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Barnmorskeprogrammet

# **Immigrant and Native Women's Initiation and Duration of Breastfeeding**

A literature review

Examensarbete i sexuell, reproduktiv och perinatal hälsa, 7.5 hp  
(Avancerad nivå) 2011

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Department of Women's and Children's Health  
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Midwifery Program

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## Abstract

The aim of this study was to review scientific publications for comparison of breastfeeding initiation and duration between immigrant and native women. Systematic literature searches were performed in PubMed, CINAHL, SweMed+, LIBRIS and among Swedish student reports. Five studies fulfilled inclusion criteria. All studies showed equal or higher rates of partial breastfeeding among immigrant women compared to native women. Only two studies presented data on exclusive breastfeeding, with inconclusive results. Several studies also showed that breastfeeding rates decreased as immigrants stay longer in their new country. More research is needed on exclusive breastfeeding among immigrants. Also, it does not seem to be clear how best to group immigrant countries.

Keywords: breastfeeding, immigrant.

## Sammanfattning

Syftet med detta arbete var att systematiskt granska studier som jämfört amningsfrekvens hos invandramödrar och inhemska mödrar. Litteratursökningar gjordes i PubMed, CINAHL, SweMed+, LIBRIS och uppsatser.se. Fem studier uppfyllde inklusionskriterierna. Alla studier visade att amningsfrekvensen hos invandrade mödrar är större eller lika stor som hos inhemska mödrar, båda när det gäller initiering av amning och delamning under den uppmätta tiden. Bara två studier hade data på helamning och inga säkra slutsatser kan dras kring detta. Flera studier visade också att amningsfrekvensen var lägre hos de invandrade mödrar som bott en längre tid i det nya landet. Fortsatt forskning behövs kring helamning hos invandrare. Det verkar inte heller vara klart hur man bäst delar in invandrarländer i olika grupper.

Nyckelord: amning, invandrare.

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## Introduction

During my clinical rotations at prenatal clinics, maternity and postnatal wards in Stockholm, and at a postnatal ward in Karlstad, I have met many immigrant mothers. In some cases I have had difficulties to understand their attitudes to breastfeeding. In particular I remember a mother from Somalia. She had been well informed by several midwives about the value of breastfeeding and she seemed to be listening. In spite of this she bought breast milk substitute in secret and gave it to her newborn in the hospital. I got the feeling that this had to do with her culture, but I didn't understand exactly how. This mother and similar experiences from other women inspired me to perform this study; I wanted to be better prepared to address any cultural differences when giving breastfeeding information, education and support. When I made choices regarding studies and background information to be included, the clinical application was in focus so that the results from this study could be useful for a Swedish midwife.

It is also possible that my choice of project was influenced by me as an immigrant myself. I was trained as a nurse and midwife in Tamil Nadu, India, and came to Sweden ten years ago.

## Background

### Immigration to Sweden

A large and increasing proportion of the children born in Sweden have immigrant parents. In 2007, 22% of the newborn children in Sweden had an immigrant mother. Table 1 shows how the distribution of immigrant mothers has changed during the last decades. In 1980, 12% of all newborn children in Sweden had an immigrant mothers, and almost all immigrant mothers came from the Nordic countries or some other part of Europe. In 2007, the proportion of children with immigrant mothers had increased to 22%, and the largest group of immigrant mothers was women from non-EU countries with mid-level development, such as Iran, Iraq, Bosnia or Thailand (Statistiska Centralbyrån, 2008). Development in non-European countries has here been measured using the Human Development Index (HDI), which has been developed by UN using a combination of health, education and living standards (United Nations, 2011).

**Table 1. Proportion (%) of children born to Swedish and foreign-born women. (SCB 2008)**

Year	1980	1990	2000	2007
<b>Mother born in Sweden:</b>	<b>88%</b>	<b>87%</b>	<b>82%</b>	<b>78%</b>
<b>Mother born in:</b>				
Nordic countries	7%	5%	2%	2%
EU	2%	2%	2%	3%
Europe outside EU	2%	1%	3%	4%
Non-European country with high HDI	1%	1%	2%	2%
Non-European country with middle HDI	1%	3%	7%	9%
Non-European country with low HDI	0%	0%	2%	2%
<b>Total foreign-born mother:</b>	<b>12%</b>	<b>13%</b>	<b>18%</b>	<b>22%</b>

This change reflects the general pattern of immigration to Sweden. Before the 1970s many immigrants were industrial workers from Finland and Yugoslavia, but later on many immigrants have been refugees. In the 1970s many immigrants came from Asia and South America. In the 1980s many immigrants came from Iran, Chile, Lebanon, Poland and Turkey. In the 1990s many immigrants came from Balkan. After 2000 many immigrants have come from Iraq and other countries in the Middle East.

