

IMMIGRANT STATUS AS IMPORTANT DETERMINANT OF BREASTFEEDING PRACTICE IN SOUTHERN EUROPE

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SUMMARY

Aim: Breastfeeding is universally accepted as the optimal way to nourish infants. There is evidence that socio-demographic factors, including immigrant status, are related to infant feeding practices. The aim of the present study was to identify the factors which are associated with breastfeeding initiation and duration, with special focus on the role of immigrant status of the mother in breastfeeding practice. A sample of mothers giving birth and living in Athens, Greece, was investigated.

Methods: 428 mothers (438 infants) were recruited in the maternity ward of a Tertiary University Hospital, and were interviewed using a structured questionnaire. Monthly telephone interviews were subsequently conducted until the sixth postpartum month. Multivariate logistic regression models were used to quantify the association of socio-demographic parameters with breastfeeding initiation. Cox regression analysis was employed to assess related factors that might influence breastfeeding duration.

Results: Being an immigrant was positively associated with exclusive as well as partial breastfeeding initiation (OR 7.97, 95% CI 1.02–62.19). Immigrant mothers were also 0.35 times less likely (95% CI 0.21–0.58) to stop breastfeeding earlier, compared to the native ones. Several other factors were deemed important either for breastfeeding initiation or its duration but not for both aspects of breastfeeding practice.

Conclusion: Maternal immigrant status was found to be consistently associated with breastfeeding initiation and duration in this study sample. Health professionals, health policy makers and politicians should remain attuned to the cultural backgrounds which have created strong breastfeeding traditions, to further promote breastfeeding practice in Western countries.

Key words: lactation, breastfeeding, formula, duration, exclusive, mother, newborn, immigrant

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INTRODUCTION

Breastfeeding is universally accepted as the natural way to nourish and nurture infants (1–7). Exclusive breastfeeding is recommended for the first 6 months of life (2, 6, 7), thus breastfeeding promotion has become a public health priority (3). A number of international policies were endorsed by the World Health Organization and UNICEF, including the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding and the Baby-Friendly Hospital Initiative (8, 9).

However, opinions and recommendations about infant nutrition are influenced not only by scientific evidence, but also by socio-cultural factors, trends, marketing and advertisements of alternative feeding methods (10), and many mothers either choose not to breastfeed or shift to formula-feeding within days or weeks after childbirth (11).

Maternal immigrant status has been associated with breastfeeding practice (12), although different trends in infant feeding practices may be present, either in the same country or between countries with similar societal composition (i.e. USA vs. UK) (13, 14). Although migration is supposed to improve the lives of migrants, it also represents a process during which their access

to health services, including the quality obstetric care, may be suboptimal.

The aim of the present study was to identify the factors associated with breastfeeding initiation and duration, with special focus on the role of immigrant status of the mother in breastfeeding practice. A sample of mothers giving birth in the maternity ward of a Tertiary University Hospital in Athens, Greece, was investigated.

MATERIALS AND METHODS

Study Population

The study population comprised 428 mothers who had given birth to 438 live infants and were recruited in the maternity ward of a Tertiary University Hospital within a 10-month period (February to December 2009). The final sample size was primarily determined by time restrictions, since it was mandatory to complete the recruitment within the aforementioned time period. Hence, the study population included as many eligible mothers as possible (convenient sample).

The hospital where the recruitment took place provides gynaecological and maternity services to women residing in the Prefecture of Attica, Greece, and nationwide monitoring of high-risk pregnancies. During the recruitment period, women who had delivered a child and met the eligibility criteria (inhabitants of Greece and basic understanding of the Greek language) were approached by the first author after 24 hours from delivery (the average nationwide in-patient stay in the maternity ward is four days), and asked to participate in the study.

The study protocol was approved by the Ethics Committee of the University of Athens. All participants were asked to sign an informed consent form before being enrolled in the study.

Data Collection

At recruitment, baseline information about the immigrant status of the mother as well as other socio-demographic characteristics was collected through a structured baseline questionnaire, by means of a face-to-face interview. Data regarding medical and lactation-related parameters was also collected, as these factors typically influence breastfeeding practice. In detail, the baseline questionnaire consisted of 5 sections: a section related to the socio-demographic characteristics of the mother and father (12 items); a section of general information (3 items); a section related to the past medical/gynaecological history of the mother (2 items); a section associated with the gestation/childbirth of the newborn(s) (8 items); and a section associated with the lactation status of the newborn(s) (7 items). The questionnaire included both open-ended and closed questions. Baseline interviews usually lasted for about 30 minutes.

