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ANALYSIS OF FACTORS INFLUENCING INITIATION AND CONTINUATION OF BREASTFEEDING IN A GROUP OF POLISH MOTHERS

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Abstract: Recommendations for healthy infant nutrition emphasise exclusive breastfeeding during the first 6 months of an infant's life. The report "Breastfeeding in Poland" showed that 98% of newborns were fed with their mother's milk in the first days of life. Unfortunately, later on, the percentage decreased significantly to as low as 46% in the 6th week of the infant's life.

The study was aimed at identifying factors which favoured the commencement and continuation of breastfeeding in a selected group of women. The survey was conducted in 2017–2022. The data were acquired during face-to-face interviews and by sharing a relevant questionnaire on social media. Complete data sets were obtained from 754 women with children aged 0.5–3 years. The study found 98% of the women to have made an attempt to breastfeed their babies. The factors conducive to breastfeeding were: the mother's age of >19 years, having older children, and natural childbirth at term. On the other hand, the factors conducive to the continuation of breastfeeding in the sixth month of a child's life were: the mother's age of >26 years, a good financial situation, the mother's poorer education, having older children, natural childbirth at term, breastfeeding starting no later than the first day after birth, and lactation guidance. In the study group, lactation counselling resulted in breastfeeding being continued throughout the first six months of a child's life. The counselling should especially target women who are younger (<26 years), better educated, experiencing a poor financial situation, giving birth to their first child, and delivering prematurely by caesarean section.

Key words: breastfeeding, breastfeeding duration, socio-demographic factors, perinatal factors

INTRODUCTION

Proper nutrition at the first stage of life, whereby the infant is provided with the necessary energy and nutrients, is essential for the physical and cognitive development of a child. Nutrition during that time also plays a role in metabolic, nutritional, and health programming [1]. Exclusive breastfeeding for the first 6 months of life is considered the "gold standard" for infant and young child feeding, and breastfeeding continuation for as long as desired by the mother and child is regarded as the best option [2, 3, 4]. Breastfeeding is beneficial for the health of both the child and the mother. The benefits of breastfeeding for the child include a reduced risk of gastrointestinal and respiratory tract infections, middle ear inflammation until the age of 2 [5], a lower risk of malocclusion [6], and potentially a lower risk of obesity and type 2 diabetes; a better intellectual development has also been listed

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among the benefits [7, 8]. Research also indicates a lower incidence or milder course of bacterial meningitis, sepsis, urinary tract infections, and necrotising enterocolitis in breastfed infants [9]. Moreover, a probability of reduced risk of sudden infant death syndrome [10], type 1 diabetes [11], lymphoma, leukaemia [12], and allergic diseases [13] has been referred to as well. In the Netherlands, exclusive breastfeeding of all children for at least 6 months, should it be applied, has been estimated to have the potential of preventing 50, 20, 47, and about 10% of gastrointestinal and ear infections, Crohn's disease cases, leukaemia, and obesity, respectively, compared to a situation when only 35% of infants are still breastfed at 6 months of age [14]. The benefits of breastfeeding for the mother include a decreased risk of postpartum bleeding [15], a faster uterine involution, a quicker return to pre-pregnancy weight, increased bone remineralisation [16], and a decreased risk of ovarian and breast cancer post-menopause [17, 18]. Health benefits result not only from exclusive breastfeeding, but are also derived from partial breastfeeding [19]. Therefore, promoting breastfeeding as well as protecting and supporting breastfeeding mothers are among the most effective strategies for improving public health worldwide [20].

Research indicates that, during pregnancy and early motherhood, women have a desire to breastfeed; 91.5% of pregnant women expressed their intention to breastfeed their child and would like to do so for as long as possible; 32.3% of women intended to breastfeed until their child reaches one year of age, and 22% wished to breastfeed for more than a year [21]. However, bringing these intentions to fruition seems to be challenging. According to data from the 2015 report "Breastfeeding in Poland", 98% of newborns were initially breastfed. Unfortunately, this percentage significantly dropped in the subsequent weeks, with only 46% of infants still being breastfed by the sixth week of life.

As there are no current data on factors conducive to, or preventing, at least partial breastfeeding in Poland, the research presented here was aimed at determining the factors that contribute to the initiation and continuation of (even partial) breastfeeding in a selected group of women.