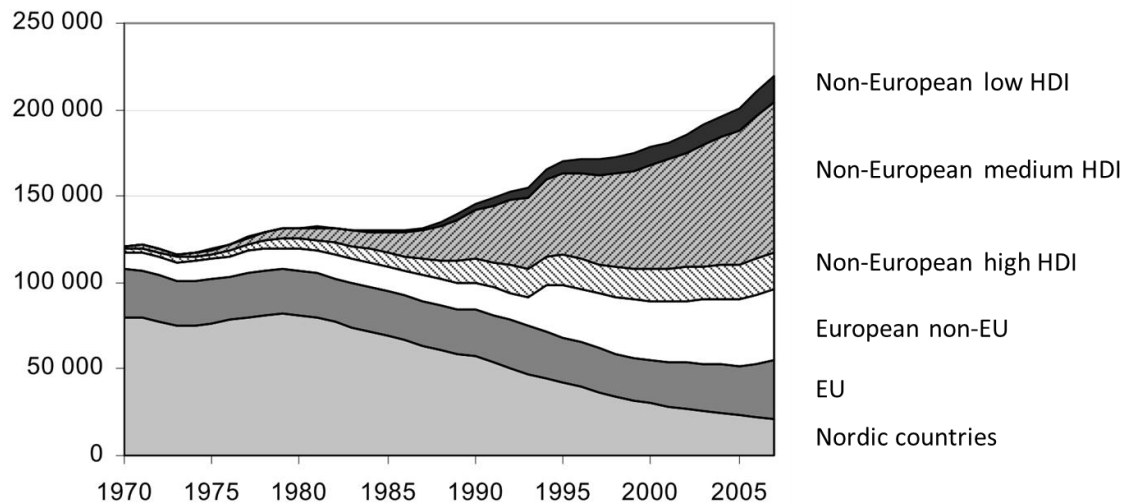


Figure 1. Foreign-born women in child-bearing age in Sweden, according to country group (SCB 2008)

The number of immigrant women of child-bearing age is shown in Figure 1. Since mothers from different countries have different nativity indices, the importance of immigration is even larger when studying newborn children and breastfeeding. For instance, mothers from Iraq give birth to an average of 3.2 children, while the nativity index for native mothers and mothers from most other countries is close to 2 (Statistiska Centralbyrån, 2008).

### Research on breastfeeding and immigration

Breastfeeding has many advantages for both mother and child. It can create a strong psychological bond between mother and child (Jansen, de Weerth, & Riksen-Walraven, 2008). By transferring antibodies from mother to child, breast milk will give the baby some protection against infections. Also, breastfeeding could decrease the baby's risk of developing allergies or diabetes later in life. Exclusive breastfeeding as compared to partial breastfeeding has additional advantages for both mother and child, giving a decreased risk of diarrhea and death (WHO, 2009). WHO recommends exclusive



breastfeeding for the first six months, with continued breastfeeding along with appropriate complementary food up to two years of age or beyond (WHO, 2009). The Swedish recommendations are exclusive breastfeeding during six months; supplemented with vitamin D. Optionally the baby can taste small servings of other food after four months (Livsmedelsverket, 2011).

Socioeconomic factors such as age, education and social support are known to influence whether a mother will continue with breastfeeding or not (Thulier & Mercer, 2009) and therefore need to be taken into account when comparing breastfeeding rates between among immigrant and native women. Several American studies on breastfeeding among mothers from ethnic minority groups, have described a phenomenon known as “the Hispanic paradox” (Kimbrow, Lynch, & McLanahan, 2008) (Sussner, Lindsay, & Peterson, 2008) (Gibson-Davis & Brooks-Gunn, 2006) (Merewood, Brooks, Bauchner, MacAuley, & Mehta, 2006). This means that Hispanic women have high rates of breastfeeding and other positive health behaviors despite being socially disadvantaged. The highest breastfeeding rates are seen among Hispanic immigrants and the rates decline for further generations of mothers of Hispanic ethnicity. Since immigrant and native mothers differ after adjustment for health and socioeconomic factors, it could be expected that culture, tradition and beliefs also influence breastfeeding.

Many studies have tried to explore attitudes to breastfeeding among immigrant women. A few studies have found religious influence on breastfeeding, e.g. a tradition of cleansing rites could explain lower breastfeeding rates among Vietnamese mothers in Canada (Groleau, Soulière, & Kirmayer, 2006).

A more common finding has been a difference in health beliefs, most importantly beliefs regarding breast milk and children’s health. A well-performed qualitative study on 37 Somali women in the USA (Steinman, et al., 2010) found several cultural factors affecting breastfeeding, including a positive attitude to formula, a desire for chubby babies, and a worry about not having enough milk. They also found some religious influence in that Islamic tradition recommends two years of breastfeeding. Similar findings were reported in two non-published Swedish studies. In a recent student project (Hallencreutz & Östlund, 2011) the interviewed Somali mothers, although they intended to breastfeed for up to 2 years, added formula early because of a belief that they had too little breast milk. In a report based on medical records and small focus group interviews

from an immigrant suburb of Stockholm, Nordström and Wilén (1995) describe distinctive breastfeeding patterns among different immigrant groups, where long breastfeeding with early introduction of formula is common among women from Somalia, North Africa, and Iraq. To have chubby babies is an important focus for Somalia mothers and they have heard from friends and relatives that infant formula is better than breast milk. They believe that breast milk amount decreases some weeks after delivery and therefore introduce infant formula to their new born babies.