Information about breastfeeding duration as well as other modes of infant feeding, along with potentially related characteristics/factors, was subsequently collected through a structured follow-up questionnaire, by means of telephone interviews at the end of each month until the sixth month postpartum. The follow-up questionnaire collected information about changes related to socio-economic factors (4 items); topics related to the mother (7 items); issues pertaining to the newborn (5 items); and attitudes of health professionals (1 item). This questionnaire included closed-ended questions only. Interviews usually lasted for about 15 minutes.

Overall, there were 6 interview waves from March 2009 until May 2010, corresponding to the respective monthly periods after childbirth, and yielding a total of 1,665 maternal interviews. The total number of mothers in the first interview wave was 392 and the respective number of babies reached 400, attaining a response rate of 91.3%.

Definition of Infant Feeding

Three categories of infant feeding were defined; exclusive breastfeeding, formula feeding and partial breastfeeding. Exclusive breastfeeding was considered when an infant was receiving only breast milk (or expressed breast milk) and no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines. Formula feeding consisted of liquid food delivery to an infant from a bottle with a nipple/teat. Newborns receiving either combination of breast milk and formula or additional liquids such as tea, infusions and

oral rehydration salts were classified as belonging to the partial breastfeeding category (15).

The initiation of breastfeeding (exclusive or partial) was considered as positive, if the mother had answered that she was breastfeeding her newborn at the time when the interview took place. The continuation of breastfeeding (exclusive or partial) was considered as positive, if the mother had answered that she was breastfeeding her newborn at the time when the respective phone call was made.

Statistical Analysis

Descriptive statistics were initially estimated and the chi-squared test was used. Student's t-test for independent samples was specifically used to determine the association between body mass index (BMI) as well as maternal age and breastfeeding initiation (exclusive or partial, henceforth referred to as any). In the bivariate analysis, socio-demographic parameters, medical and lactation-related variables were associated with any breastfeeding initiation, on the basis of knowledge derived from the relevant literature. Multivariate logistic regression models were used in order to adjust for potential confounders, such as socio-demographic parameters, medical and lactation-related variables. In all analyses, breastfeeding initiation was compared with formula feeding.

Regarding the analysis of breastfeeding duration, the main variable of interest (exclusive or partial breastfeeding) is a quantitative variable with right censoring. To investigate primarily the effect of the immigrant status as well as other factors affecting breastfeeding duration, Cox proportional hazard models were used. Univariate models were initially run, and multivariate models subsequently employed to adjust for potential confounding. Covariates which had p -value < 0.1 in the univariate models were kept in the final multivariate model, along with a small set of covariates that was predetermined to be included in the model, on the basis of knowledge derived from the relevant literature. This set of covariates included maternal age, body mass index (BMI) and employment status.

All analyses were performed using the IBM SPSS Statistics 21.0. Statistical significance for two-sided comparisons was set at the 0.05 level.

RESULTS

Baseline characteristics of the study population are shown in Table 1, whilst baseline characteristics related to the infant and the maternity hospital practices are presented in Table 2.

The breastfeeding initiation rate was 92.1%, with 44.4% of babies in the maternity ward being exclusively breastfed. In addition, formula feeding was practiced in 7.9%, and any breastfeeding in 47.7% of newborns, respectively. The mean breastfeeding duration was 15.3 (± 8.6) weeks. The percentages of breastfeeding (either exclusive or partial) were 87.5%, 57.0% and 38.75% for the first, third and sixth postpartum month, respectively. Exclusive breastfeeding reached 43.5%, 34.0% and 24.5%, for the aforementioned monthly periods, respectively.

The most commonly reported problem during breastfeeding initiation was sore/traumatized nipples, while 65.0% of mothers did not encounter any problem during breastfeeding initiation. In

Table 1. Baseline socio-demographic and lifestyle characteristics of the 428 mothers recruited in the study

Baseline characteristics	Number
Maternal age	
Mean ^a	32.0 (SD = 4.7)
Pre-pregnancy BMI ^{b, c}	
< 18.5	25 (6.4%)
18.5–24.9	263 (67.0%)
25–29.9	74 (18.9%)
≥ 30	30 (7.7%)
Nationality	
Greek	304 (71.0%)
Immigrant	124 (29.0%)
University/College education ^d	
Mandatory/High school	166 (38.8%)
University/College	233 (54.4%)
Master degree	29 (6.8%)
Employment status ^d	
Employed	311 (73.4%)
Domestically occupied	87 (20.5%)
Unemployed	26 (6.1%)
Pre-pregnancy smoking	
Yes	132 (30.8%)
No	296 (69.2%)
Previous breastfeeding experience	
Yes	190 (44.5%)
No	23 (5.5%)
First-born child	215 (50.0%)

