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ORIGINAL PAPER

Sociodemographic determinants for initiation and duration of breastfeeding – Polish Mother and Child Cohort Study

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ABSTRACT

Introduction: Nowadays special attention is paid to sociodemographic determinants for initiation and duration of breastfeeding.

Aim of the study: The objective of this study was to evaluate the association of sociodemographic determinants and initiation and duration of breastfeeding based on the Polish Mother and Child Cohort Study.

Material and methods: The current analysis, taking into account the availability of data, was restricted to 539 mother-child pairs. In the analysis the impact of sociodemographic factors on initiation and duration of breastfeeding were evaluated.

Results: Initiation of breastfeeding correlated positively with maternal level of education (rho = 0.13), and a negatively with the maternal late pregnancy body mass index (rho = –0.15), maternal smoking status during the first year after delivery (rho = –0.09) and type of delivery (rho = –0.10); $p < 0.05$. Continuation of initiated breastfeeding correlated positively with maternal age delivery (rho = 0.18), maternal level of education (rho = 0.17), paternal level of education (rho = 0.15), marital status (rho = 0.22), while a negative correlation was seen with maternal smoking status during the first year after delivery (rho = –0.19); $p < 0.05$.

Conclusions: Breastfeeding friendly policy practiced in hospitals should be brought in to effect. Also need to educate mothers about healthy lifestyle, weight reduction after childbirth and anti-smoking activities.

KEY WORDS:

breastfeeding, socio-demographic factors, mothers.

INTRODUCTION

The American Academy of Pediatrics and the World Health Organisation (WHO) recommend exclusive breastfeeding for the first six months of life [1]. Many mothers find it difficult to meet personal goals and follow expert recommendations for initiation and continued breastfeeding. A lot studies have revealed varied sociodemographic, psychosocial, and biomedical determinants for initiation and duration of breastfeeding [2]. According to the latest data from the Lactating Science Centre contained in the 2015 report entitled "Breastfeeding in Poland", 98% of mothers initiate breastfeeding, but after two weeks only 52% of them continue that practices. After six months 42%, after nine months 17%, and after 12 months only 11.9% women continue breastfeeding [3]. Various factors affect

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the length of breastfeeding, among others: the mother's education, the amount of family income, support from the family, and time of the first feeding. Also, studies show that mothers who breastfeed have a higher score of quality of life [4] Breastfeeding has a positive influence on maternity. The mothers are calmer, more patient, and more sensitive to their children. Women tolerate motherhood better and feel more joy and satisfaction. Breastfeeding also creates a bond between the mother and the child [5].

It has been shown that exclusive breastfeeding provides greater protection of children against infection of the lower respiratory tract, diarrhoea, atopic dermatitis, and obesity in children and is correlated with improved cognitive neurodevelopment [6–10].

The literature suggests that predictors of breastfeeding may be different in various parts of the world. Understanding the factors associated with breastfeeding can help to promote it.

The aim of our study was to evaluate whether sociodemographic variables are associated with initiation and duration of breastfeeding.

MATERIAL AND METHODS

STUDY DESIGN AND POPULATION

The present study was part of the Polish Mother and Child Cohort (REPRO PL), a multicentre prospective cohort study conducted in different regions of Poland looking into environmental factors contributing to pregnancy outcomes, children's health, and neurodevelopment that had been recruited within a four-year period (2007–2011). The REPRO PL cohort is carried out in cooperation with the Norwegian Institute of Public Health (NIPH) – the main coordinator of the MoBA cohort. The study was approved by the Ethical Committee of the Nofer Institute of Occupational Medicine, Lodz, Poland (Decisions No. 7/2007 and 3/2008). All study participants are informed about the aims and procedures of the study. Informed consent was obtained from all participants included in the study. Women were recruited during the first trimester of pregnancy at maternity units in selected regions of Poland; they fulfilled the following inclusion criteria: single pregnancy up to 12 weeks of gestation, no assisted conception, no pregnancy complications, and no chronic diseases, as specified in the study protocol. Questionnaires were collected during pregnancy (weeks: 8–12, 20–24, and 30–34) and at birth (within the first week, and one and two years after birth). The questionnaires covered sociodemographic data, medical and reproductive history, and information about environmental, lifestyle, and occupational factors. The current analysis, taking into account the availability of data, was restricted to 539 mother-child pairs. The study procedures have been described in detail elsewhere [11, 12].

