuš, National Institute of Public Health, Slovenia; and Dr. Lida Lhotska, IBFAN Liaison office, IBFAN-GIFA, Switzerland.
Table of Contents

Executive Summary .................................................................................................................. 5
Introduction ............................................................................................................................... 7
Background ................................................................................................................................ 8
  DG SANCO initiatives .......................................................................................................... 8
  World Health Organization Initiatives .................................................................................. 9
Methods ..................................................................................................................................... 10
  Search Strategy ................................................................................................................... 10
  Eligibility Criteria ............................................................................................................... 11
Results ....................................................................................................................................... 11
  Data from the Baby-Friendly Hospital Initiative Global Coordinator’s Meeting ............. 11
  Examples of Publications on Breastfeeding Prevalence .................................................... 12
  Recommendations .............................................................................................................. 17
References and bibliography .................................................................................................... 19
Annex I - Determinants of breastfeeding and complementary feeding practices identified by DG SANCO (2008) .................................................................................................................. 23
Annex II - Terms of Reference ............................................................................................... 24
Annex III - Preliminary Data from EU Member States, Gathered at the WHO Baby-Friendly Hospital Initiative Global Meeting in June 2014 ................................................................................................. 25
Annex IV - Rates of breastfeeding and complementary feeding practices by socio-demographic factors ............................................................................................................................... 32
Annex V - Lower breastfeeding rates in most deprived & younger groups in England ................................................................................................................................. 33
Annex VI - Comparison of breastfeeding and complementary feeding practices initiation in deprived and affluent groups in Scotland ................................................................. 35
Annex VII - Comparison of breastfeeding and complementary feeding rates in deprived and affluent groups in Scotland ......................................................................................... 37
Annex VIII - Comparison of breastfeeding and complementary feeding rates depending on level of maternal education in France ....................................................................................... 40

Tables and Figures

 FIGURE 1: **How Obesity Inequities Compound over Life-Course** ................................................................................................................................. 7

 TABLE 1: **List of Contacts to Date** ......................................................................................... 11
 TABLE 2: **Example of Data Gathered at the WHO Baby-Friendly Hospital Initiative Meeting in June 2014** ................................................. 11
 TABLE 3: **Rates on Exclusive Breastfeeding at Six Months by EU Member States** ............................... 12
 TABLE 4: **Countries with policies and recommendations meeting stated criteria in 2002 and 2007** ........................................................................ 12
 TABLE 5: **Breastfeeding and Complementary Feeding Practices and Conditions by Country** ................................................................. 15
Executive Summary

As health and social inequalities appear to be increasing within and between EU countries, the Council of the European Union encourages Member States to create and promote policies, strategies, and initiatives that support a healthy lifestyle throughout the life-course. Promoting and supporting the best start to life, the WHO recommendations of six months exclusive breastfeeding and timely introduction to appropriate complementary feeding, were recently re-endorsed and stressed by the Council of the European Union. In order to inform policy-makers how best to implement the most health promoting infant feeding approaches there is a great need to disaggregate data by socio-economic status. However, it is unclear how many national data sets currently exist where data are collected and disaggregated by socio-economic status in relation to infant feeding practices, both within and between EU countries. If these disaggregated data are readily available, they can provide a useful basis to investigate which interventions can best reduce social inequalities in maternal and young child health by helping us to understand what is needed to improve poor infant feeding practices.

A search of peer-reviewed publications and grey literature was conducted and five key informants were contacted. A total of 47 documents were identified. However, we were unable to present a summary of all documents due to time limitations for this assignment.

The findings illustrate that EU national datasets on breastfeeding prevalence and complementary feeding practices by socio-economic status do exist. Maternal, newborn, infant and young child health are key to addressing inequalities in obesity and so data collection by socio-economic status, related to the beginning of the life-course, should be prioritised by EU Member States, WHO and European Parliament and Commission. Investigations into the interconnection between socio-economic status and infant feeding practices will help inform policy implementation, disease prevention and health promotion, to reduce health-related social inequalities. Following this short review of existing data and available publications, the following recommendations are proposed to DG SANCO:

1. It is recommended to re-evaluate the implementation of the recommendations to EU Member States included in DG SANCO’s ‘Blue Print Report on Breastfeeding’ (2008). This could be carried out by implementing the same methodology developed for the 2002 and 2007 surveys by Cattaneo and colleagues published in 2009.
2. Data on breastfeeding prevalence and complementary feeding practices by socio-economic status do exist in many EU Member States. However often these data are published in national reports in national languages. Apart from one comparative survey published in 2012 by Ibanez et al., no systematic comparison has been made across EU Member States. It is therefore recommended to collect and compare existing data from each EU Member State on breastfeeding prevalence and complementary feeding practices by socio-economic status (i.e. education, profession, maternity protection, etc.). These results could then suggest where the gradient was shallowest and where the absolute figures were highest in order to identify evidence of what works best to support better infant feeding practices and thereby inform policy-makers.
3. A literature review, to include grey literature and translated national reports, should be carried out to map, identify, compare, and contrast data sets that exist in national
languages in EU countries (e.g. a more comprehensive review than the one published by Ibanez et al. in 2012).

4. A literature review, to include grey literature and translated national reports, should be carried out to find which specific practices have been successful in increasing breastfeeding rates and improving complementary feeding practices in low socio-economic groups, using targeted proportional universal interventions.

5. A literature review, to include grey literature and translated national reports, should be carried out to investigate what recommendations exist regarding how best to target the approach ‘proportionate universalism’, which are actions “to reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage” in EU Member States (Marmot, 2010: p. 15)

6. Reviews or new investigations are needed to inform policy-makers how population-based policies, such as national laws and regulations and the EU Directive on marketing of breast-milk substitutes can proportionally protect breastfeeding and improve infant feeding practices within lower socio-economic groups.

7. It is well known that many women in lower socio-economic groups feel discriminated against by judgemental healthcare professionals and so tend not to attend antenatal and postnatal healthcare services. A literature review or new investigations should be carried out to find out what the barriers are and how families can be better served and innovative recommendations put in place to improve maternal and young child health.

8. A strong social determinant for high levels of breastfeeding appears to be a relatively high number of years of maternal education. More research should focus on how to best improve infant feeding practices in families where the mothers are either teenagers or have not had many years of schooling.
Introduction

Health inequalities appear to be increasing within and between EU countries (WHO & DG SANCO, 2014). Adults with lower socio-economic status (SES) and low level of education are more likely to become overweight and obese "(…) and the gap is generally larger in women" (OECD, 2014: p.3). "The social gradient observed in overweight and obesity is constant with similar gradients in healthy eating and physical activity" (OECD, 2014: p. 3). Evidence suggests that women with lower SES are often hit hardest during economic crisis with impact on lifestyle patterns and prevalence of obesity (OECD, 2014). This may impact pre-pregnancy body mass index (BMI) and gestational weight gain (GWG), which are negatively associated with SES and found to be some of the determinants for the initiation and duration of breastfeeding and complementary feeding practices (Robertson et al., 2007; WHO & DG SANCO, 2014).

The Council of the European Union (EU) (2014) encourages Member States to create and promote policies, strategies, and initiatives, which aim at a healthy lifestyle throughout the life-course for all age and SES groups, including vulnerable groups such as pregnant women and children see Figure 1. Additional emphasis is put on the efforts of "promoting and supporting adequate breastfeeding and appropriate introduction of complementary food" (Council of the EU, 2014: p. 5).

![Diagram](image-url)
It is therefore of great importance to disaggregate data by SES, especially in pregnant and lactating women, as recommendations related to maternal, newborn, infant and young child nutrition have recently been recognised as a key determinant of inequalities (WHO & DG SANCO, 2014). There is a need to better understand the interconnection between SES and breastfeeding initiation and duration and optimum complementary feeding practices.

