



Socio-demographic Factors Affecting Initiation and Duration of Breastfeeding in a Culturally Diverse Area of North Eastern Greece

Eirini Tsanidou^{1,2}, Vasiliki Gougoula², Athanasios Tselebonis², Christos Kontogiorgis², Theodoros C. Constantinidis², Evangelia Nena²

¹ Department of Public Health, Region of East Macedonia-Thrace, Alexandroupolis, Greece

² Laboratory of Hygiene and Environmental Protection, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

Corresponding author: Evangelia Nena, Laboratory of Hygiene and Environmental Protection, Medical School, Democritus University of Thrace, University Campus, 6th Km Alexandroupolis- Makris, Dragana 68100, Alexandroupolis, Greece; E-mail: enena@med.duth.gr; Tel.: +302551030638

Received: 28 Mar 2018 ♦ **Accepted:** 09 Apr 2019 ♦ **Published:** 31 Dec 2019

Citation: Tsanidou E, Gougoula V, Tselebonis A, Kontogiorgis C, Constantinidis TC, Nena E. Socio-demographic factors affecting initiation and duration of breastfeeding in a culturally diverse area of North Eastern Greece. *Folia Med (Plovdiv)* 2019;61(4):566-71. doi: 10.3897/folmed.61.e47858.

Abstract

Background: Breastfeeding is not only important for the bond between the mother and the child but is also associated with many health benefits. Socio-demographic factors have been found to be important for the initiation and longer duration of breastfeeding.

Aim: To record the breastfeeding characteristics and to explore possible associations with socio-cultural and demographic factors in a culturally diverse area in Greece.

Materials and methods: A questionnaire including information about breastfeeding characteristics, medical history and demographics was completed by parents of children in the primary schools of the area.

Results: The study included 700 school-age children (352 boys), mean age 9.4±1.9 years. Breastfeeding was reported in 54.9% of them, with median (IQR) duration of 120 (range 60-360) days. Prevalence of breastfeeding was slightly higher in semi-urban areas, versus rural or urban settlements, but the duration there was significantly lower ($p<0.001$). Better educated mothers tended to initiate or sustain breastfeeding for a longer period; however, this difference was not statistically significant. Children of the native Muslim minority had been breastfed for a longer time (median duration 360 vs. 120 days, $p<0.001$), however, no difference was noted in prevalence.

Conclusion: Prevalence of breastfeeding in Greece is approximately 55%, similar to previous reports and along with duration is determined by certain socio-cultural factors.

Keywords

breastfeeding initiation, breastfeeding duration, Greece, socio-demographic factors

INTRODUCTION

Breast milk provides all the nutrients and substances that an infant needs during the first months of his/her life, while breastfeeding enhances the bond between a mother and her

infant/ child. Breastfeeding is also associated with many short- and long-term health benefits¹⁻³ as well as enhanced children growth and neurocognitive development^{4,5}.

Although breastfeeding has multiple health advantages both for the mother and the infant and despite the fact that

the World Health Association (WHO) recommends exclusive breastfeeding for the first six months with continued breastfeeding accompanied by appropriate food up to two years of age or beyond,⁶ the overall breastfeeding rates remain low, especially in Europe. More specifically, between 2006 and 2012, approximately only one quarter of infants in the WHO European Region was exclusively breastfed for the first six months, in comparison to 43% of infants in the WHO South-East Asia Region. More recent reports show that 13% of infants were exclusively breastfed during the first six months, although rates vary substantially across the European Region of WHO, which in fact has the lowest breastfeeding rates globally.⁷

The aim of the present study was to assess the prevalence of reported breastfeeding during infancy among schoolchildren in this area and to explore possible socio-demographic factors which act as either barriers or facilitators towards breastfeeding among their mothers.

MATERIALS AND METHODS

SETTING

The area of Evros is located in the North-Eastern part of Greece, next to the Turkish and Bulgarian borders, with an estimated population of more than 147,000 inhabitants. The area is characterized by cultural diversity, comprising both native-born Christians and Muslims living in different settings, i.e. urban, semi-urban or rural.⁸ According to OECD reports, the area to which it belongs (East Macedonia- Thrace) is the poorest region of Greece, with a GDP half of that recorded in Attica region, i.e. where Athens is located.⁹

PARTICIPANTS

All primary schools in the different settlements of Evros area, in NE Greece (i.e. urban, semi-urban, and rural) were included in the study. In every school, two classes were randomly selected and questionnaires were handed to the students. These had to be filled out by students' parents and be returned into a closed envelope provided by the research team. No exclusion criteria in distribution were applied, however, only questionnaires completed in full for the items regarding breastfeeding were included in the present analysis. Participation was encouraged by school teachers, but remained on a voluntary basis. Still, parents had to sign an attached consent form in which the scopes and the procedure of the study had been clearly explained. The study was approved by the Ethics Committee of our Institution and the Primary Education Board of the Evros Prefecture (Ministry of Education and Religious Affairs of Greece).