MATERIALS AND METHODS

The study was conducted between 2017–2022. The survey targeted women who had finished breastfeeding but had children aged 0.5–3 years. Data were collected during direct interviews (by a researcher and two properly instructed students) and by collecting information via social media and online forums (using the Computer-Assisted Web Interview, or CAWI, method). The study involved a total of 861 women. Complete data were acquired from 754 women (87.6%): 321 and 433 subjects were interviewed directly and using the CAWI, respectively. The inclusion criterion for the study was the absence of contraindications to breastfeeding in the mother and child.

The first part of the survey consisted of questions covering socio-demographic data, such as the mother's age, place of residence, education, financial situation, and the presence of older children. The questions in the second part of the survey referred to the timing and method of delivery as well as the lactation guidance provision. Lactation guidance was defined as at least an hour-long meeting (also online), individual or in a group, and with a consultant who provided a theoretical background, gave practical feeding instructions and answered questions the subjects might have had. Delivery was defined as preterm if it occurred before the 37th week of pregnancy was completed. The key questions covered information about breastfeeding initiation after birth, time of the first feed, duration of exclusive breastfeeding, overall breastfeeding duration, and reasons for stopping breastfeeding. Respondents also defined the dominant method of feeding the baby in the first six months of life. Based on the information obtained, the women in the study group were assigned to three subgroups, based on the dominant method of feeding in the first half-year of life. The subgroups were defined as follows:

- Dominant breastfeeding: women who primarily breastfed their child, possibly supplementing breastfeeding with a formula used scantily (1–2 × per day) and/or introduced complementary feeding with other products,
- Mixed feeding (breast + formula milk): women who fed their child, in equal amounts, with their milk and formula and/or introduced complementary feeding with other products,
- Formula feeding: women who fed their child a formula and/or introduced complementary feeding with other products.

This division stemmed from the absence of current research on factors conducive to, or precluding, even partial breastfeeding. The available literature allows for identifying factors which encourage exclusive breastfeeding in the initial months of the child's life [22, 23, 24, 25].

The results obtained were analysed statistically using Microsoft Excel and Statistica 13. To test the independence of qualitative variables (between socio-demographic and perinatal factors, the initiation of breastfeeding and the method of feeding the child in the sixth month of life), the Pearson χ^2 test was used.

Characteristics of the women comprising the study group are summarised in Table 1.

Table 1. Characteristics of the studied group of women (n = 754)

Characteristic	%
Age	
<19 years	1.9
19–26 years	33.0
27–35 years	56.0
>35 years	9.1
Place of residence	
urban	87.0
rural	13.0
Financial situation	
poor	1.6
average	26.9
good	52.9
very good	18.6
Education	
vocational	8.5
secondary	32.7
higher	58.8
Number of children in the family	
1	65.5
2	29.4
≥3	5.1
Due date	
correct	93.5
preterm	6.5
Delivery method	
natural	62.2
caesarean section	37.8

Source: own study

RESULTS AND DISCUSSION

Analysis of the results obtained revealed that over 93% of the respondents reported a full-term birth, i.e., after the completion of the 37th week of pregnancy – Table 1. However, nearly 38% of the women surveyed gave birth by caesarean section – Table 1. These figures are somewhat lower than the national data presented in the document titled "Government Programme for Comprehensive Reproductive Health Protection in Poland for the years 2021–2023". According to it, approximately 43% of births were by caesarean section, one of the highest rates in Europe. In Scandinavian countries, the percentage is considerably lower, ranging from 16.1% in Iceland to 21.6% in Denmark [26]. According to the World Health Organization (WHO) recommendations, the caesarean section rate should be 10–15% at most [27].

As many as 98% of the women surveyed in this study reported initiating breastfeeding after birth, the majority of them (67%) starting within the first hour after delivery – Table 2. The WHO recommends early breastfeeding commencement, i.e., within 1 hour after birth [48]. This promotes proper lactogenesis, allows for the delivery of immunity bodies to the child, and provides support to the newborn during the postpartum period due to the colostrum produced by the mammary gland [28]. The data on the percentage of women starting breastfeeding after birth is similar to the results reported by Królak-Olejnik et al. [29] and published in the "Breastfeeding in Poland" report [21].