In order to achieve health equity and ‘proportionate universalism’ it is crucial to “give every child the best start to life” and follow the WHO recommendations of six months exclusive breastfeeding and timely introduction to appropriate complementary feeding (Marmot, 2010: p. 16; WHO, 2003). However, not much evidence exists to describe the extent of the problem of inequalities in the rates of breastfeeding and complementary feeding practices by SES between and within EU countries. Furthermore, only little evidence exists on how to reduce these inequalities in maternal, newborn, infant and young child health. A list of determinants of breastfeeding and complementary feeding practices identified by the DG SANCO (2008) is available in Annex I.

Given:
1. The ‘EU Action Plan on Childhood Obesity 2014-2020’ (2014);
2. The EU related guidance on nutrition for newborn and infants;
3. The ‘Comprehensive implementation plan on maternal, infant, and young child nutrition’ (2012) endorsed at the Sixty-fifth World Health Assembly;
4. The ‘Global monitoring framework on maternal, infant, and young child nutrition’ (2014) endorsed at the Sixty-seventh World Health Assembly;
5. And the third ‘WHO European Region Food and Nutrition Action Plan 2015-2020’ (2014);

Amongst others, it is timely for the DG SANCO to consider what future projects and research work will best help to address action on the socio-economic gradient in breastfeeding and complementary feeding.

Background
EU Member States are already committed to public health actions and the main official commitments related to breastfeeding and complementary feeding practices are listed below.

**DG SANCO initiatives**
- 2009- DG SANCO funded research (Cattaneo et al., 2009) and published results of two surveys (2002 and 2007) assessing the implementation of the ‘EU Blue Print for Protection, promotion and support of Breastfeeding in Europe’ by each EU Member State.
- 2008- ‘EU Blue Print for Protection, promotion and support of Breastfeeding in Europe’ published by DG SANCO in 2004 and updated in 2008. This report includes recommendations for actions and objectives by the European Commission.

1‘Proportionate universalism’ are actions “to reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage” (Marmot, 2010: p. 15)
“To develop EU regulations on the marketing of breastmilk substitutes which would include all the provisions and products under the scope of the International Code as a minimum requirement” (2008; p. 35)

“To ensure that the International Code is reflected in the EU position at meetings of Codex Alimentarius” (2008; p. 35)

“To foster and support research on breastfeeding based on agreed priorities and agenda, using agreed definitions of breastfeeding, and free from competing and commercial interests” (2008; p. 40)

“To support and ensure intensive exchange of expertise in breastfeeding research among research institutions in Member States” (2008; p. 40)

2007- DG SANCO funded document (Robertson et al., 2007) includes practical recommendations on obesity prevention and reduction of social inequalities, by addressing maternal and young child health including breastfeeding and complementary feeding practices.

2006- Infant and young child feeding: standard recommendations for the European Union -standard recommendations on infant and young child feeding to complement the Blueprint for Action for the Protection, Promotion and Support of Breastfeeding in Europe (European Commission funded project SPC 2002359).


2005- DG SANCO document (Cattaneo et al., 2005) on the results of a survey (2002) assessing the current situation in regards to the protection, promotion and support of breastfeeding and complementary feeding practices in Europe.

**World Health Organization Initiatives**


2014- ‘Obesity and Inequities - Policy Guidance’ (2014), which recognizes that maternal, newborn, infant and young child health are key to addressing underlying inequalities in Member States. This area has been relatively neglected and needs to be prioritised more within Member States, WHO and European Parliament and Commission. Also, the 2014 policy guidance emphasises ‘proportionate universalism’ as a means to “tackle the root causes of health inequities” and give every child the best start to life (WHO & DG SANCO, 2014: p. V; Marmot, 2010)

2013- The ‘Vienna Declaration on Nutrition and Noncommunicable Diseases in the Context of Health 2020’ (2013)


World Health Assembly endorsement of the Code of Marketing on Breast Milk Substitutes (1981) and subsequent relevant resolutions.
Methods

In the following section the methods used to meet the Terms of Reference (TOR) (Annex II) are described.

Search Strategy

A targeted search for EU Member States was conducted during June 2014. Relevant publications were identified through the search strategy shown below. Some of the references cited in these publications were also searched manually to yield additional information.

The search strategy:

1. Peer-reviewed publications from electronic databases were searched (PubMed and EMBASE), using an established methods that involved combining the following search terms:
   (newborn OR infant*), (nutrition OR feeding), (breast-fe* OR breastfe* OR breast fe* OR weaning OR breastmilk OR breast-milk OR breast milk), (early OR exclusive OR continued), (prevalence OR incidence OR rate), (monitor* OR surveillance), ((maternal OR maternity OR parental) AND (pay OR leave OR protection OR 'working condition*' OR 'breastfeeding break*' OR 'breast-feeding break*' OR 'breast feeding break*' OR benefit*)) AND (determinant*, (socio-economic status OR SES OR social class), (employment OR ethnicity OR education OR age OR culture OR smok* OR (maternal AND (obes* OR overweight)) OR (support AND (group OR peer counselling OR professional OR mother-to-mother)) OR ((antenatal OR postnatal) AND care)) OR (birth weight OR birth-weight OR gestational age OR gestational-age) OR (midwife AND (visit* OR support OR 'accreditation system*')) OR (((baby friendly OR baby-friendly) AND (hospital* OR community)) OR BFH OR BFHI OR BFCI OR BFC)) AND (country specific OR EU OR European Union)

2. Grey literature was used to search for national and international documents. The search terms were the same as the ones above and were employed throughout the steps ‘a’ to ‘f’, which are listed below.
   a. National authorities websites, including Ministry of Health (MoH)
   c. Save the Children
   d. World Health Organization (WHO)
   e. International Labour Organization (ILO)
   f. International Baby Food Action Network

3. Key informants were identified and contacted by email, Table 1. The personal contacts included: National contacts from the High Level Group and WHO/EURO National Focal Points, NGOs including IBFAN, National Experts, and Baby-Friendly Hospital Initiative (BFHI) Meeting Coordinators and WHO.
Eligibility Criteria

The inclusion criteria included relevant publications (articles, papers, and documents) on the topic. The exclusion criteria included: non-English language and pre-2008 publications. However, some grey literature in national language e.g. Luxembourg was accessed.

Results

The search strategy identified 47 articles, papers, and documents relevant to the aim and objectives of the TOR. Due to time allocation only a few examples from the reviewed publications are presented, however titles and details of all 47 documents are included in the references/bibliography.

The grey literature search identified national data collected by national authorities in national language. Therefore, mostly grey literature published from the United Kingdom and Ireland were included. However, other EU Member States do have data available, e.g. a report by the MoH of Luxembourg presents national data on infant feeding practices by SES (Ministére de la Santé de Luxembourg, 2008).

Data from the Baby-Friendly Hospital Initiative Global Coordinator’s Meeting

A WHO BFHI Global Coordinators’ meeting was held in Lithuania in June 2014. Seventeen EU Member States were among the participating countries. At this meeting, specific national data was collected (Table 2) and the EU results are available in Annex III. The results show that among the 17 EU Member States, only 13 EU Member States collect national surveillance data on infant feeding practices.