QUESTIONNAIRE

As part of a general research protocol on school children's general and oral health in the area, a questionnaire about children demographics and medical history was distribut-

ed. This comprised also questions about each child's breastfeeding history, namely duration. Additionally, parents' characteristics indicative of socio-economic status were included. More specifically, questions about the educational level of the mother [selection among: Primary Education (<6 years); Mandatory Education (9 years); Secondary Education (12 years); Higher Education (technical); Higher Education (University); Post-graduate Education (MSc, PhD)] and about father's occupation (open question filled by participants) were also recorded. Answers to these questions were gathered into larger groups: namely blue collar jobs (technicians, factory workers, unskilled workers, car mechanics plumbers, etc.), white collar jobs (public service, bank officers, teachers, etc.), armed forces jobs (army, police, coast guard, fire brigade, etc.).

STATISTICAL ANALYSIS

Descriptive statistics were used. Normality was checked with Kolmogorov Smirnov test and non-parametric analyses were applied when the distribution was skewed. For comparisons between proportions, the chi-square test (χ^2 test) was applied, while for comparisons of median values, the Kruskal-Wallis or the Mann Whitney test was applied. Statistical significance was set at $p < 0.05$ value. IBM SPSS 17.0 was used for statistical analysis. (SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.)

RESULTS

TOTAL SAMPLE

Out of the initially 817 collected questionnaires, included were 700 (85.7%). These had adequate data, while the rest 117 were partially answered or completely blank in the parts referring to general demographics or breastfeeding history and thus excluded.

In the final sample, the mean age of children was 9.4 ± 1.9 years, with an almost equal gender distribution (352 boys, 348 girls). The vast majority of participating children had been fully vaccinated according to the National Immunization Program (99.1%), based on data from their medical booklet, with 52% being vaccinated in a private practice and 48% in a public hospital or health center.

More than half of the participating children (54.9%) had been breastfed and the reported breastfeeding duration varied significantly: mean (\pm SD) duration was 184.5 (\pm 164) days, with median (IQR) duration at 120 (60-360) days.

SOCIO-DEMOGRAPHIC FACTORS AFFECTING INITIATION AND DURATION OF BREASTFEEDING

Place of residence, prevalence, and duration of breastfeeding
Breastfeeding duration varied significantly among different settings. The longest reported duration (720 days) was reported in rural areas, followed by 700 days in urban settings (cities), while in semi-urban settings (towns) the highest

Table 1. Breastfeeding prevalence and duration in different settlements of Evros region

Place of residence	Rural settlement	Semi-urban settlement	Urban settlement	p value
Number of participants	312	101	287	
Proportion of children who had been breastfed (%)	52.9%	63.4%	50.5%	0.051
Median [IQR (25-75)] duration (days)	180 (60-360)	90 (40-180)	180 (90-360)	<0.001
Mean \pm SD duration (days)	164.1 \pm 127.5	91.3 \pm 61.6	236.3 \pm 194.9	
Maximum reported duration (days)	720	240	700	

Table 2. Breastfeeding duration according to mothers' educational level

Educational level	Basic education (≤ 9 years)	High school level (10-12 years)	Higher education (>12 years)	p value
N	265	292	95	
Prevalence	56.2%	54.5%	64.2%	0.246
Duration of breastfeeding (days) Median [IQR (25-75)]	160 (60-360)	180 (60-360)	210 (105-360)	0.094
Duration of breastfeeding (days) Mean \pm SD	213 \pm 189	198 \pm 149	236 \pm 126	

Table 3. Comparison of breastfeeding duration between natively born Christian and natively born Muslim children

	Children of Christian religion	Children of Muslim religion (minority)	p value
N	614	76	
Prevalence	55%	52.6%	0.690
Duration of breastfeeding (days) Median [IQR (25-75)]	120 (60-262.5)	360 (127.5-690)	<0.001
Duration of breastfeeding (days) Mean \pm SD	163.4 \pm 137.7	366.25 \pm 241.2	

reported duration was only 240 days. As seen in **Table 1**, although breastfeeding was most commonly reported in semi-urban areas, this difference was not statistically significant and the duration in these areas was significantly lower (Kruskal-Wallis analysis: $p < 0.001$).