In contrast to these findings, the largest Swedish study of breastfeeding and immigration (Wallby & Hjern, 2009) finds only small differences in breastfeeding rates between immigrant and native mothers during the first six months, and the household's disposable income is a much stronger predictor of breastfeeding than the mother's region of origin. An earlier Swedish study (Koçtürk & Zetterström, 1986) found that Turkish mothers in Sweden breastfed less than a comparison group of mothers that had stayed in Turkey, and that the new breastfeeding pattern was more similar to native Swedish mothers.

It therefore does not seem to be clear, whether high rates of breastfeeding among immigrants is a general finding, or if it only holds for specific groups in certain countries. The main part of this study will review comparative studies on breastfeeding rates in order to make it clearer whether immigration is really an important factor for breastfeeding, or whether other factors such as income matter more.

## **Aim**

The aim of this study is to review scientific publications which have compared breastfeeding rates of immigrant and native women.

## **Research Question**

Is immigrant status of the mother an important factor for breastfeeding rates, when other socioeconomic factors are considered?

## **Methods**

In order to answer the research question, a systematic literature review was performed (Polit & Beck, 2008) (Forsberg & Wengström, 2008). A literature review can be defined as a critical study on a topic of interest, often prepared to put a research problem

in context (Polit & Beck, 2008, p. 757). Based on predefined inclusion criteria relevant articles from searches in PubMed, CINAHL, and the Swedish databases LIBRIS, SweMed+ and uppsatser.se were included. The included studies were then critically examined and their results were compared.

### Inclusion criteria

Studies found in literature searches were evaluated according to the following inclusion criteria:

1. Presenting original data on breastfeeding rates, with comparisons between immigrant and native mothers.
2. Data on both breastfeeding initiation and on breastfeeding duration at least two months.
3. Systematic selection representative for the general population.
4. Study from a Western country, defined as the EU, Canada, Australia, New Zealand or the USA.
5. Study written in English or Swedish

### Literature search

The main searches were performed in PubMed and CINAHL using MeSH keywords related to breastfeeding and immigrants. Some modification of the MeSH keywords were made in order to find recently published studies and studies that treat immigrants as a special case of minority ethnic groups.

**Table 2. Literature search**

1	PubMed	2011-12-22	breastfeeding[Mesh] OR breastfeeding[Title] OR "breast feeding"[Title]	23692
2	PubMed	2011-12-22	"Emigrants and Immigrants"[Mesh] OR "Emigration and Immigration"[Mesh] OR immigrant OR immigrants	31031
3	PubMed	2011-12-22	"ethnic"[Title] AND (generation OR acculturation)	681
4	PubMed	2011-12-22	1 AND (2 OR 3)	135
5	CINAHL	2011-12-22	(breastfeeding OR "breast feeding") AND (immigrant OR immigrants)	97
6	PubMed	2011-12-01	"breast feeding"[Mesh] AND Sweden[Mesh] AND "socioeconomic factors"	26

From the results of (4), (5) and (6), abstracts and/or full text were to select studies according to the inclusion criteria.

From the 135 results of search (4) above, 1 was an old review, 2 were duplicates, and 37 had another focus than breastfeeding, e.g. caries or nutritional deficiencies. Of the remaining 95 studies, 25 included comparisons between immigrant and native mothers. Of these, 12 presented data on both breastfeeding initiation and duration. Three otherwise well-performed American studies were excluded since their population was selected only from poor or disadvantaged families (Kimbrow, Lynch, & McLanahan, 2008) (Sussner, Lindsay, & Peterson, 2008) (Gibson-Davis & Brooks-Gunn, 2006), four were excluded since they were written in French, German or Spanish, and one was excluded since it was performed in Israel. Three studies fulfilled the inclusion criteria: van Rossem et al (2010), Hawkins et al (2008), and Singh et al (2007).

Search (5) in CINAHL did not give any additional studies which fulfilled the inclusion criteria. Among the results of search (6), two studies (Wallby & Hjern, 2009) (Ludvigsson & Ludvigsson, 2005) fulfilled the inclusion criteria and were added to the review.

The included studies are summarized in Table 3 on page 11. All reviewed studies have obtained ethical approval. For (Singh, Kogan, & Dee, 2007) this is not described in the article, but in the online methods section ([www.childhealthdata.org](http://www.childhealthdata.org)).