Table 2: Example of Data Gathered at the WHO Baby-Friendly Hospital Initiative Meeting in June 2014

<table>
<thead>
<tr>
<th>NATIONAL STATISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Country:</td>
</tr>
<tr>
<td>1. Whenever data is reported, please also list the source of the data (with link, if possible) and the year the data was collected.</td>
</tr>
<tr>
<td>Yes / No Comment if you need</td>
</tr>
<tr>
<td>1.1 Is statistical surveillance data on infant feeding collected in your country?</td>
</tr>
<tr>
<td>If yes, at which level? (specify yes where applicable)</td>
</tr>
<tr>
<td>Nationally?</td>
</tr>
<tr>
<td>Regionally?</td>
</tr>
<tr>
<td>By each facility?</td>
</tr>
<tr>
<td>How frequently is data collected</td>
</tr>
<tr>
<td>every_ specify year or month with Y or M</td>
</tr>
</tbody>
</table>

*not contacted yet
Data on exclusive breastfeeding at six months were also collected at the meeting. The rates from the EU Member States are shown in Table 3. Unfortunately, the complete meeting report is not yet available in time to be included in this report. It is not clear if the WHO template included a question about collection of infant feeding surveillance data by SES or if only the existence of mean prevalence was assessed.

Table 3: Rates on Exclusive Breastfeeding at Six Months by EU Member States

<table>
<thead>
<tr>
<th>Country</th>
<th>Exclusive Breastfeeding from Birth to 6 Months Rate (%)</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>10</td>
<td>Data from 2006 (published in Esberger 2007)</td>
</tr>
<tr>
<td>Belgium</td>
<td>26</td>
<td>Published in Walonia 2009</td>
</tr>
<tr>
<td>Croatia</td>
<td>76.2 (0-2 months) 54.5 (3-5 months)</td>
<td>Croatian Health Service Yearbook 2011, Croatian National Institute of Public Health 2012</td>
</tr>
<tr>
<td>Estonia</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>France</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Germany</td>
<td>37</td>
<td>KIGGS (2007)</td>
</tr>
<tr>
<td>Greece</td>
<td>0.5</td>
<td>National Feeding Survey (2007)</td>
</tr>
<tr>
<td>Italy</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Lithuania</td>
<td>30.7</td>
<td>Data of annual reports of primary health care facilities, Institute of Hygiene, 2012</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Malta</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Netherlands</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Poland</td>
<td>19.3</td>
<td>2013</td>
</tr>
<tr>
<td>Slovenia</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Spain</td>
<td>28.5</td>
<td>-</td>
</tr>
<tr>
<td>Sweden</td>
<td>13.5</td>
<td>-</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Examples of Publications on Breastfeeding Prevalence

Cattaneo and colleagues (2009) carried out surveys in 2002 and 2007 of EU Member States to assess the degree of implementation of the ‘EU Blue Print for Protection, promotion and support of Breastfeeding in Europe’ (DG SANCO, 2008). The studies showed that an increasing number of national policies were complying with recommendations on the protection, promotion, and support of breastfeeding and complementary feeding practices, Table 3 (Cattaneo et al., 2009). Only small improvements on maternity protection and implementation of the International Code on Marketing of Breast milk Substitutes were reported, whereas the BFHI showed more improvements.

Table 4: “Countries with policies and recommendations meeting stated criteria in 2002 and 2007” (Cattaneo et al., 2009: p. 752).
Only “slight improvements in the rates of initiation, exclusivity and duration [of breastfeeding]” were observed within EU Member States (Cattaneo et al., 2009: p.751), see Figures 2-4. Therefore Cattaneo and colleagues recommended more actions on "pre-service training and standard monitoring of breastfeeding rates" be carried out both within and between EU Member States (Cattaneo et al., 2009: p.751) in order to improve the average prevalence rates. One major disadvantage is that the data were only presented as national averages and so this hides the wide-range of different rates that probably exists between different socio-economic groups within each country.


Similarly a report by the NGO Save the Children ‘State of the World’s Mothers’ (2012) provided an overview of breastfeeding practices, maternal protection, working conditions, and BFHI, and included 25 EU Member States, Table 4. However, again the breastfeeding rates are presented as national averages with no breakdown by the different socio-economic groups.

Table 5: Breastfeeding and Complementary Feeding Practices and Conditions by Country (Save the Children, 2012: p. 43)
One recent review published in 2012 did attempt to investigate if different rates of breastfeeding and complementary feeding practices in different socio-economic groups within 16 industrialized countries (Ibanez et al., 2012). Low rates of breastfeeding were identified in women who are “young, single, from low socioeconomic group, or with a low level of education”. It was noted that in some countries “women from immigrant population groups breastfed more than the native-born population” (Ibanez et al., 2012: p. 305). The actual rates of breastfeeding and complementary feeding practices and their association with socio-demographic factors published in the paper by Ibanez et al. (2012) are displayed in Annex IV. The paper by Ibanez et al. (2012) appears to be the only published comparative study of breastfeeding and complementary feeding practices rates by SES across very few (seven) EU Member States (Denmark, France, Germany, Greece, Italy, Netherlands, UK). However it appears many more countries do collect these data at national level. For example, in the ‘Infant Feeding Survey’ (2012) from England, the initial breastfeeding and exclusive breastfeeding rates by six weeks were 81% and 23% respectively. Maternal age, level of education, and professional occupation were all found to influence the incidence and duration of breastfeeding in the England.

Also in England, Oakley and colleagues (2013) conducted an ecological area-based analysis using routinely collected data from 141 Primary Care Trusts. The study demonstrated lower breastfeeding rates in the most deprived groups, younger mothers, and smoking mothers, (Annex V).

Similarly in Scotland, a prospective cohort study by Donnan et al. (2013) followed 344 women from the Ninewells Hospital in Dundee. At delivery 68% of the women initiated breastfeeding and at 16 weeks only 20% were exclusively breastfeeding; Almost half (48%) of the most deprived women did not initiate breastfeeding compared with only around one fifth (22%) in the two most affluent groups; similarly only one third (30%) initiated breastfeeding in the most deprived groups compared with almost half (47%) of the most affluent mothers, Annex VI (Donnan et al., 2013). The study identified previous breastfeeding experience as a strong predictor of whether or not mothers would breastfeed.

A descriptive study by Ajetunmobi and colleagues (2013) looked at health records for 731,595 infants born in Scotland between 1997 and 2009. This study also found lower breastfeeding rates in the most deprived compared with the most affluent groups at both 10 days and six-eight weeks after birth (Annex VII).

A French prospective study based on 1339 mothers’ social and occupational characteristics, found that the return to work was a strong predictor for stopping breastfeeding (Bonet et al., 2012). Also those with lower than high school education were less likely to breastfeed compared with those having a university education or high school diploma, Annex VIII (Bonet et al., 2012).
**Discussion and Recommendations**

In order to decrease health inequities within and between the EU Member States, efforts to protect, promote and support exclusive breastfeeding and timely introduction to appropriate complementary feeding must be improved across the whole population and with a particular focus on the lower socio-economic groups (Council of the EU, 2014; WHO & DG SANCO, 2014; Marmot, 2010; WHO, 2003). All data retrieved for this short review show a social gradient related to breastfeeding and complementary feeding rates in different socio-economic groups.

However, no comparative EU survey has been made using existing national breastfeeding and complementary feeding practices data, which have been collected by SES. Cattaneo et al. (2009) carried out a survey to assess the situation and the changes in relation to the implementation of the EU 'Blue Print on breastfeeding’ between 2002 and 2007 (DG SANCO, 2008) but breastfeeding and complementary feeding rates were not presented according to different socio-economic groups.