^ain years, ^bin kg/m², ^cmissing cases n = 36, ^dmissing cases n = 4

addition, 78.0% of the mothers choosing to use formula (alone or in combination with breast milk) believed that they could not produce enough milk during the first few days of lactation. The majority of mothers (48.6%) reported inadequate milk production as the primary reason of breastfeeding discontinuation. Medical reasons accounted for 17.8% of cases, among which only 4.2% were related to breast problems. Return to work was only mentioned by 4.2% of mothers.

Table 3 shows the results from the multivariate regression analysis regarding breastfeeding initiation. Maternal immigrant status was positively associated with any breastfeeding (OR 7.97, 95% CI 1.02–62.19). Any breastfeeding was also favourably affected by maternal information about breastfeeding (OR 6.92, 95% CI 2.53–18.89) and encouraging women to breastfeed (OR 5.42, 95% CI 1.90–15.50). On the other hand, hospital practices which adversely affected any breastfeeding initiation included caesarian section (OR 0.11, 95% CI 0.03–0.39), whilst rooming-in was positively associated with breastfeeding practice (OR 6.93, 95% CI 2.01–23.88).

Table 4 shows the results from the multivariate Cox proportional hazards analysis, investigating the factors which are associated with breastfeeding duration. The immigrant status of the mother was found to be associated with increased breastfeeding

Table 2. Infant related characteristics and maternity hospital practices at baseline

Characteristic	Number
Delivery mode	
Vaginal delivery	218 (49.0%)
Caesarean section	220 (51.0%)
Multiplicity	
Singletons	418 (95.4%)
Twins	20 (4.6%)
Prematurity (< 37 weeks)	
No	399 (91.0%)
Yes	39 (9.0%)
Low birth weight (< 2.5 kg)	
No	411 (94.0%)
Yes	27 (6.0%)
Newborn health problems ^a	
No	350 (80.5%)
Yes	86 (19.5%)
Rooming-in ^b	
No	228 (52.5%)
Yes	206 (47.5%)
Breastfeeding encouragement ^c	
No	43 (10.3%)
Yes	373 (89.7%)

^amissing cases n = 2, ^bmissing cases n = 4, ^cmissing cases n = 22

duration ($p < 0.001$). After adjusting for potential confounders, immigrant mothers were 0.35 times less likely (95% CI 0.21–0.58) to stop breastfeeding earlier compared to the native ones. Maternal smoking during lactation (HR 4.2, 95% CI 2.57–6.89) and psychological status (HR 1.72, 95% CI 1.23–2.41), along with the use of a pacifier (HR 2.08, 95% CI 1.40–3.08), were inversely associated with breastfeeding duration. In contrast, higher maternal educational level – university/college vs. mandatory/high-school graduates (HR 0.53, 95% CI 0.37–0.76) and Master's degree vs. mandatory/high-school graduates (HR 0.20, 95% CI 0.09–0.43) was associated with a lower risk of earlier breastfeeding cessation.

DISCUSSION

Although breastfeeding has always been considered an emphatic symbol of motherhood, today, it presents women with choices, desires, obligations, and constraints in the context of a modern Western society (16). On the other hand, migration to such societal environment is primarily driven by a desire to improve the life of women most commonly coming from developing countries.

In a sample of mothers who delivered their newborns in the maternity ward of a Tertiary University Hospital in Athens, Greece, we found evidence that the immigrant status of the mother is consistently related with both the initiation and duration of breastfeeding and as such, it appears to be the most important socio-demographic determinant of breastfeeding practice (Tables 3, 4).