## Analysis

The included studies were first assessed according to quality criteria based on Forsberg and Wengström (2008, p. 116):

1. Aim: Are aim and research questions well-defined?
2. Design and analysis: Is the design appropriate to the aim and research questions?  
Is the statistical method appropriate?
3. Population: Are inclusion and exclusion criteria well-defined? Is the selection method clearly described? How large was the drop-out and is there an analysis of non-responders?
4. Data collection: Is data reliable and valid?
5. Strengths and weaknesses

The results of this quality assessment are presented in Table 3. In order to better understand the various variables under study a categorization of the material was performed, and the results will be presented according to these categories.

**Table 3. Details of reviewed studies**

<b>Article, Country</b>	<b>Aim</b>	<b>Design and Analysis</b>	<b>Study population</b>	<b>Outcome parameters</b>	<b>Main Results</b>	<b>Quality</b>
<p>van Rossem, L., Vogel, I., Steegers, E. A., Moll, H. A., Jaddoe, V. V. W., Hofman, A., Mackenbach, J. P., Raat, H. (2010). Breastfeeding patterns among ethnic minorities: the Generation R Study. <i>J Epidemiol Community Health</i>, 64(12), 1080-5.</p> <p>The Netherlands</p>	<p>To compare breastfeeding patterns of ethnic minority groups in The Netherlands with those of native mothers and establish how they are influenced by generational status and socio-demographic determinants of breastfeeding</p>	<p>Prospective cohort study.</p> <p>Univariate chi-square. Multivariate logistic regression.</p> <p>Adjusts for educational level, parity, smoking, place and type of delivery, and planned pregnancy</p>	<p>3848 women from the generation R cohort with expected delivery of their first child between 2002 and 2006.</p> <p>Response rate 60%, more non-responders low-income women and among women from ethnic minority groups.</p>	<p>Breastfeeding at birth and after 2 and 6 months.</p> <p>Data from medical records and questionnaire, with translator assistance as needed.</p>	<p>Overall, 90.6% of women started breastfeeding, and 30.6% continued at least 6 months. After adjustment for covariates, more non-native mothers started breastfeeding than native Dutch mothers. Immigrants from Morocco or Turkey had higher breastfeeding rates at 6 months, but there were no differences between natives and Caribbean immigrants or second-generation immigrants.</p>	<p>Quality: low response rate, otherwise good.</p> <p>Strengths: Homogenous immigrant groups. Data on exclusive breastfeeding.</p>
<p>Wallby, T., &amp; Hjern, A. (2009). Region of birth, income and breastfeeding in a Swedish county. <i>Acta Paediatrica</i>,</p>	<p>To study the relationship between maternal region of birth, disposable income and breastfeeding initiation and duration</p>	<p>Population study.</p> <p>Multivariate logistic regression, Cox proportional Hazard ratios.</p> <p>Adjusts for</p>	<p>All 12197 babies born 1997-2001 in the county of Uppsala. Very low drop-out.</p>	<p>Breastfeeding rates at discharge, after 6 and 12 months.</p> <p>Data from medical records</p>	<p>Overall, 98.6% of the women started breastfeeding, and 75.1% continued at least 6 months. Breastfeeding at 6 months was influenced by disposable income, but not by country of birth. Non-Swedish mothers had higher rates</p>	<p>Quality: Good</p> <p>Strengths: Consecutive study population</p> <p>Weakness: Adjusts for only few covariates.</p>

98, 1799-1804.  Sweden		disposable income, and to less extent for smoking and caesarean section.		and statistical databases.	of breastfeeding after 12 months.	
Hawkins, S. S., Lamb, K., Cole, T. J., & Law, C. (2008). Influence of moving to the UK on maternal health behaviours: prospective cohort study. <i>BMJ</i> , 336(7652), 1052-5.  UK	To compare health behaviours during pregnancy (smoking and alcohol consumption) and after birth (initiation and duration of breastfeeding) between British/Irish white mothers and mothers from ethnic minority groups; and, in mothers from ethnic minority groups, to examine whether indicators of acculturation (generational status, language spoken at home, length of residency in the United Kingdom) were associated with these health behaviours.	Prospective nationally representative cohort study.  Univariate chi-square and regression analysis. Modified multivariate Poisson regression.  Adjusts for socioeconomic circumstances, family income, educational level, single-parent, age, and parity	6478 British/Irish white mothers and 2110 mothers from ethnic minority groups, from the Millennium cohort, which is weighted towards disadvantaged neighbourhoods. Response rate 60%	Any smoking during pregnancy; any alcohol consumption during pregnancy; initiation of breastfeeding; breastfeeding for at least four months.  Data from interviews with translator.	Compared with British/Irish white mothers, mothers from ethnic minority groups were more likely to initiate breast feeding (86% v 69%) and breastfeed for at least four months (40% v 27%). Among mothers from ethnic minority groups, second and third generation mothers were less likely to initiate breastfeeding, and less likely to breastfeed for at least four months than immigrants, after adjustment for sociodemographic characteristics.  Among immigrants, for every additional five years spent in the UK they were 5% (0% to 10%) less likely to breastfeed for at least four months.	Quality: Full score except low response rate, no drop-out analysis.  Strengths: data collection by interview with translator, careful analysis of effects of longer stay in UK  Weakness: Data presented for ethnic groups rather than immigrants
Singh, G., Kogan, M., & Dee, D. (2007). Nativity/Immigrant Status, Race/Ethnicity, and Socioeconomic Determinants of Breastfeeding Initiation and Duration in the	To examine the extent to which breastfeeding initiation and duration vary by immigrant status overall and in conjunction with race/ethnicity and socioeconomic status after controlling for other relevant social and behavioral covariates.	Cross-sectional data from National Survey. Multivariate logistic regression.  Adjusts for child gender, parity, household composition, place of residence,	33121 children aged 0 to 5 years. Sample based on random telephone numbers.	Breastfeeding at 0, 3, 6, and 12 months.  Data from telephone calls in English or Spanish.	More than 72% of mothers reported ever breastfeeding their infants, with the rate declining to 52%, 38%, and 16% at 3, 6, and 12 months, respectively. Rates of breastfeeding initiation varied greatly among the 12 ethnic-immigrant groups from a low of 48% for native black children with native parents to a high of 88% among immigrant black and	Quality: Selection and data collection by random telephone calls, otherwise good.  Strengths: Well-written