Table 2. Characteristics of breastfeeding in a selected group of women (n = 739)

Characteristic	Respondents (%)
Breastfeeding after childbirth	
yes	98.0
no	2.0
Breastfeeding commencement after delivery	
in the first hour after birth	67.1
on the first day after delivery	20.7
on the second day after delivery	7.3
in the first week after delivery	3.4
later	1.5
Duration of exclusive breastfeeding	
up to the age of 1 month	23.6
until the age of 3 months	57.6
until the age of 6 months	18.8
Dominant feeding method in the 6th month	
breastfeeding	57.6
mixed feeding (breast + formula milk)	29.9
feeding with modified milk	12.5

Source: own study

By the sixth month of the child's life, as few as 18.8% of children were exclusively breastfed, and 68.7% were supplemented – Table 2. The percentages of children being exclusively or partially breastfed in the sixth month of life are significantly higher than those reported by Królak-Olejnik et al. [29], who found that by the sixth month of life, only 38% of infants were breastfed, and exclusive breastfeeding concerned just 4% of respondents. As reported by Zagórecka and Piotrowska-Jastrzębska [30], the corresponding percentages were 64.9 and 3.7%. Differences in the results obtained by us and by other authors could have resulted from a different selection of study groups. In the present study, a significant portion of the data was supplied by women participating in information exchange in online forums and social media groups for mothers. This could have been a group of women more motivated to breastfeed and seeking support. In addition, our research covered the period of the COVID-19 pandemic, which may have had a positive impact on the duration of breastfeeding [31]. A very good breastfeeding rate has been reported from Norway, with as many as 99% of women starting breastfeeding after delivery and nearly 80% of them continuing after six months [32].

The percentage of mothers who breastfeed depends, among other factors, on the support provided to women during lactation. Higher percentages of breastfeeding women are reported from regions where local, effective actions have been taken to promote breastfeeding and to provide systemic support for breastfeeding women. An example is the programme called "Natural feeding of a child as prevention against adverse environmental influences", implemented, among others, by the Certified Lactation Consultants (CLC) and financially supported by the City of Gdańsk. Two years into the programme, breastfeeding indicators were observed to improve substantially, with an increase in breastfeeding from 18 to 33% in the sixth month of the child's life [33]. Although the staff of obstetric and neonatal departments are obligated to promote breastfeeding and support women during early lactation [34, 35], less than half of the women (46%) in this study declared to have received lactation advice after giving birth – Fig. 1. Women in Poland rarely receive lactation guidance. Possible reasons may include a low number of qualified lactation consultants, midwives' work organisation and overburden, and a short duration of hospitalisation after delivery (2–3 days), during which it is difficult to provide the woman with lactation support. Lactation advice is also not reimbursed by the National Health Fund.

Among the reasons for discontinuing breastfeeding in the first six months of a child's life, the respondents primarily mentioned insufficient milk production (nearly 40% of respondents) and difficulties that could not be overcome, including problems with properly latching the child to the breast, altogether reported by 29.8% of respondents – Table 3. According to the data in the report "Breastfeeding in Poland", one of the main reasons for giving up breastfeeding was insufficient sufficient milk production [21]. Similarly, as reported by de Jager et al. [36], mothers indicated that they could not maintain lactation at an appropriate level for the child and reported a milk deficiency as the main cause of lactation problems. Another common problem pointed out by mothers was no lactation support. Most mothers considered guidance and advice from a lactation consultant to be helpful for the extension of breastfeeding.

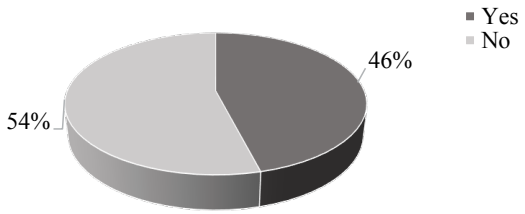

Figure 1. Lactation guidance after delivery (n = 754)

Source: own study.

Table 3. Reasons for discontinuing breastfeeding (n = 739)

Reason	Respondents (%)
Insufficient milk production	39.5
Difficulties on the part of the mother or child that have not been overcome	15.0
Problems with a proper latch of the baby to the breast	14.8
Loss of milk	9.1
Medical considerations	5.8
The baby was too big to be breastfed	3.2
Feeding was embarrassing in public places	2.5
Other	10.1

Source: own study.

Effects of socio-demographic and perinatal factors on breastfeeding initiation by the women surveyed and on the dominant method of feeding in the first six months of the baby's life were analysed statistically. Detailed data for only those factors which exerted a statistically significant effect ($p \leq 0.05$) are shown in Tables 4 and 5.

Table 4. Relationships between socio-demographic and perinatal factors and breastfeeding initiation (n = 754)

Factor	Breastfeeding taken up (%)		p
	yes	no	
Mother's age			
<19 years	85.7	14.3	
19–26 years	97.5	2.5	0.021
27–35 years	97.5	2.5	
>35 years	100	0.0	
Number of children in the family			
1	96.2	3.8	0.008
2	100	0.0	
≥3	100	0.0	
Due date			
correct	98.2	1.8	0.000
premature	87.8	12.2	
Method of delivery			
natural	99.1	0.9	0.000
caesarean section	94.8	5.2	

Source: own study.