Table 3. Adjusted odds ratios (OR) and 95% confidence intervals (95% CI) for specific medical, lactation-related and socio-demographic determinants of any breastfeeding

Variable	OR	95% CI	
		Lower	Upper
Maternal age ^w	1.02	0.93	1.11
Pre-pregnancy BMI ^w	1.04	0.94	1.15
Immigrant mother (R.C. Greek)	7.97	1.02	62.19
University/College education (mother) (R.C. High school graduate or lower)	2.00	0.67	5.96
Maternal employment (R.C. Unemployed/domestically occupied)	0.58	0.19	1.74
Mortgage/Rent payment (R.C. Home owner)	0.75	0.23	2.44
Lack of home support (R.C. Home support)	1.48	0.52	4.23
Regular smoking before pregnancy (R.C. Non-smoker before pregnancy)	0.72	0.26	2.01
Maternal health problems (R.C. Absence of maternal health problems)	1.40	0.50	3.90
Newborn health problems/Prematurity/Low birth weight (R.C. Absence of related problems)	0.41	0.14	1.16
Multiplicity (R.C. Singletons)	1.02	0.20	5.10
Multiparity (R.C. < 3 children)	0.53	0.12	2.30
Caesarean section (R.C. Vaginal delivery)	0.11	0.03	0.39
Breastfeeding experience (R.C. Previously inexperienced)	0.92	0.31	2.72
Breastfeeding information (R.C. Not receiving information)	6.92	2.53	18.89
Breastfeeding encouragement (R.C. Not encouraged to breastfeed)	5.42	1.90	15.50
Rooming-in (R.C. Rooming-in not practiced)	6.93	2.01	23.88

^wMaternal age and BMI are considered as continuous variables, R.C.: reference category, bold values indicate statistically significant results

Table 4. Adjusted hazard ratios and 95% confidence intervals for factors potentially affecting breastfeeding duration

Variable	HR	95% CI	
		Lower	Upper
Maternal age ^a	1.01	0.97	1.05
Pre-pregnancy BMI	1.01	0.97	1.05
Immigrant mother (R.C. Greek)	0.35	0.21	0.58
University/College education (mother) (R.C. High school graduate or lower)	0.53	0.37	0.76
Master's degree (mother) (R.C. High school graduate or lower)	0.20	0.09	0.43
Maternal employment (R.C. Unemployed/domestically occupied)	0.76	0.50	1.17
Regular smoking before pregnancy (R.C. Non-smoker before pregnancy)	0.49	0.20	1.22
Regular smoking during follow up (R.C. Non-smoker during follow up)	4.20	2.57	6.89
Maternal psychological problems (R.C. Absence of related problems)	1.72	1.23	2.41
Prematurity (R.C. Full-term baby)	1.65	0.93	2.93
Multiplicity (R.C. Singletons)	1.83	0.89	3.74
Breastfeeding experience (R.C. Previously inexperienced)	0.69	0.46	1.03
Breastfeeding encouragement (R.C. Not encouraged to breastfeed)	0.98	0.60	1.58
Pacifier introduction (R.C. No pacifier introduction)	2.08	1.40	3.08

^aper year, R.C.: reference category, bold values indicate statistically significant results

Several other factors deemed important for the initiation of breastfeeding practice, including informing and encouraging women to breastfeed, caesarian section and rooming-in. However, these parameters were not finally associated with its duration. In addition, factors which proved important for breastfeeding duration included maternal educational level, maternal smoking

after delivery and psychological status, and the use of a pacifier by the infant. None of these factors had been initially identified as significant for the initiation of breastfeeding.

Hence, despite the rise in the rates of breastfeeding initiation and duration in Western countries in the last two decades (17, 18), the parameters associated with breastfeeding practice as a

whole seem rather complex and multifaceted with regard to the interrelationship between breastfeeding initiation and its duration. Therefore, a closer look at the cultural backgrounds which have created strong breastfeeding traditions is warranted, for the observed progress in Western countries to be sustainable.

The effect of the maternal immigrant status on breastfeeding has been reported mainly in multi-culturally structured societies (i.e. US, UK) (13, 19), in which acculturation has been consistently associated with lower breastfeeding rates (14). However, the structural orientation of Southern European societies is not multi-cultural per se, and cultural norms regarding close family bonding and breastfeeding are considered prevalent.

Nonetheless, it should be noted that since the early 1990s, immigrants have become a regular part not only of the Greek society, but also of Southern European cultural structure. Indeed, the recorded percentage of immigrant population in the last Greek census was 8.4% (20), whereas 2010 data revealed that the non-EU born population reached 8.9% in Spain, 7.8% in France, 5.7% in Portugal, and 5.3% in Italy (21).

Adapted to the new reality, the percentage of immigrant mothers in the study sample of the first National Survey of Infant Feeding Practices in Greece had reached 14.5%, although the respective status was not found to be associated with breastfeeding initiation (22). In contrast, the duration of breastfeeding started to differ between native and immigrant mothers after the third postpartum month (22). The relatively high percentage of immigrant mothers in the present study (29%) can be considered reflective of the respective composition of the urban population in the Prefecture of Attica, along with the high attendance rate of immigrant women in Greek public maternity clinics.