United States, 2003. Pediatrics, 119(S38-S46).  USA		poverty status, neighborhood safety, familial support, health, exercise, and smoking			white children. Breastfeeding at 6 months was highest among foreign-born children to Hispanic immigrants, and lowest among native black children.	
Ludvigsson, J., & Ludvigsson, J. (2005). Socioeconomic determinants, maternal smoking and coffee consumption, and exclusive breastfeeding in 10205 children. Acta Paediatrica, 94, 1310-1319.  Sweden	To examine socio- economic factors, smoking, coffee consumption and exclusive breastfeeding duration.	Population study. Univariate chi- square and Fisher. Multivariate logistic Cox regression with backward stepwise regression analysis.  Adjusts for child gender, presence of sibling, urban-rural; maternal age, smoking, alcohol and coffee consumption, education level, employment, single-mother, born outside Sweden, urban-rural; paternal age, education level, born outside Sweden, employment, urban- rural.	10205 babies from the ABIS study of all 21 700 babies born in southeast Sweden between 1 October 1997 and 1 October 1999. Response rate 60%, no drop-out analysis.	Exclusive breastfeeding for less than 4 months.  Data from questionnaire; data on smoking and breastfeeding validated in separate studies.	In the first model using Cox regression, mother born outside Sweden was associated with slightly longer duration of exclusive breastfeeding. In the second model using stepwise regression, maternal smoking, short maternal education, maternal unemployment, short paternal education, young father and young mother increased the odds for exclusive breastfeeding less than 4 months in the stepwise regression. Mother born outside Sweden had no significant effect in this model.	Quality: Low response rate and no drop-out analysis. Perhaps too many covariates. Otherwise good.  Weakness: Immigration not primary aim of study.

## Results

During the categorization of the material in the included studies, the category “*breastfeeding rates*” was immediately apparent. By reading not only the results sections, but also methods and discussions carefully, two other categories emerged which could explain some differences between the reviewed studies: “*division of participants*” and “*culture*”. The results will be presented here according to these three categories.