As health inequalities related to obesity appear to be increasing within and between EU countries, we must gain more knowledge about the socio-demographic distribution of good infant feeding practices. This can be achieved by collecting data on both breastfeeding and complementary feeding rates and their determinants, and identifying how poor rates can be improved through proportionate universal healthcare services and breastfeeding and complementary feeding interventions that are tailored to the specific needs of particular socio-economic groups (WHO & DG SANCO, 2014). Moreover, priority should be given to research and interventions related to the protection, as opposed to the promotion and support of breastfeeding. As protection has the potential to be more of an equalizer than promotion and support, which tend to increase the gaps, at least in an initial phase of implementation (Cattaneo, 2012)

**Recommendations**

Maternal, newborn, infant and young child health are key to addressing inequalities in obesity and so data collection by SES, related to the beginning of the life-course, should be prioritised by EU Member States, WHO and European Parliament and Commission. In this short review we have been able to demonstrate that many EU countries do collect data on infant feeding practices by SES and so these existing data could be better exploited to inform policy development and implementation. Following this short review of existing data and available publications, eight recommendations are proposed to DG SANCO:

1. It is recommended to re-evaluate the implementation of the recommendations to EU Member States included in DG SANCO's 'Blue Print Report on Breastfeeding' (2008). This could be carried out by implementing the same methodology developed for the 2002 and 2007 surveys by Cattaneo and colleagues published in 2009.
2. Data on breastfeeding prevalence and complementary feeding practices by socio-economic status do exist in many EU Member States. However often these data are published in national reports in national languages. Apart from one comparative survey published in 2012 by Ibanez et al, no systematic comparison has been made across EU Member States. It is therefore recommended to collect and compare existing data from each EU Member State on breastfeeding prevalence and complementary feeding
practices by SES (i.e. education, profession, maternity protection, etc.). These results would suggest where the gradient was shallowest and where the absolute figures were highest in order to identify evidence of what works best to support better infant feeding practices and thereby inform policy-makers.

3. A literature review, to include grey literature and translated national reports, should be carried out to map, identify, compare, and contrast data sets that exist in national languages in EU countries (e.g. a more comprehensive review than the one published by Ibanez et al. in 2012).

4. A literature review, to include grey literature and translated national reports, should be carried out to find which specific practices have been successful in increasing breastfeeding rates and improving complementary feeding practices in low socio-economic groups, using targeted proportional universal interventions.

5. A literature review, to include grey literature and translated national reports, should be carried out to investigate what recommendations exist regarding how best to target the approach 'proportionate universalism', which are actions "to reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage" in EU Member States (Marmot, 2010: p. 15)

6. Reviews or new investigations are needed to inform policy-makers how population-based polices, such as national laws and regulations and the EU Directive on marketing of breast-milk substitutes can proportionally protect breastfeeding and improve infant feeding practices within lower socio-economic groups.

7. It is well known that many women in lower socio-economic groups feel discriminated against by judgemental healthcare professionals and so tend not to attend antenatal and postnatal healthcare services. A literature review or new investigations should be carried out to find out what the barriers are and how families can be better served and innovative recommendations put in place to improve maternal and young child health.

8. A strong social determinant for high levels of breastfeeding appears to be a relatively high number of years of maternal education. More research should focus on how to best improve infant feeding practices in families where the mothers are either teenagers or have not had many years of schooling.
References and bibliography


Annex I - Determinants of breastfeeding and complementary feeding practices identified by DG SANCO (2008)


| Mother, Newborn, Infant, Child, Family | - Age, parity, physical and psychological health of the mother  
| | - Breastfeeding experience of the mother  
| | - Education, employment, social class, ethnicity, area of residence  
| | - Knowledge, attitudes, confidence in the ability to breastfeed  
| | - Marital status, family size, support from father/partner and family  
| | - Lifestyles (smoking, alcohol, drugs, diet, physical exercise)  
| | - Birth weight, gestational age, mode of delivery, health of the newborn  
| | - Access to role-models who have had positive breastfeeding experiences  
| Healthcare System | - Access to antenatal care and quality of care  
| | - Quality of assistance during delivery and in the first few days  
| | - Access to postnatal maternal and child health care, and quality of care  
| | - Type and quality of professional support for lactation management  
| | - Access to peer counseling and mother-to-mother support  
| Public Health Policies | - Level of priority and financial support given to breastfeeding  
| | - Official policies, recommendations and plans  
| | - Breastfeeding monitoring and surveillance systems  
| | - Quality of pre- and in-service training of health workers  
| | - Financial support for voluntary mother-to-mother support activities  
| | - CBSC and use of different media for breastfeeding advocacy  
| Social Policies and Culture | - Legislation on and enforcement of the International Code  
| | - Legislation on maternity protection and its enforcement  
| | - Representation of infant feeding and mothering in the media  
| | - Obstacles and barriers to breastfeed in public  
| | - Prevalence and activities of mother-to-mother support groups  
| | - Level of community awareness and knowledge |
Annex II - Terms of Reference

3. BREASTFEEDING AND ITS DETERMINANTS BY SOCIO-ECONOMIC STATUS

It would be useful to produce an analysis of inequalities in breastfeeding between countries, between regions and by socio-economic status. Data should look at not just the incidence of breastfeeding, but also maternal pay, maternal leave, working conditions, baby-friendly hospitals, midwife visits and support, and other determinants of breastfeeding.

This is politically very timely both in terms of the interest of parliament in the topic, the funding of two projects looking at guidance on nutrition for babies, and for the EU Child Obesity strategy.

Proposal 5

<table>
<thead>
<tr>
<th>A scoping study of data and data sources on breastfeeding and influences on breastfeeding, in relation to inequalities</th>
<th>Metropol 32 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Undertake database search of scientific literature on breastfeeding and breastfeeding determinants and SES in EU member states. Exclude non-English language and papers published pre-2008.</td>
<td>8 hours</td>
</tr>
<tr>
<td>2. Undertake a web-based search for grey literature including government surveys and UN agency reports. Exclude non-English language and papers published pre-2008.</td>
<td>8 hours</td>
</tr>
<tr>
<td>3. Identify key informants and contact by email to ask if they can recommend relevant information not otherwise identified.</td>
<td>10 hours</td>
</tr>
<tr>
<td>4. Write a report summarising the evidence found in the time allowed, and identify the apparent evidence gaps.</td>
<td>6 hours</td>
</tr>
</tbody>
</table>
### Annex III – Preliminary Data from EU Member States, Gathered at the WHO Baby-Friendly Hospital Initiative Global Meeting in June 2014

#### Your Country: Austria

<table>
<thead>
<tr>
<th>Yes / No</th>
<th>Question</th>
<th>Austria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Is statistical surveillance data on infant feeding collected in your country?</td>
<td>No</td>
</tr>
</tbody>
</table>

If yes, at which level? (specify yes where applicable)

<table>
<thead>
<tr>
<th>Level</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationally?</td>
<td>No</td>
</tr>
<tr>
<td>Regionally?</td>
<td>No</td>
</tr>
<tr>
<td>By each facility?</td>
<td>Partly</td>
</tr>
</tbody>
</table>

Comment if you need

- Not on country level, at least not regularly.
- But of course, certified baby-friendly hospital do monitor their breastfeeding rates

How frequently is data collected

- Every...
### Your Country: CROATIA

1

<table>
<thead>
<tr>
<th>Yes / No</th>
<th>Is statistical surveillance data on infant feeding collected in your country?</th>
<th>Yes</th>
</tr>
</thead>
</table>

If yes, at which level? (specify yes where applicable)

<table>
<thead>
<tr>
<th>Nationaly?</th>
<th>How frequently is data collected</th>
<th>Yes</th>
<th>specify year or month with Y or M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>every 1 Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.2 Is the responsible authority for the delivery of health services in your country?