Educational level of the mother, prevalence, and duration of breastfeeding

Only a small proportion of mothers (14.5%) in our study sample attended University level or higher education (i.e. more than 12 years school attendance). The majority referred to high-school graduates (44.7%) followed by basic education graduates (40.6%). Due to the small number of certain subgroups, mentioned at the questionnaire, the level of education of the mother was divided into three larger subgroups: basic education (≤ 9 years); high school level education (10-12 years); higher education (>12 years). As shown in **Table 2**, high-school graduates reported the shortest duration and although prevalence and duration tend to be higher/ longer in better educated women these differences are not statistically significant.

Fathers' occupation and breastfeeding

As mentioned previously, answers regarding father's occupation were gathered into larger groups. Analyses in groups revealed that the highest duration was among children whose parents worked in armed forces (median 360 days, IQR 157.5-360 days). The lowest duration was reported in children with fathers in blue collar professions (median 120 days, IQR 40-240 days). Further analysis with specific occupations revealed that the highest breastfeeding duration was reported in children of sailors (median 360 days, IQR 210-360 days).

Minority children and prevalence and duration of breastfeeding

Minority children of the native Muslim religion living in the area comprised 15.8% of our study sample. No difference in terms between them and native Christian children was observed in birth weight, as recorded in the medical booklet (3192.1 \pm 755.6 grams and 3308.7 \pm 373.1 grams,

$p=0.408$), in gender distribution (50% boys vs. 50.2%, respectively), or in age during study (9.8 ± 2.3 vs. 9.3 ± 1.8 years, $p=0.130$) Muslim mothers, had breastfed their children for a significantly longer period (median 360 days vs. 120 days, $p<0.001$), however, prevalence did not differ between these two groups (Table 3).

DISCUSSION

Our study in a representative sample of a culturally diverse area, located in NE Greece, has shown that different socio-cultural factors are associated with the initiation of breastfeeding as well as its duration. It is estimated that 54.9% of children in the area had been breastfed, with breastfeeding duration in the urban settlements (i.e. the three cities of the region) being relatively higher than that of semi-urban settings.

It has been reported that women's breastfeeding decisions can be determined by several factors, such as breastfeeding intention, breastfeeding self-efficacy and social support.¹⁰ In fact, encouragement from the societal environment is associated with longer duration of breastfeeding.¹¹ The economic status of each family, the residence and other social factors, such as cultural influences, can also have an impact on breastfeeding initiation and duration.^{12,13}

Previous studies from Greece, demonstrated that different factors can influence a mother's decision to breastfeed such as her BMI, the rate of information and encouragement by midwives, the mode of childbirth, the educational level and the immigrant status.^{14,15}

Although it has been previously reported that there is a relationship between the education level of the parents and breastfeeding duration,¹⁶ in our study sample duration was not affected by the educational level of the mother, although prevalence tended to be higher among better educated women and duration shorter among high-school graduates. According to the results of a previously published study, the educational level of the mother did not affect her breastfeeding habits and the duration of breastfeeding. Indeed, in a long term analysis of 666 women, changes did not occur at the same direction among subgroups of women with different levels of education, for example in women with primary education a constant decrease was observed, while in women of higher education an increase was recorded.¹²

The occupation of the mother is also an important factor that has to be taken into consideration. Time off work after labor enhances the breastfeeding potential but this time usually varies depending on the occupation characteristics. Still, breastfeed initiation always is not always affected by the occupation, as an older study has shown.¹⁷ However, in the same study it was shown that it may be more difficult for low-income women and women working in administrative and manual occupations to breastfeed. A potential explanation is either that their work facilities do not support breastfeeding¹⁸ or they are not provided with extra breaks during working-time in order to extract breast milk.¹⁹

A previous study conducted 14 years ago in Greece reported that 55% of children had been breastfed.²⁰ This means that despite the goals set by WHO⁶ and the increasing awareness of all the advantages of breastfeeding for the mother and the child, no remarkable improvement has been made in the last decade. In contrast to other studies conducted previously in rural areas in which breastfeeding was never initiated or was characterized by small duration,^{21,22} in our study population breastfeeding duration in the rural settlements of Evros region was relatively higher than that of semi-urban settings; however the duration was not as long as that reported in urban settlements. Additionally, and despite the noted difference in duration, the decision to initiate breastfeeding was not affected by the place of residence. In addition, the study highlights the effects of different socio-demographic factors that seem to determine the decision to initiate and sustain breastfeeding for a longer time. A major strength of the study is that it was conducted in an area characterized by cultural diversity, comprising different kinds of settlements and population of various educational and occupational backgrounds, enabling us to draw conclusions on the effect of different parameters.