### Breastfeeding rates

#### *Breastfeeding initiation*

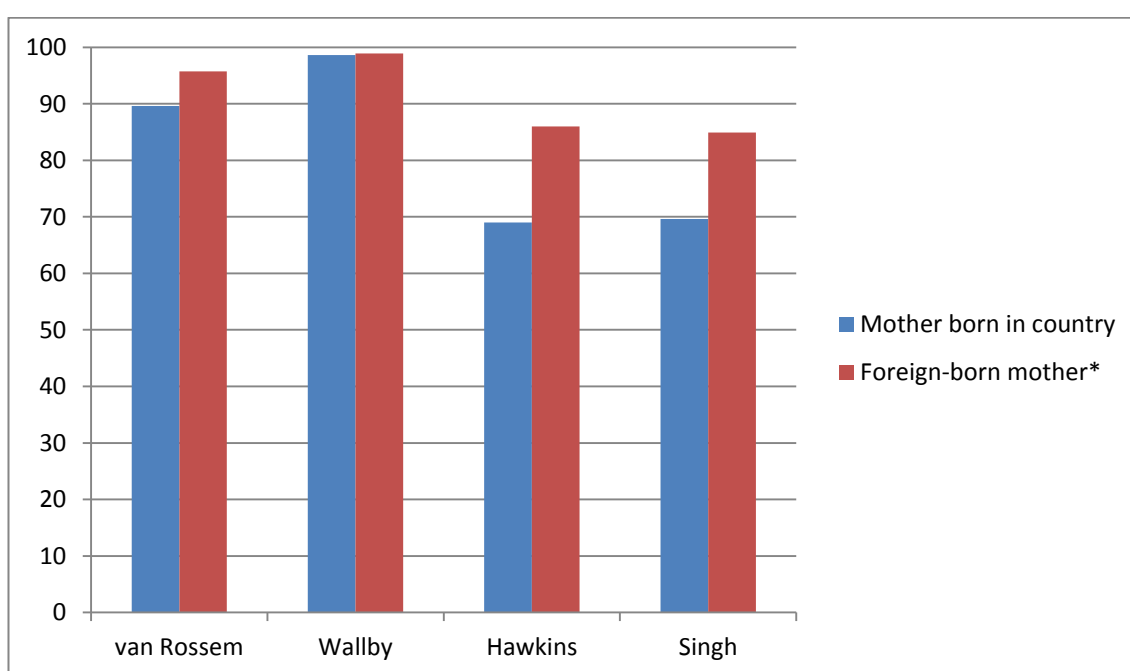


Figure 2. Breastfeeding initiation, mothers born in the country under study or foreign-born mothers. Data is presented as percentage.

The unadjusted results for breastfeeding initiation are shown in Figure 2. Hawkins give results for all mothers from a minority ethnic group, but states that there were no significant differences between immigrants and the second/third generation. Singh’s data is for children with one or two immigrant parents. Breastfeeding initiation rates among immigrants are significantly higher in all studies except Wallby. Ludvigsson and Ludvigsson do not present data on breastfeeding initiation.

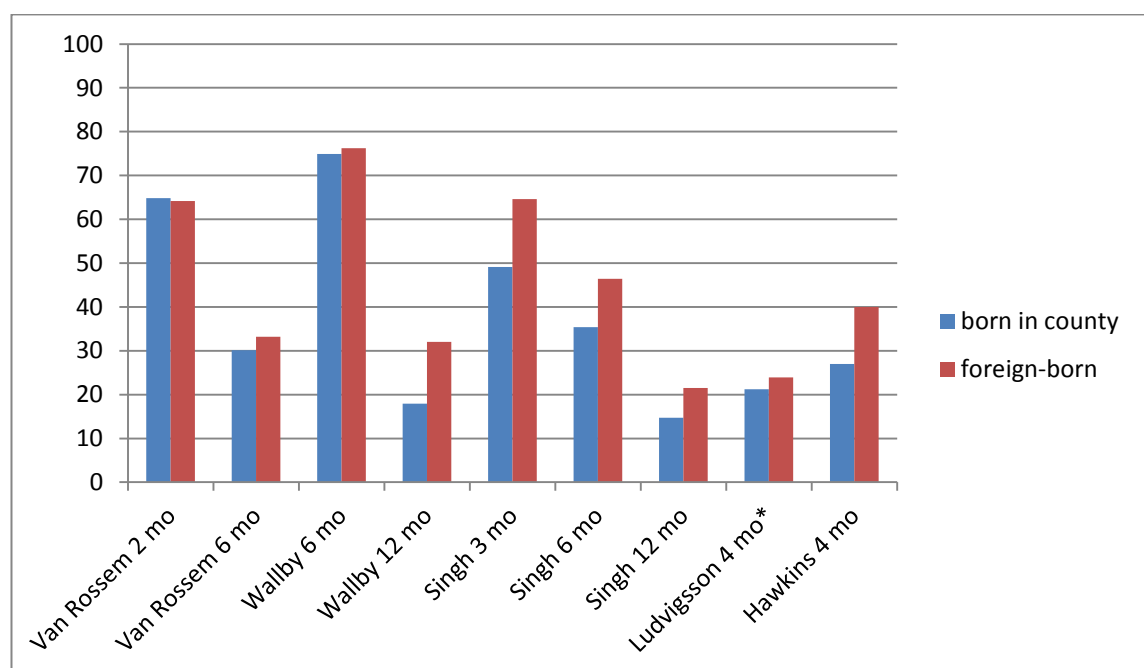
Both van Rossem and Singh found increasing differences after adjustment for covariates. Van Rossem found an odds ratio of never breastfeeding at 10.96 (5.64-



21.31) for immigrants from the Mediterranean group. Singh found an odds ratio of never breastfeeding at 2.03 (1.63-2.54) among children with US-born parents, when US-born children with two immigrant parents were treated as reference. This difference was present in every ethnic group. In the fully adjusted model, Hawkins found that immigrants initiated breastfeeding significantly more often than second- or third-generation mothers from the same ethnic group. Wallby still found no significant differences in breastfeeding initiation, after adjusting for covariates.

In summary, all studies find higher or equally high breastfeeding initiation rates among immigrants.

### *Breastfeeding duration*



**Figure 3. Breastfeeding duration, mothers born in the country under study or foreign-born mothers. Data is presented as percentage.**

The unadjusted results on breastfeeding duration are shown in Figure 3. Hawkins give results for all mothers from minority ethnic groups, but states that the rates for immigrants are significantly higher than for the second and third generation. Singh's data are for children with one or two immigrant parents. The results from Ludvigsson and Ludvigsson refer to exclusive breastfeeding.