<table>
<thead>
<tr>
<th>Regional</th>
<th>Yes</th>
<th>National authority</th>
</tr>
</thead>
</table>

### Your Country: ESTONIA

1

<table>
<thead>
<tr>
<th>Yes / No</th>
<th>Is statistical surveillance data on infant feeding collected in your country?</th>
<th>Yes</th>
</tr>
</thead>
</table>

If yes, at which level? (specify yes where applicable)

<table>
<thead>
<tr>
<th>Nationaly?</th>
<th>How frequently is data collected</th>
<th>Yes</th>
<th>specify year or month with Y or M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 weeks, 3 mths, 6 mths</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Your Country: Finland

1

<table>
<thead>
<tr>
<th>Yes / No</th>
<th>Is statistical surveillance data on infant feeding collected in your country?</th>
<th>Yes</th>
</tr>
</thead>
</table>

If yes, at which level? (specify yes where applicable)

<table>
<thead>
<tr>
<th>Nationaly?</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regionally?</td>
<td>No</td>
</tr>
<tr>
<td>By each facility?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How frequently is data collected</th>
<th>Nationally every 5th year</th>
</tr>
</thead>
</table>

Latest data was collected between 11/2010 – 5/2011
Your Country: FRANCE

1.1 Is statistical surveillance data on infant feeding collected in your country? Yes

If yes, at which level? (specify yes where applicable)
Nationally? Yes At birth and 9 months
Regionally? No
By each facility? No

How frequently is data collected every... 1 Y specify year or month with Y or M

Your Country: Germany

1.1 Is statistical surveillance data on infant feeding collected in your country? Yes

If yes, at which level? (specify yes where applicable)
Nationally? No
Regionally? Yes Only in certain facilities
By each facility? No

How frequently is data collected every... specify year or month with Y or M non-periodically

Your Country: Greece

1.1 Is statistical surveillance data on infant feeding collected in your country? Yes

Accurate data available only as part of a National Feeding survey performed in 2007

If yes, at which level? (specify yes where applicable)
Nationally? Yes
Regionally? Yes Facilities that express interest in BFH assessment
By each facility? Yes

How frequently is data collected every... specify year or month with Y or M
Not regularly Aiming at repeating feeding survey in 2015
Your Country: Italy

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
Nationally? yes
Regionally? some
By each facility? partial

How frequently is data collected every...

Your Country: LITHUANIA

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
By each facility? yes

How frequently is data collected Every Year

Your Country: LUXEMBOURG

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
Nationally? yes
Regionally? feeds into national data
By each facility? yes

How frequently is data collected Every Y...

1. Annual data from maternity hospitals
2. Regularly +/- every 5 years in a survey more data
Your Country: Malta

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
Nationally? Yes
Regionally? No
By each facility? Yes

How frequently is data collected
Quarterly and yearly

Comment if you need
Only discharge rate

Source: Data from the National Statistical Office of Malta.

Your Country: Netherlands

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
Nationally? Yes
Regionally? No
By each facility? Yes

How frequently is data collected
Year

Comment if you need
No more since 2010

Source: Data from the Dutch National Institute for Public Health and the Environment.

Your Country: Poland

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country?

If yes, at which level? (specify yes where applicable)
Nationally? Yes
Regionally? Yes
By each facility? Yes

How frequently is data collected
Every...

Comment if you need
Mandatory for BFHI designated institutions

Source: Data from the National Health Institute of Poland.

The statistical data on infant feeding have been collected in the whole of the country since 01.01.2014. Data are collected for all babies born in hospitals on a day of discharge from the hospital. This is a national common action.
Your Country: Slovenia
1

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country? Yes

Comment if you need
National breastfeeding statistics is at the moment established only for all newborn infants (and their mothers) at discharge from maternity hospitals.

If yes, at which level? (specify yes where applicable)
Nationally? Yes
Regionally?
By each facility?

How frequently is data collected

Your Country: SPAIN
1

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country? YES

Comment if you need
National Institute of Statistics Surveys every 5 year
Some regions
Maternity Hospitals collect data of EBF, BF and AF at discharge / from birth to discharge.

If yes, at which level? (specify yes where applicable)
Nationally?
Regionally?
By each facility?

How frequently is data collected
every... Y
specify year or month with Y or M

Your Country: Sweden
1

Yes / No
1.1 Is statistical surveillance data on infant feeding collected in your country? yes

Comment if you need

If yes, at which level? (specify yes where applicable)
Nationally? yes
Regionally? yes
By each facility? yes

How frequently is data collected
Every year
specify year or month with Y or M
Your Country:  United Kingdom

1. Is statistical surveillance data on infant feeding collected in your country?  Yes

If yes, at which level? (specify yes where applicable)

- Nationally?  Yes
- Regionally?  Yes
- By each facility?  Yes

How frequently is data collected
- every...  specify year or month with Y or M

M
Annex IV - Rates of breastfeeding and complementary feeding practices by socio-demographic factors


**Fig. 2.** Exclusive BF prevalence by country in the general population. *Exclusive breastfeeding (BF) data for Germany, the United Kingdom, and Denmark are given for only 4 months.

**Fig. 3.** Prevalence of all types of breastfeeding (BF) in the general population by country. *BF data for Germany and the United Kingdom are given for only 4 months.

**Fig. 4.** Overall association between sociodemographic characteristics.
Annex V - Lower breastfeeding rates in most deprived & younger groups in England

Tables from Oakley et al. (2013): p. 4,6,7.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Distribution of the prevalence of breastfeeding and socio-demographic variables across PCTs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All PCTs (n = 151)</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
</tr>
<tr>
<td><strong>Breastfeeding</strong></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding initiation (%)</td>
<td>72.3 (11.2)</td>
</tr>
<tr>
<td>Any breastfeeding at 6–8 weeks (%)</td>
<td>45.3 (15.0)</td>
</tr>
<tr>
<td>Exclusive breastfeeding at 6–8 weeks (%)*</td>
<td>31.6 (2.1)</td>
</tr>
<tr>
<td><strong>Sociodemographic</strong></td>
<td></td>
</tr>
<tr>
<td>IMD (raw score)†</td>
<td>23.6 (8.4)</td>
</tr>
<tr>
<td>Mothers aged ≥35+ (%)</td>
<td>19.3 (5.7)</td>
</tr>
<tr>
<td>Mothers aged ≥20 (%)</td>
<td>5.9 (2.3)</td>
</tr>
<tr>
<td>Population BME (%)</td>
<td>10.1 (14.7)</td>
</tr>
<tr>
<td>Mothers smoking at delivery (%)‡</td>
<td>14.7 (6.1)</td>
</tr>
</tbody>
</table>

*Restricted to 141 PCTs with data on breastfeeding at 6–8 weeks.† High score is indicative of greater deprivation.‡ Restriction to 145 PCTs with data on smoking at delivery.