With regard to breastfeeding initiation, it is possible that the observed association in the present study reflects the fact that immigrant mothers in Southern Europe come from families and communities, where breastfeeding is by far the predominant infant feeding method. Hence, their intent to breastfeed before the delivery of their baby, which is considered a reliable indicator of breastfeeding practice (23–25), is likely to be more positive. Indeed, available data from US studies indicate that foreign-born mothers have more than twice the intent to breastfeed (OR 2.23, 95% CI 1.22–4.43) compared to continental US-born women (26). Furthermore, in a cross-sectional study of 33,121 children aged 0–5, Singh et al. reported marked ethnic-nativity differentials in the odds of not initiating breastfeeding, even after controlling for the relevant covariates. Compared with the least acculturated group (immigrant Hispanic children with foreign-born parents), the odds of never breastfeeding for native children with native parents (presumably the most acculturated group) of Hispanic, white, black, and other ethnicities were 2.4, 2.9, 6.5 and 2.4 times higher, respectively (19).

Interestingly, De Amici et al. suggested that there may also be the biological/genetic basis for the observed differences in breastfeeding initiation between native and immigrant mothers in the Mediterranean area, resulting from the process of natural selection (27). This may have occurred because immigrant mothers might descent from populations who had suffered long-lasting adverse living conditions. Based on a prospective study of 269 women classified into 4 ethnic groups (Groups 1–3 non-Italians, Group 4 Italians), the authors reported that the ethnic background appeared to be not only an independent predictor of earlier lactogenesis, but

also of the overall amount of milk production. Hence, lactation occurred earlier and the milk output was significantly higher in the immigrant population, compared to the Italian population (27).

In the present study, the immigrant status of the mother was also significantly associated with increased breastfeeding duration. This finding has also been previously reported in multi-cultural societies, with each additional year of the US residency found responsible for a decrease in the odds of breastfeeding by 4% (28). Moreover, the ethnic-nativity differentials in breastfeeding duration in the study of Singh et al. were even greater than those observed for breastfeeding initiation (19). Indeed, compared with immigrant Hispanic children with foreign-born parents (least acculturated group), the odds of not breastfeeding at 6 months were 3.7, 3.6, 6.4 and 2.9 times higher for native children with native parents of Hispanic, white, black, and other ethnicities, respectively (19). In addition, ethnic Vietnamese women migrating to Australia (also multi-culturally structured) began to express a preference towards baby feeding practices which were influenced by the social, cultural and economic environment of the host country, thus demonstrating the negative effect of acculturation on breastfeeding (29).

It seems, however, that even in non-multi-cultural societies, such as the ones prevalent in Southern Europe, immigrant mothers tend to breastfeed their children longer, compared to native ones (HR 0.35, 95% CI 0.21–0.58), despite the practical and financial barriers which they often face. One can speculate that these mothers may come from extended families as opposed to the nuclear structure of the Western ones, or belong to communities in which the adaptation process to a more westernized lifestyle may not have yet begun. On the other hand, a mirror reading of the same result could simply indicate that immigrant mothers might not have been in position to afford the formula, hence they were trying to breastfeed as long as possible. Nevertheless, the ability to afford formula-feeding in the context of a Western society is thought to be inversely associated with the use of formula (30). In addition, more than half of the participants in the present study (and not just the immigrant mothers) reported a monthly net household income equal or lower than the least monthly expenditure of poor households in the year the study was conducted (data not shown). The respective percentage in the overall Greek population in the same year had reached 15.3% (31), which means in effect that more women in our study sample (irrespective of their immigrant status) belonged to the lower economic classes compared to the general population. Hence, an economic dimension in the observed association between maternal immigrant status and breastfeeding duration in the present study is not likely to have influenced our results.

Nonetheless, it is not unlikely that a contrast in racial/ethnic patterns of breastfeeding duration may be identified in future studies involving Southern European societies, similar to societies with multi-cultural backgrounds (13, 19). Such differences may necessitate very different public health approaches to positively affect the duration of breastfeeding.

CONCLUSION

Although the present study showed a pivotal role for maternal immigrant status in the process of breastfeeding, breastfeeding

practice seems rather complex and multifaceted. It is, therefore, essential that health professionals, health policy makers and politicians remain attuned to the factors which are associated with both the initiation and duration of breastfeeding, and create social, economic and cultural environments to promote breastfeeding practice.

Conflicts of Interests

None declared

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