A certain limitation in the present study is its retrospective design, making it vulnerable to recall bias, concerning also information about the health status of the mother and child at the time of birth, and the fact that analyses were performed in a descriptive manner, using univariate analysis techniques, with no adjustment for population density and income. In addition, data on parity and breastfeeding characteristics of siblings were not included. On the other hand, as mentioned previously, it comprises a large, representative sample of the Thrace population, with children of all socio-cultural groups living in different settings, facts that make the results easily extrapolated to other culturally diverse regions.

In conclusion, and despite the recommendations by WHO, the estimated prevalence of breastfeeding in Greece remained longitudinally the same. The fact that even lower prevalence is recorded among women of medium level education, who live in semi-urban settlements indicates a target-group for future interventions.

ACKNOWLEDGEMENTS

The authors would like to thank Lazaros Charalambidis, Evlambia Karavangeli and Elli Papadopoulou, students at the Medical School of Democritus University of Thrace for their contribution to the registration of the data.

REFERENCES

1. Chowdhury R, Sinha B, Sankar MJ, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatr* 2015; 104(467): 96-113.
2. Binns C, Lee M, Low WY. The long-term public health benefits of breastfeeding. *Asia Pac J Public Health* 2016; 28(1): 7-14.

3. Ip S, Chung M, Raman G, et al. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess (Full Rep)* 2007; (153): 1-186.
4. Habibzadeh H, Jafarizadeh H, Didarlo A. Determinants of failure to thrive (FTT) among infants aged 6-24 months: a case-control study. *J Prev Med Hyg* 2015; 56(4): E180-6.
5. Victora CG, Horta BL, Loret de Mola C, et al. Association between breastfeeding and intelligence, educational attainment, and income at 30 years of age: a prospective birth cohort study from Brazil. *Lancet Glob Health* 2015; 3(4): e199-205.
6. World Health Organization. *Infant and young child feeding. Model chapter for textbooks for medical students and allied health professionals*. Geneva: World Health Organization; 2009.
7. World Health Organization - Regional Office for Europe. WHO European Region has lowest global breastfeeding rates. Available from: <http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/news/news/2015/08/who-european-region-has-lowest-global-breastfeeding-rates>. Last accessed: 10th December 2018.
8. Nikolaidis C, Nena E, Agorastakis M, et al. Differences in survival and cause-specific mortality in a culturally diverse Greek population, 1999-2008. *J Public Health (Oxf)* 2016; 38(1): 71-5.
9. Organization for Economic Cooperation and Development (OECD). *Regions and cities at a glance 2018 - Greece*. Available from: <http://www.oecd.org/cfe/GREECE-Regions-and-Cities-2018.pdf>. Last accessed: 10th December 2018.
10. Meedy S, Fahy K, Kable A. Factors that positively influence breastfeeding duration to 6 months: a literature review. *Women Birth* 2010; 23(4): 135-45.
11. Bellu R, Condo M. Breastfeeding promotion: evidence and problems. *Pediatr Med Chir* 2017; 39(2): 156.
12. Singh GK, Kogan MD, Dee DL. Nativity/immigrant status, race/ethnicity, and socioeconomic determinants of breastfeeding initiation and duration in the United States, 2003. *Pediatrics* 2007; 119 (Suppl 1): S38-46.
13. Kannan S, Carruth BR, Skinner J. Cultural influences on infant feeding beliefs of mothers. *J Am Diet Assoc* 1999; 99(1): 88-90.
14. Tavoulari EF, Benetou V, Vlastarakos PV, et al. Factors affecting breast-feeding initiation in Greece: What is important? *Midwifery* 2015; 31(2): 323-31.
15. Tavoulari EF, Benetou V, Vlastarakos PV, et al. Factors affecting breastfeeding duration in Greece: What is important? *World J Clin Pediatr* 2016; 5(3): 349-57.
16. Colodro-Conde L, Sánchez-Romera JF, Tornero-Gómez MJ, et al. Relationship between level of education and breastfeeding duration depends on social context: breastfeeding trends over a 40-year period in Spain. *J Hum Lact* 2011; 27(3): 272-8.
17. Kimbro RT. On-the-job moms: work and breastfeeding initiation and duration for a sample of low-income women. *Matern Child Health J* 2006; 10(1): 19-26.
18. Nkrumah J. Maternal work and exclusive breastfeeding practice: a community based cross-sectional study in Efutu Municipal, Ghana. *Int Breastfeed J* 2017; 12: 10.
19. Jantzer AM, Anderson J, Kuehl RA. Breastfeeding support in the workplace: the relationships among breastfeeding support, work-life balance, and job satisfaction. *J Hum Lact* 2018; 34(2): 379-85.
20. Theofiliogiannakou M, Skouroliakou M, Gounaris A, et al. Breast-feeding in Athens, Greece: factors associated with its initiation and duration. *J Pediatr Gastroenterol Nutr* 2006; 43(3): 379-84.
21. Wang JM, Li N, Xie SN, et al. Duration of breastfeeding and its relevant influencing factors on under 2-year-olds in rural areas of 10 provinces in China. *Zhonghua Liu Xing Bing Xue Za Zhi* 2013; 34(7): 682-5.
22. Lynch S, Bethel J, Chowdhury N, et al. Rural and urban breastfeeding initiation trends in low-income women in North Carolina from 2003 to 2007. *J Hum Lact* 2012; 28(2): 226-32.