Information on maternal smoking at delivery was unavailable for a number of PCTs, leaving 144 and 137 PCTs included in the complete case analysis for breastfeeding initiation and breastfeeding at 6–8 weeks (115 non-London PCTs and 26 London PCTs; 110 non-London PCTs and 27 London PCTs): BME, Black and Minority Ethnic; IMD, Index of Multiple Deprivation; PCT, primary care trust.
### Task 3 - Infant Feeding By SES

#### Table 2: Association between the prevalence of breastfeeding and the prevalence of socio-demographic variables at the PCT level: non-London PCTs

<table>
<thead>
<tr>
<th>Non-London PCTs</th>
<th>Breastfeeding initiation (n = 115)</th>
<th>Any breastfeeding at 6–8 weeks (n = 110)</th>
<th>Exclusive breastfeeding at 6–8 weeks (n = 110)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>Adjusted*</td>
<td>Unadjusted</td>
</tr>
<tr>
<td>IMD Quintile 1 (least deprived)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>0.92 (0.68 to 1.25)</td>
<td>1.19 (0.85 to 1.66)</td>
<td>0.74 (0.59 to 0.93)</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>0.68*** (0.55 to 0.85)</td>
<td>0.76*** (0.60 to 0.96)</td>
<td>0.61*** (0.46 to 0.78)</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>0.56*** (0.46 to 0.68)</td>
<td>0.64*** (0.49 to 0.80)</td>
<td>0.54*** (0.41 to 0.70)</td>
</tr>
<tr>
<td>Quintile 5 (most deprived)</td>
<td>0.50** (0.41 to 0.61)</td>
<td>0.88** (0.54 to 0.96)</td>
<td>0.51*** (0.41 to 0.64)</td>
</tr>
<tr>
<td>Mothers aged 35+ (%)</td>
<td>1.07*** (1.06 to 1.09)</td>
<td>1.05*** (1.04 to 1.07)</td>
<td>1.06*** (1.04 to 1.08)</td>
</tr>
<tr>
<td>Mothers aged &lt;20 (%)</td>
<td>0.96*** (0.93 to 0.99)</td>
<td>0.92** (0.89 to 0.97)</td>
<td>0.83*** (0.79 to 0.88)</td>
</tr>
<tr>
<td>Population BME (%)</td>
<td>1.03*** (1.01 to 1.05)</td>
<td>1.03*** (1.01 to 1.06)</td>
<td>1.03*** (1.01 to 1.05)</td>
</tr>
<tr>
<td>Mothers smoking at delivery (%)</td>
<td>0.94*** (0.93 to 0.96)</td>
<td>0.90*** (0.89 to 0.96)</td>
<td>0.93*** (0.92 to 0.95)</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001.

*Variables in model: IMD, percentage of births to older mothers, percentage of population BME.
†Variables in model: IMD, percentage of births to older mothers, percentage of population BME.
‡Variables in model: IMD, percentage of births to older mothers, percentage of population BME.
BME: Black and Minority Ethnic. IMD: Index of Multiple Deprivation. PCT, primary care trust.

#### Table 3: Association between the prevalence of breastfeeding and the prevalence of socio-demographic variables at the PCT level: London PCTs

<table>
<thead>
<tr>
<th>London PCTs</th>
<th>Breastfeeding initiation (n = 29)</th>
<th>Any breastfeeding at 6–8 weeks (n = 27)</th>
<th>Exclusive breastfeeding at 6–8 weeks (n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>Adjusted*</td>
<td>Unadjusted</td>
</tr>
<tr>
<td>IMD Quintile 1 (least deprived)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>0.81 (0.62 to 1.07)</td>
<td>1.08 (0.82 to 1.42)</td>
<td>0.70 (0.43 to 1.14)</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>1.22 (0.71 to 2.10)</td>
<td>1.39 (0.85 to 2.28)</td>
<td>1.38* (1.03 to 1.85)</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>1.34 (0.75 to 2.37)</td>
<td>1.46* (1.06 to 2.00)</td>
<td>1.48 (0.88 to 2.50)</td>
</tr>
<tr>
<td>Quintile 5 (most deprived)</td>
<td>1.10 (0.69 to 1.75)</td>
<td>1.18 (0.76 to 1.84)</td>
<td>1.18 (0.70 to 1.86)</td>
</tr>
<tr>
<td>Mothers aged 35+ (%)</td>
<td>1.05*** (1.03 to 1.08)</td>
<td>1.04*** (1.02 to 1.07)</td>
<td>1.04*** (1.02 to 1.07)</td>
</tr>
<tr>
<td>Mothers aged &lt;20 (%)</td>
<td>0.79** (0.69 to 0.92)</td>
<td>0.79** (0.69 to 0.92)</td>
<td>0.79** (0.69 to 0.92)</td>
</tr>
<tr>
<td>Population BME (%)</td>
<td>1.02* (1.00 to 1.04)</td>
<td>1.03*** (1.01 to 1.05)</td>
<td>1.03*** (1.01 to 1.04)</td>
</tr>
<tr>
<td>Mothers smoking at delivery (%)</td>
<td>0.88*** (0.84 to 0.91)</td>
<td>0.88*** (0.84 to 0.91)</td>
<td>0.88*** (0.84 to 0.91)</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001.

*Variables in model: IMD, percentage of births to older mothers, percentage of mothers smoking at delivery.
†Variables in model: percentage of births to older mothers, percentage of population BME.
‡Variables in model: percentage of births to older mothers, percentage of population BME.
BME: Black and Minority Ethnic. IMD: Index of Multiple Deprivation. PCT, primary care trust.
Annex VI - Comparison of breastfeeding and complementary feeding practices initiation in deprived and affluent groups in Scotland

### Table 1. Characteristics of women by feeding method at baseline delivery (n=344)

<table>
<thead>
<tr>
<th></th>
<th>Women who did not initiate breastfeeding (n=111)</th>
<th>Women who initiated breastfeeding (n=233)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Mean (SD) or *<em>% (N)</em></td>
<td><em>Mean (SD) or % (N)</em></td>
</tr>
<tr>
<td>Gestation at baseline (weeks)*</td>
<td>32.5 (5.3)</td>
<td>31.7 (6.0)</td>
</tr>
<tr>
<td>Age (years)*</td>
<td>26.6 (8.2)</td>
<td>29.8 (6.4)</td>
</tr>
<tr>
<td>Years since leaving school*</td>
<td>15.9 (2.8)</td>
<td>17.9 (1.8)</td>
</tr>
<tr>
<td>Relationship status**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>22.6 (25)</td>
<td>5.2 (12)</td>
</tr>
<tr>
<td>Married</td>
<td>29.7 (33)</td>
<td>55.8 (130)</td>
</tr>
<tr>
<td>With partner</td>
<td>46.8 (52)</td>
<td>38.6 (90)</td>
</tr>
<tr>
<td>Other</td>
<td>0.3 (1)</td>
<td>0.4 (1)</td>
</tr>
<tr>
<td>Missing</td>
<td>0.9 (1)</td>
<td>0.0 (0)</td>
</tr>
<tr>
<td>Living status**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On own</td>
<td>17.1 (19)</td>
<td>2.6 (6)</td>
</tr>
<tr>
<td>With husband or partner</td>
<td>58.6 (65)</td>
<td>89.3 (208)</td>
</tr>
<tr>
<td>With parents</td>
<td>15.3 (17)</td>
<td>5.2 (12)</td>
</tr>
<tr>
<td>Other</td>
<td>6.3 (7)</td>
<td>1.3 (3)</td>
</tr>
<tr>
<td>Missing</td>
<td>2.7 (3)</td>
<td>1.7 (4)</td>
</tr>
<tr>
<td>Parity**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First child</td>
<td>45.0 (50)</td>
<td>54.5 (127)</td>
</tr>
<tr>
<td>Second child</td>
<td>30.6 (34)</td>
<td>29.2 (68)</td>
</tr>
<tr>
<td>Third child or more</td>
<td>21.6 (24)</td>
<td>12.5 (29)</td>
</tr>
<tr>
<td>Missing</td>
<td>2.7 (3)</td>
<td>3.9 (9)</td>
</tr>
<tr>
<td>Previous breastfeeding experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>47.7 (53)</td>
<td>58.4 (136)</td>
</tr>
<tr>
<td>Parous—no previous breastfeeding experience</td>
<td>43.2 (48)</td>
<td>5.2 (12)</td>
</tr>
<tr>
<td>Parous—previous breastfeeding experience</td>
<td>9.0 (10)</td>
<td>36.5 (85)</td>
</tr>
<tr>
<td>Missing</td>
<td>0.0 (0)</td>
<td>0.0 (0)</td>
</tr>
<tr>
<td>SIMD quintile**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1 (most deprived)</td>
<td>47.7 (53)</td>
<td>30.5 (71)</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>20.7 (23)</td>
<td>10.3 (24)</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>8.1 (9)</td>
<td>12.4 (29)</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>15.3 (17)</td>
<td>30.9 (72)</td>
</tr>
<tr>
<td>Quintile 5 (most affluent)</td>
<td>7.2 (8)</td>
<td>15.9 (37)</td>
</tr>
<tr>
<td>Missing</td>
<td>0.9 (1)</td>
<td>0.0 (0)</td>
</tr>
<tr>
<td>Occupations**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher managerial, administrative and professional occupations</td>
<td>24.3 (27)</td>
<td>60.1 (140)</td>
</tr>
<tr>
<td>Intermediate occupations</td>
<td>16.2 (18)</td>
<td>12.0 (28)</td>
</tr>
<tr>
<td>Routine and manual occupations</td>
<td>16.9 (21)</td>
<td>11.0 (27)</td>
</tr>
<tr>
<td>Not in paid employment</td>
<td>34.2 (38)</td>
<td>15.3 (36)</td>
</tr>
<tr>
<td>Missing</td>
<td>6.3 (7)</td>
<td>0.3 (2)</td>
</tr>
<tr>
<td>Total IIFAS score</td>
<td>49.8 (0.29)</td>
<td>62.0 (7.45)</td>
</tr>
<tr>
<td>TPB score 1: attitude to breastfeeding</td>
<td>2.0 (0.70)</td>
<td>4.2 (0.08)</td>
</tr>
<tr>
<td>TPB score 2: subjective norm</td>
<td>2.2 (0.3)</td>
<td>3.3 (1.0)</td>
</tr>
<tr>
<td>TPB score 3: perceived behavioural control</td>
<td>2.0 (0.84)</td>
<td>3.8 (0.78)</td>
</tr>
<tr>
<td>TPB score 4: intention to breastfeed</td>
<td>1.7 (0.96)</td>
<td>4.4 (0.98)</td>
</tr>
<tr>
<td>TPB score 4: intention to breastfeed categorical (% (number))‡</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No breastfeeding intended</td>
<td>60.4 (67)</td>
<td>3.8 (7)</td>
</tr>
<tr>
<td>Undecided</td>
<td>38.7 (43)</td>
<td>45.1 (105)</td>
</tr>
<tr>
<td>Definite breastfeeding intended</td>
<td>0.0 (0)</td>
<td>51.9 (121)</td>
</tr>
<tr>
<td>Missing</td>
<td>0.0 (1)</td>
<td>0.0 (0)</td>
</tr>
</tbody>
</table>