After adjustments for socioeconomic covariates, van Rossem found that breastfeeding rates at 2 and 6 months were significantly higher among Mediterranean immigrants.

Among Caribbean immigrants there was no significant difference regarding partial breastfeeding, but exclusive breastfeeding at 2 months was significantly less common. Wallby found no significant difference between Swedish- and foreign-born mothers at 6 months. At 12 months, mothers from all immigrant groups breastfed significantly more often, with Hazards ratios 1.20-2.14. Hawkins found that the odds ratio for breastfeeding at least four months decreased by 0.95 (0.90-1.00) for every five years spent in UK. Singh found positive odds ratios for not breastfeeding at 3, 6, and 12 months among children of US-born parents when compared with children with two immigrant parents, with the largest OR 2.03 (1.63-2.54) at 3 months. Ludvigsson and Ludvigsson found no significant effect of immigrant status on exclusive breastfeeding at least 4 months, after bootstrapping for the more important covariates.

In summary, all studies find equal or longer breastfeeding duration among immigrants. Van Rossem, Hawkins and Singh also find that immigrant's breastfeed longer compared to second- or third generation members of the same ethnic group.

### *Other factors*

All studies adjust for socioeconomic factors, and some studies also present results on how these factors influence breastfeeding. The factors associated with lower rates of breastfeeding in the reviewed studies were:

**Table 4. Factors that affect breastfeeding adversely**

	Von Rossem	Wallby	Hawkins	Singh	Ludvigsson
Low income		6 and 12 months		x	
Small city/rural				x	
Single-parent				x	
Smoking		X	x	x	X
Low education				x	X
C-section		X			
Young age					X
Unemployment					X

Ludvigsson uses stepwise regression and finds that smoking, educational level of both parents, age of both parents and unemployed mother all decrease exclusive breastfeeding at 4 months.

## Division of participants

### *What is the reference group?*

The word “native” has been used rather loosely in this report, signifying the normal standard against which immigrants are compared. Wallby and Ludvigsson use Swedish-born mothers as the reference. Hawkins uses as reference the group of British/Irish women; second- and third-generation immigrants are classified into minority ethnic groups. Van Rossem follows the Dutch Standard Classification in assigning Dutch ethnicity to third-generation immigrants. Singh gives Black, White, Hispanic and other ethnic groups more or less equal status in the analysis of data.

These differences are part of the analysis methods, but they also influence the conclusions and can be seen in the different aims of the studies.

### *How should immigrant countries be grouped?*

Ludvigsson and Ludvigsson do not present data on different immigrant countries, which is understandable since immigration is not the main topic of their study. Wallby divides immigrant groups according to EU/North America, the Middle East and the different continents. In contrast to this, van Rossem defines two large and homogenous groups of immigrants; Mediterranean and Caribbean. Hawkins defines five ethnic groups: “Indian”, “Pakistani/Bangladesh”, “Black”, “other white” and “other”. Singh divides immigrants into the ethnic groups Hispanic, black, white, mixed, and other.

These divisions seem to be motivated by geography (Wallby, Van Rossem), race (Singh, Hawkins), and religion (Van Rossem, Hawkins). Singh discusses the need for further subdivision of the Hispanic and Asian ethnic groups, since the subgroups “are extremely heterogeneous in their socioeconomic, behavioral, and health characteristics”. None of the studies motivate their choice of immigrant groups by describing properties of the countries such as economy or breastfeeding rates.

Also, since all studies categorize immigrants in different ways, it is not possible to compare breastfeeding rates for women with a certain country of origin between studies.

## Culture

### *Immigrant culture affecting breastfeeding*

Although information on culture is not obtainable through the methods used in the reviewed studies, there are some remarks on this in their interpretation of the results. Van Rossem suggests that Islam and women's attitudes to breastfeeding in public could influence breastfeeding, but: "Qualitative studies are needed". Singh suggests that "the ethnic-immigrant differences may partly reflect cultural norms regarding breastfeeding practices that are prevalent in their countries of origin".

### *Acculturation*

Van Rossem, Hawkins and Singh use large parts of their studies to discuss differences between newly arrived and more acculturated members of ethnic groups. In Van Rossem and Hawkins, comparisons are made between immigrants and second-generation members of ethnic groups. In Singh, comparisons are made between foreign-born children, US-born children with two immigrant parents, US-born children with one immigrant parent and US-born children with two US-born parents. They all find that breastfeeding rates are lower in the more acculturated groups. Hawkins finds less clear differences when comparing families that speak English to families that speak another language, but finds less clear results. There is however an effect of years spent in the UK, such that immigrants that have stayed longer have lower rates of breastfeeding for at least 4 months. Wallby instead compares immigrants that have stayed in Sweden less than five years to other immigrants, and does not find a significant difference.