STATISTICAL ANALYSIS

Initiation of breastfeeding was expressed as a dichotomous yes/no variable, whereas continuation of breastfeeding was expressed as a continuous variable – the length of initiated breastfeeding. All the categorical variables were described as absolute and relative frequencies, whereas continuous variables were expressed as mean and standard deviation (SD), if not stated otherwise. The following variables were examined for association with initiation of breastfeeding and continuation of initiated breastfeeding: maternal age at delivery, maternal weight gain over pregnancy, maternal late pregnancy body mass index (BMI), maternal and paternal level of education, marital status, socioeconomic status, maternal smoking status during the first year after delivery, child birthweight, gender of the child, type of delivery, gestational age, and child urinary cotinine level at one year of age. The associations were assessed using Spearman's rho correlation coefficients. Each Spearman's coefficient for the association of a given variable with initiation of breastfeeding was compared with that of continuation of initiated breastfeeding. The Spearman's coefficients were treated as though they were Pearson's coefficients and using the standard Fisher's z-transformation with subsequent comparison. The false discovery rate (FDR) for all the associations was controlled at the level of 0.05 with the Benjamini-Hochberg correction for testing multiple hypotheses. A P-value lower than 0.05 was considered statistically significant. Cases with missing data were excluded from the analysis. The analysis was performed using Statistica 12.5 Software (StatSoft, Tulsa, OK, USA).

RESULTS

DESCRIPTIVE ANALYSIS

Parental and child characteristics are presented in Table 1. The mean maternal age at delivery was 28.9 (±4.4) years, maternal weight gain during pregnancy was 12.4 kg (±4.7) and maternal late pregnancy body mass index was 26.9 (±3.9). Most of the mothers (62.8%) and 40.3% of the fathers had a university degree. Thirty-three per cent of the mothers and 55% of the fathers had a secondary degree. Approximately 4% of the mothers and 5% of the fathers had a primary degree. A high proportion of the women were married (75.0%). About 70% of parents had a medium socioeconomic status, while about 11% of the mothers had a low socioeconomic status, and 19.4% of the mothers had high socioeconomic status. Eighty-three per cent of the mother did not smoke during the first year after delivery. About 46% of the mothers breastfed for more than six months, while about 26% of the mothers breastfed for less than three months, and 17% of the mothers breastfed from three months to six months. On average, the children were born at the 39th week of

TABLE 1. Sociodemographic characteristics of parents and children. $N < 539$ indicates missing data for some cases

Variable	Mean (SD) or *n* (frequency)
Parents	
Maternal age at delivery [years] ($N = 539$)	28.9 (4.4)
Maternal weight gain over pregnancy [kg] ($N = 477$)	12.4 (4.7)
Maternal late pregnancy body mass index [kg/m^2] ($N = 478$)	26.9 (3.9)
Maternal level of education ($N = 538$)	
Primary/Vocational	21 (3.9%)
Secondary	179 (33.3%)
University	338 (62.8%)
Paternal level of education ($N = 529$)	
Primary/Vocational	24 (4.5%)
Secondary	292 (55.2%)
University	213 (40.3%)
Marital status ($N = 535$)	
Unmarried	134 (25.0%)
Married	401 (75.0%)
Socioeconomic status ($N = 532$)	
Low	57 (10.7%)
Medium	372 (69.9%)
High	103 (19.4%)
Breastfeeding [months] ($N = 501$)	
0	52 (10.4%)
≤ 3	133 (26.5%)
> 3 and ≤ 6	85 (17.0%)
> 6	231 (46.1%)
Children	
Birthweight [kg] ($N = 517$)	3.34 (0.48)
Gender of the child ($N = 539$)	
Boy	255 (47.3%)
Girl	284 (52.7%)
Type of delivery ($N = 486$)	
Caesarean	177 (36.4%)
Vaginal	309 (63.6%)
Gestational age [weeks] ($N = 539$)	39.2 (1.4)
Child urinary cotinine level at one year of age ($N = 219$)	6.6 (9.8) Median: 3.1 25th–75th percentile: 1.2–8.0
Breastfeeding	
Initiation of breastfeeding ($N = 539$)	
Yes	482 (89.4%)
No	57 (10.6%)
Length of initiated breastfeeding [months] ($N = 482$)	7.2 (4.6)

gestation, with the mean birth weight was 3.33 kg. About 53% of the children were girls. The mean child urinary cotinine level at one year of age was 6.6 (±9.8). About 90% of the mothers initiated breastfeeding. The mean length of initiated breastfeeding was 7.2 (±4.6) months.

INFERENTIAL ANALYSIS

Table 2 shows the association between sociodemographic variables and initiation of breastfeeding and continuation of initiated breastfeeding. Initiation of breastfeeding correlated positively with maternal level of education (rho = 0.13), and negatively with the maternal late pregnancy body mass index (rho = –0.15), maternal smoking status during the first year after delivery (rho = –0.09) and type of delivery (rho = –0.10); $p < 0.05$. The other sociodemographic factors, namely maternal age at delivery, maternal weight gain during pregnancy, paternal level of education, marital status, socioeconomic status, birthweight, gender of the child, gestational age, and the child's urinary cotinine level at one year of age, were not associated with initiation of breastfeeding. Continuation of initiated breastfeeding correlated positively with maternal age at delivery (rho = 0.18), maternal level of education (rho = 0.19), paternal level of education (rho = 0.15), and marital status (rho = 0.22), while a negative correlation was seen with maternal smoking status during the first year after delivery (rho = –0.19); $p < 0.05$. The other sociodemographic factors, namely maternal weight gain during pregnancy, maternal late pregnancy body mass index, socioeconomic status, birthweight, gender of the child, type of delivery, gestational age, and the child's urinary cotinine level at one year of age, were not associated with continuation of initiated breastfeeding.