‡: On a scale of 1–5.
†: 1 = no breastfeeding intended; 2–4, undecided; 5, definite breastfeeding intended.
IIFAS, Iowa Infant Feeding Assessment Scale; TPB, Theory of Planned Behaviour.
Annex VII - Comparison of breastfeeding and complementary feeding rates in deprived and affluent groups in Scotland

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Factors that influence the likelihood of any (exclusive or mixed) breast feeding 1997–2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background, maternal and infant health characteristics</strong></td>
<td><strong>First visit review (10 days after birth)</strong></td>
</tr>
<tr>
<td></td>
<td>Exclusive breast feeding (%)</td>
</tr>
<tr>
<td><strong>Mother’s age</strong></td>
<td></td>
</tr>
<tr>
<td>Less than 20 years</td>
<td>13</td>
</tr>
<tr>
<td>20–24 years</td>
<td>23</td>
</tr>
<tr>
<td>25–29 years</td>
<td>37</td>
</tr>
<tr>
<td>30–34 years</td>
<td>41</td>
</tr>
<tr>
<td>35–39 years</td>
<td>51</td>
</tr>
<tr>
<td>40 years +</td>
<td>53</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>43</td>
</tr>
<tr>
<td>Cohabiting</td>
<td>23</td>
</tr>
<tr>
<td>Single/partnered</td>
<td>11</td>
</tr>
<tr>
<td><strong>Father’s country of birth</strong></td>
<td></td>
</tr>
<tr>
<td>British birth</td>
<td>31</td>
</tr>
<tr>
<td>Non-British birth</td>
<td>53</td>
</tr>
<tr>
<td><strong>Mother’s country of birth</strong></td>
<td></td>
</tr>
<tr>
<td>Non-British birth</td>
<td>31</td>
</tr>
<tr>
<td><strong>Maternal religious background</strong></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>37</td>
</tr>
<tr>
<td>Muslim</td>
<td>32</td>
</tr>
<tr>
<td>Hindu</td>
<td>49</td>
</tr>
<tr>
<td>Sikh</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Other/unknown</td>
</tr>
<tr>
<td><strong>Parents' origin</strong></td>
<td></td>
</tr>
<tr>
<td>Both parents of British origin</td>
<td>31</td>
</tr>
<tr>
<td>Mother British and father non-British origin</td>
<td>53</td>
</tr>
<tr>
<td>Father British and mother non-British origin</td>
<td>54</td>
</tr>
<tr>
<td>Both parents of non-British origin</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Other/unknown</td>
</tr>
<tr>
<td><strong>Area deprivation (SMI 2000)</strong></td>
<td></td>
</tr>
<tr>
<td>SIMD 1: Most deprived</td>
<td>21</td>
</tr>
<tr>
<td>SIMD 2</td>
<td>31</td>
</tr>
<tr>
<td>SIMD 3</td>
<td>41</td>
</tr>
<tr>
<td>SIMD 4</td>
<td>51</td>
</tr>
<tr>
<td>SIMD 5: Least deprived</td>
<td>59</td>
</tr>
<tr>
<td><strong>Rural/urban residence</strong></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>36</td>
</tr>
<tr>
<td>Large town</td>
<td>41</td>
</tr>
<tr>
<td>Rural</td>
<td>41</td>
</tr>
<tr>
<td><strong>Mother’s socioeconomic status</strong></td>
<td></td>
</tr>
<tr>
<td>Managerial/professional</td>
<td>63</td>
</tr>
<tr>
<td>Intermediate</td>
<td>39</td>
</tr>
<tr>
<td>Routine/nonroutine occupation</td>
<td>24</td>
</tr>
<tr>
<td>Students</td>
<td>34</td>
</tr>
<tr>
<td>Not stated/other</td>
<td>27</td>
</tr>
<tr>
<td><strong>Father’s socioeconomic status</strong></td>
<td></td>
</tr>
<tr>
<td>Managerial/professional</td>
<td>59</td>
</tr>
<tr>
<td>Intermediate</td>
<td>45</td>
</tr>
<tr>
<td>Routine/nonroutine occupation</td>
<td>27</td>
</tr>
<tr>
<td>Students</td>
<td>34</td>
</tr>
<tr>
<td>Not stated/other</td>
<td>27</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
<td>31</td>
</tr>
<tr>
<td>Non-racial</td>
<td>31</td>
</tr>
</tbody>
</table>
Table 2  Continued