## Discussion

### *Result discussion*

There have been many studies on the effect of ethnicity and immigration on breastfeeding. One of the largest difficulties in interpreting the results is that immigrants are not a homogenous group. As van Rossem et al (2010) note in their introduction "breastfeeding patterns vary between ethnic minority groups and depend on the countries where specific ethnic groups lives." Every immigrant has his or her own history, and immigrant groups differ not only in culture and tradition, but also in education, employment, economy and social support. In addition, the new countries differ regarding healthcare, social benefits, and breastfeeding tradition. All included

studies selected a study population that should be representative for the whole country in question. Comparisons between countries are more difficult. The rates of breastfeeding duration and initiation are high in Sweden, low in the UK and the US with the Netherlands in between. Also, the immigrants in different countries come from different regions. The Mediterranean group in van Rossem consisted of mothers from Turkey and Morocco, which are both Moslem countries with middle HDI, and could therefore be comparable to the typical immigrant countries in Sweden. In Hawkins et al, 60% of the women from ethnic minority groups come from Pakistan, India or Bangladesh. In Singh et al, 47% of the mothers from ethnic minority groups were Hispanic. Still, some conclusions can be made.

All except one of the reviewed studies find that immigrant women breastfeed more than native mothers; at 12 months (Wallby & Hjern, 2009) or at all reported times (van Rossem, et al., 2010) (Singh, Kogan, & Dee, 2007) (Hawkins, Lamb, Cole, & Law, 2008). The fifth study (Ludvigsson & Ludvigsson, 2005) finds no significant differences. The absolute numbers are very different in the different studies; Sweden has a high rate of breastfeeding, UK and the US have low rates with the Netherlands in between. Also, breastfeeding differs between immigrants from different groups, with high rates among Hispanic immigrants in the US, Turkish and Moroccan immigrants in the Netherlands and African immigrants in Sweden. That breastfeeding rates during the first six months are similar between Swedish-born and foreign-born mothers in Sweden can probably be explained by the high rates of breastfeeding in Sweden. Also, a reasonable explanation for the high rates of breastfeeding among immigrants is the generally high rates of breastfeeding in the mother's country of origin (UNICEF, 2009).

The analysis also revealed some interesting differences between the studies. The non-Swedish studies treat immigration as a special case of ethnicity, and compare immigrants to second- and third-generation members of the same ethnic groups. Also, with the exception of Ludvigsson and Van Rossem, the different immigrant groups seem to be defined by tradition, and it is possible that another grouping of immigrant countries could give stronger differences. Instead of grouping immigrant countries according to race, religion or ethnicity, it would be interesting for future research to use a grouping based on HDI or a similar index. Alternatively, a grouping could be based on breastfeeding patterns in the country of origin

Ludvigsson and Van Rossem give data on exclusive breastfeeding, but the other studies used only partial breastfeeding for their analysis. This is unfortunate, since the recommendations are that children should be exclusively breastfed for six months. Also, as described earlier, several qualitative studies have described a positive attitude towards formula and early partial breastfeeding among immigrant women.

### Method discussion

This topic turned out to be far more complex than I had imagined before starting my project. In order to be able to finish it within given time limits, I had to restrict its scope. I first tried to limit myself to Swedish studies, but this turned out to be too restrictive since many studies were old or unpublished. Instead I constructed the very restrictive inclusion criteria used in this review.

There are probably some good studies that were not found by the searches I made. This is shown by the additional search on (“socioeconomic factors” AND Sweden), which found two Swedish studies which did not use immigrant as keyword or in the title. Since I chose to include these two studies, I should perhaps have performed a full search on (“socioeconomic factors” AND breastfeeding) but the results would have taken too long to go through.

By only allowing controlled studies, no qualitative studies were included. As mentioned in the background, qualitative studies have found important results on immigrant health beliefs. My choice to only include comparative studies was partly based on the fact that Wallby et al did not find any large differences in breastfeeding rates between immigrant and Swedish-born mothers, and it therefore seemed important to see if the difference only was true in the US.

After completing this project, I have found that “immigrant” is such a general concept that it often needs to be specialized further to be meaningful. Perhaps I should have abandoned the aim of describing immigrants in general, and instead have focused on one or a few immigrant groups, describing both background information and breastfeeding studies for immigrants from a few selected countries such as Somalia. I would also include non-controlled studies on these groups, allowing a synthesis of qualitative studies as well.

## Practical implications

Based on the results of this review, a Swedish Midwife could expect an immigrant mother to breastfeed at the same rate as a Swedish mother. Although immigrant mothers can have a difficult situation in many ways, it seems that the fact of being born in another country is in fact a positive influence on breastfeeding. A reservation is that exclusive breastfeeding rates have been little studied, and could possibly be lower in some immigrant groups.

## Implications for further research

There seems to be a need of further research on the rates of exclusive breastfeeding among immigrants. In order to obtain meaningful and comparable results, it would probably be most valuable to study a few important and homogenous immigrant groups, based on characteristics of the home countries. Also, while many international studies have compared breastfeeding between first- and second-generation mothers this seems not to have been done in Sweden.

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