DISCUSSION

Many studies have focused on the factors associated with successful initiation of breastfeeding. For successful breastfeeding it is very important for mothers to establish the intention to breastfeed during the antepartum and perinatal period [13–15]. In the United States older maternal age, higher education, and more breastfeeding experience are positively associated with intention of breastfeeding [13]. This study showed a high percentage of mothers who initiated breastfeeding, at 89.4%. Another study has shown a high proportion of Chinese Malaysian women who intend to breastfeed, but more than 70% did not achieve their primary intention to breastfeed after childbirth [14]. Riva et al. showed that a mother having been breastfed herself, nursing guidance in the maternity ward, and higher social class were significant predictors of initiation of breastfeeding[16]. In Britain older, more highly educated, non-smoking women were more likely to initiate breastfeeding [17]. In our study, initiation of breastfeeding correlated positively with maternal level

TABLE 2. The association of variables with initiation of breastfeeding and continuation of initiated breastfeeding

Variable	Initiation of breastfeeding (yes = 1, no = 0)		Continuation of initiated breastfeeding		Comparison of Spearman's correlation coefficients	
	Spearman's rho	*p*-value	Spearman's rho	*p*-value	*Z*	*p*-value
Maternal age at delivery	–0.00	0.9490	**0.18**	**0.0001**	**–2.99**	**0.0028**
Maternal weight gain over pregnancy	–0.09	0.0578	-0.05	0.3432	–0.62	0.5353
Maternal late pregnancy body mass index	**–0.15**	**0.0012**	-0.04	0.3626	–1.57	0.1164
Maternal level of education	**0.13**	**0.0026**	**0.17**	**0.0002**	–0.63	0.5287
Paternal level of education	0.06	0.1616	**0.15**	**0.0010**	–1.44	0.1499
Marital status (married = 1, unmarried = 0)	–0.00	0.9932	**0.22**	**< 0.0001**	**–3.51**	**0.0004**
Socioeconomic status	–0.02	0.6953	0.04	0.3535	–0.94	0.3472
Maternal smoking status during the first year after delivery (yes = 1, no = 0)	**–0.09**	**0.0467**	**–0.19**	**< 0.0001**	1.6	0.1096
Birthweight	0.01	0.8156	0.09	0.0521	–1.25	0.2113
Gender of the child (boy = 1, girl = 0)	0.02	0.5820	0.03	0.5493	–0.06	0.9522
Type of delivery (caesarean = 1, vaginal = 0)	**–0.10**	**0.0251**	–0.06	0.2130	–0.64	0.5222
Gestational age	0.04	0.4004	0.07	0.1142	–0.57	0.5687
Child urinary cotinine level at one year of age	0.00	0.9804	–0.11	0.1086	1.18	0.2380

Benjamini-Hochberg corrected significance levels (false discovery rate = 0.05) for initiation of breastfeeding, continuation of initiated breastfeeding and comparison of Spearman's correlation coefficients are 0.0077, 0.0192 and 0.0077, respectively. Significant associations are marked in bold.

of education, and a negative correlation was seen with the maternal late pregnancy body mass index, maternal smoking status during the first year after delivery and type of delivery. Another study presented that parents with a high level of education were less likely to exclusively breastfeed in comparison with less educated parents [18]. Also, in our study initiation of breastfeeding showed a negative correlation with the maternal late pregnancy body mass index. There are possible reasons for this finding. Mothers who are concerned with image may be more motivated to initiate breastfeeding. In another study, significant breastfeeding differences were observed based on maternal BMI. Mothers with BMI greater than 25, who described their infants as vigorous breastfeeders, were less likely to exclusively directly breastfeed [19]. Other studies found an association between higher BMI categories and failure to initiate breastfeeding [20, 21]. In our study initiation of breastfeeding correlated negatively with the type of delivery. Mothers who have caesarean delivery decide to breastfeed less often.

Continuation of initiated breastfeeding in our cohort correlated positively with maternal age delivery, maternal level of education, paternal level of education, and marital status, and negatively with maternal smoking status during the first year after delivery. Siah & Yadav [22]. showed that older mothers have a significant correlation with breastfeeding, with longer duration. In contrast to our study, Tan [23] and El-Gilany *et al.* [24] found that breastfeeding was more common among mothers with low education. One study noted that smoking relapse inhibits breast-feeding [25]. In another study, most women who stopped smoking during pregnancy began to breastfeed, and smoking did not influence the decision to breastfeed [26].

In conclusion, the breastfeeding-friendly policy practiced in hospitals should be brought in to effect. It is necessary to implement an advertising campaign similar to the infant formula campaign to promote practices of breastfeeding. Also, there is a need to educate mothers about healthy lifestyle, weight reduction after childbirth, and anti-smoking activities.

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DISCLOSURE

The authors declare no conflict of interest.

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