<table>
<thead>
<tr>
<th>Background, maternal and infant health characteristics</th>
<th>First visit review (10 days after birth)</th>
<th>6–8-week review</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusive breast feeding (%)</td>
<td>Mixed feeding (%)</td>
</tr>
<tr>
<td>Maternal smoking status at the first visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonsmoker</td>
<td>45</td>
<td>6</td>
</tr>
<tr>
<td>Smoker</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Multiplicity of birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singleton</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Twins/triplets</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Mode of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal spontaneous delivery</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Instrumental delivery</td>
<td>41</td>
<td>6</td>
</tr>
<tr>
<td>Breach delivery</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Caesarean—emergency</td>
<td>35</td>
<td>7</td>
</tr>
<tr>
<td>Caesarean—elective</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>Neonatal admission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not admitted</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Admitted &lt;48 h</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>Admitted &gt;48 h</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Estimated gestation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (&lt;27–42 weeks)</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Preterm (&lt;37 weeks)</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>Postterm (&gt;24 weeks)</td>
<td>43</td>
<td>6</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>Potential stay in hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2–5 days or shorter</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td>3–5 days</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>6–21 days</td>
<td>39</td>
<td>11</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>41</td>
<td>7</td>
</tr>
<tr>
<td>Baby friendly Initiative (Hospital)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not accredited</td>
<td>41</td>
<td>7</td>
</tr>
<tr>
<td>Baby friendly</td>
<td>36</td>
<td>5</td>
</tr>
<tr>
<td>Age at review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at review</td>
<td>38</td>
<td>6</td>
</tr>
<tr>
<td>Year of birth</td>
<td>38</td>
<td>6</td>
</tr>
</tbody>
</table>

*Age at review* and *Year of birth* have been included as continuous variables. Variables with adjusted OR of 1.00 are reference categories. Adjustment based on all the variables indicated in the model (as shown above).

All p-values refer to non-significant variables (p>0.05).

SIMO, Scottish Index for Multiple Deprivation.
Annex VIII - Comparison of breastfeeding and complementary feeding rates depending on level of maternal education in France


Table 1. Factors associated with breastfeeding at 4 months of infant’s age among mothers breastfeeding at discharge from maternity unit (n = 1139).

<table>
<thead>
<tr>
<th>Maternal age, years</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤24</td>
<td>164</td>
<td>26.8 &lt; 0.001</td>
<td>0.6 (0.4, 0.9)</td>
<td>10.0</td>
<td>0.006</td>
<td>0.7 (0.4, 1.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>869</td>
<td>43.2</td>
<td>1</td>
<td>19.0</td>
<td>1</td>
<td>1</td>
<td>0.8, 1.9</td>
<td></td>
</tr>
<tr>
<td>≥35</td>
<td>200</td>
<td>50.0</td>
<td>1.2 (0.8, 1.7)</td>
<td>27.0</td>
<td>1.2</td>
<td>0.8, 1.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primipara</td>
<td>580</td>
<td>39.7</td>
<td>0.005</td>
<td>1</td>
<td>15.2</td>
<td>&lt; 0.001</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>431</td>
<td>41.1</td>
<td>0.9 (0.7, 1.3)</td>
<td>19.7</td>
<td>1.2</td>
<td>(0.9, 1.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥2</td>
<td>221</td>
<td>52.0</td>
<td>1.1 (0.7, 1.6)</td>
<td>30.8</td>
<td>1.4</td>
<td>(0.9, 2.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>685</td>
<td>46.3</td>
<td>0.02</td>
<td>1</td>
<td>21.5</td>
<td>0.35</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cohabiting</td>
<td>449</td>
<td>38.1</td>
<td>1.0 (0.8, 1.3)</td>
<td>18.0</td>
<td>1.1</td>
<td>(0.8, 1.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>29</td>
<td>48.7</td>
<td>1.8 (0.8, 4.2)</td>
<td>17.9</td>
<td>0.9</td>
<td>(0.3, 2.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maternal education level</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than high school</td>
<td>265</td>
<td>29.4</td>
<td>&lt; 0.001</td>
<td>1</td>
<td>15.8</td>
<td>0.22</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>High school diploma</td>
<td>208</td>
<td>37.0</td>
<td>1.7 (1.1, 2.6)</td>
<td>18.3</td>
<td>1.3</td>
<td>(0.8, 2.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some university</td>
<td>279</td>
<td>45.2</td>
<td>2.6 (1.7, 4.0)</td>
<td>26.8</td>
<td>2.0</td>
<td>(1.2, 3.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University degree</td>
<td>461</td>
<td>51.0</td>
<td>3.4 (2.2, 5.3)</td>
<td>21.0</td>
<td>2.0</td>
<td>(1.4, 3.8)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family origin*</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>968</td>
<td>40.2</td>
<td>0.004</td>
<td>1</td>
<td>17.5</td>
<td>&lt; 0.001</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Foreign</td>
<td>247</td>
<td>50.2</td>
<td>1.3 (1.0, 1.9)</td>
<td>27.5</td>
<td>1.6</td>
<td>(1.1, 2.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family income during pregnancy, euros</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤1,500</td>
<td>154</td>
<td>44.8</td>
<td>0.03</td>
<td>1</td>
<td>26.0</td>
<td>0.05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1,501-2,300</td>
<td>336</td>
<td>36.9</td>
<td>0.5 (0.3, 0.8)</td>
<td>16.1</td>
<td>0.5</td>
<td>(0.3, 0.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,301-3,000</td>
<td>348</td>
<td>41.1</td>
<td>0.4 (0.2, 0.6)</td>
<td>21.6</td>
<td>0.6</td>
<td>(0.2, 1.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥3,001</td>
<td>389</td>
<td>47.3</td>
<td>0.4 (0.2, 0.6)</td>
<td>18.5</td>
<td>0.4</td>
<td>(0.2, 0.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment and return to work at 4 months after birth</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not employed before birth</td>
<td>251</td>
<td>41.8</td>
<td>&lt; 0.001</td>
<td>2.3</td>
<td>(1.6, 3.5)</td>
<td>27.0</td>
<td>&lt; 0.001</td>
<td>7.1</td>
</tr>
<tr>
<td>Employed before birth, not returned to work</td>
<td>521</td>
<td>53.9</td>
<td>3.2 (2.3, 4.4)</td>
<td>26.3</td>
<td>5.6</td>
<td>(3.4, 8.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed before birth, returned to work</td>
<td>423</td>
<td>28.9</td>
<td>1</td>
<td>6.5</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment and return to work at 4 months after birth</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not-smoker before pregnancy</td>
<td>823</td>
<td>47.8</td>
<td>&lt; 0.001</td>
<td>3.2</td>
<td>(2.1, 4.9)</td>
<td>22.8</td>
<td>&lt; 0.001</td>
<td>2.6</td>
</tr>
<tr>
<td>Smoker before pregnancy, non-smoker at 4 months</td>
<td>190</td>
<td>42.9</td>
<td>2.4 (1.5, 3.9)</td>
<td>16.3</td>
<td>1.2</td>
<td>(0.8, 2.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker before pregnancy and at 4 months</td>
<td>265</td>
<td>22.4</td>
<td>1</td>
<td>10.7</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infant sex</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy</td>
<td>640</td>
<td>40.0</td>
<td>0.07</td>
<td>1</td>
<td>18.3</td>
<td>0.22</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Girl</td>
<td>593</td>
<td>45.0</td>
<td>1.5 (1.1, 1.9)</td>
<td>21.1</td>
<td>1.4</td>
<td>(1.0, 2.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Centres</th>
<th>N</th>
<th>Any breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
<th>N</th>
<th>Almost exclusive breastfeeding</th>
<th>aOR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poitiers</td>
<td>514</td>
<td>41.4</td>
<td>0.56</td>
<td>1</td>
<td>19.3</td>
<td>0.78</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Nancy</td>
<td>719</td>
<td>41.1</td>
<td>1.0 (0.7, 1.2)</td>
<td>19.9</td>
<td>1.1</td>
<td>(0.8, 1.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p* Pearson’s Chi-squared test for univariate analyses; *aOR* adjusted ORs controlled for all variables in the table; *CI* confidence intervals

*Family origin includes whether parents and maternal grand-parents were born in France, or one of the family members (mother, father or a grand-parent) was born abroad (foreign)