Социально-демографические факторы, влияющие на начало и продолжительность грудного вскармливания в культурно разнообразной области северо-восточной Греции

Ейрини Цаниду^{1,2}, Василики Гугула², Атанасиос Целебонис², Кристос Контогиоргис², Теодорос К. Константинидис², Евангелия Нена²

¹Кафедра общественного здравоохранения, Область Восточная Македония и Фракия, Александруполис, Греция

²Лаборатория гигиены и защиты окружающей среды, Факультет медицины, Университет Фракии им. Демокрита Александруполис, Греция

Адрес для корреспонденции: Евангелия Нена, Лаборатория гигиены и защиты окружающей среды, Факультет медицины, Университет Фракии им. Демокрита, Университетский кампус, 6-ой км. Александруполис - Макри, Драгана 68100, Александруполис, Греция; E-mail: enena@med.duth.gr; Тел: +302551030638

Дата получения: 28 марта 2018 ♦ **Дата приемки:** 09 апреля 2019 ♦ **Дата публикации:** 31 декабря 2019

Образец цитирования: Tsanidou E, Gougoula V, Tselebonis A, Kontogiorgis C, Constantinidis TC, Nena E. Socio-demographic factors affecting initiation and duration of breastfeeding in a culturally diverse area of North Eastern Greece. Folia Med (Plovdiv) 2019;61(4):566-71. doi: 10.3897/folmed.61.e47858.

Абстракт

Введение: Грудное вскармливание является важным фактором не только для продолжения связи между матерью и ребёнком, но также имеет много преимуществ для здоровья. Было установлено, что социально-демографические факторы важны для начала и продолжительности грудного вскармливания.

Цель: Выявить характеристики грудного вскармливания и исследовать возможные связи с социокультурными и демографическими факторами в рамках одной культурно разнообразной области Греции.

Материал и методы: Родители детей из начальных школ в этой области заполнили анкету, включающую информацию о характеристиках грудного вскармливания, истории болезни и демографических данных.

Результаты: В исследование было включено 700 детей школьного возраста (352 мальчика) со средним возрастом $9,4 \pm 1,9$. Из них количество детей на грудном вскармливании составило 54,9% с усреднённой (межквартильный интервал IQR) продолжительностью 120 (диапазон от 60 до 360) дней. Частота грудного вскармливания были немного выше в пригородных районах по сравнению с сельскими или городскими поселениями, но их продолжительность была значительно ниже ($p < 0,001$). Матери с более высоким уровнем образования начали или продолжали кормить грудью в течение более длительного периода, но эта разница не была статистически значимой. Детей из местного мусульманского меньшинства дольше кормили грудью (усреднённая продолжительность 360 против 120 дней, $p < 0,001$), но статистически значимой разницы не было.

Выводы: Частота грудного вскармливания в Греции составляет приблизительно 55%, как показывают предыдущие доклады, и наряду с его продолжительностью определяется определёнными социально-демографическими факторами.

Ключевые слова

начало грудного вскармливания, продолжительность грудного вскармливания, социально-демографические факторы, Греция