The initiation of breastfeeding after birth was demonstrated to be influenced by: the mother's age, having older children, and the timing and method of delivery – Table 4. Breastfeeding after childbirth was more often initiated by mothers who were older than 19, had older children, gave birth at term, and gave birth naturally. Perinatal difficulties, such as preterm birth and/or caesarean section delivery, can influence a woman's decision about how to feed her child [37]. Factors inhibiting or delaying lactogenesis after preterm delivery include surgical delivery, perinatal stress, and no breast emptying, the latter resulting in a gradual milk production decline due to a decreasing concentration of lactogenic prolactin and the feedback inhibition of milk secretion in an autocrine

mechanism. Therefore, perinatal care after premature delivery should also include actions aimed at maintaining lactation. Breastfeeding has been shown to be less burdensome and stressful for a premature baby than bottle feeding [38]. Although parenteral and enteral nutrition is often applied to prematurely born infants with low birth weight, a mother's lactation should be maintained by regular removal of the milk, which can then be fed to the child. There are no strict guidelines as to when breastfeeding preterm infants should start, but the transition to breastfeeding should occur gradually, especially in infants born before the 34th week of pregnancy.

Table 5. Relationships between socio-demographic and perinatal factors and the dominant feeding mode in the first six months of a baby's life (n = 754)

Factor	Dominant breastfeeding	Mixed feeding (breast + formula milk)	Feeding with modified milk	p
Mother's age				
<19 years	28.6	28.6	42.8	
19–26 years	26.6	35.4	38.0	0.000
27–35 years	67.2	25.9	6.9	
>35 years	49.3	42.0	8.7	
Material situation				
poor	66.5	0.0	33.5	
average	51.3	27.8	20.9	0.000
good	59.9	30.5	9.6	
very good	62.2	31.4	6.4	
Mother's education				
vocational	65.9	28.8	5.3	0.000
intermediate	49.4	30.2	20.4	
higher	37.6	31.2	31.2	
Number of children in the family				
1	54.9	30.7	14.4	0.021
2	64.2	27.5	8.3	
≥3	72.2	22.2	5.6	
Due date				
correct	59.1	29.5	11.4	0.001
premature	42.9	28.6	28.6	
Method of delivery				
natural	62.7	28.7	8.6	0.000
caesarean section	50.6	30.7	18.7	
Time of breastfeeding initiation				
in the first hour after birth	60.8	29.4	9.8	
on the first day after delivery	63.8	26.3	9.9	0.000
on the second day after delivery	54.0	23.0	23.0	
in the first week after delivery	36.0	50.0	14.0	
later	36.3	50.5	13.2	
Lactation guidance provided				
yes	63.1	30.1	6.8	0.042
no	50.5	37.3	12.2	

Source: own study.

The method of feeding the baby during the first six months of its life was influenced by the mother's age, her financial situation, education, the number of children in the family, the timing and method of delivery, the time of starting breastfeeding after birth, and provision of lactation guidance – Table 5. Women under the age of 26, in a poor or average financial situation, better educated, without older children, giving birth prematurely, via caesarean section, who started breastfeeding on the second day of the infant's life or later, and who did not receive any lactation advice were more prone to give up any (full, partial) breastfeeding (cf. the modified milk feeding group) in the first 6 months of the baby's life – Table 5. The relationship between women's age and the number of children they have and early weaning was also reported by Kaczorowska et al. [39]. They found a higher percentage of children of mothers older than 30 and children with siblings were still breastfed at the age of six months. Women with older children may have knowledge and skills associated with breastfeeding and are aware of the related difficulties from previous experiences; they may also be less stressed about giving

birth and more confident in their actions. The initiation and continuation of breastfeeding may also depend on the woman's attitude towards breastfeeding [40]. The relationship between socio-demographic factors such as age, marital status, socio-economic conditions, having children, and professional activity on the one hand and women's attitudes towards breastfeeding on the other was examined by Bień et al. [41]. They showed a statistically significant relationship between the attitude towards breastfeeding and the age of the respondents, and the strength of the positive attitude towards breastfeeding increased with the respondents' age. The women who rated their socio-economic conditions as satisfactory and the women with children also had a stronger positive attitude towards natural feeding. The data on the relationship between breastfeeding duration and socio-economic situation are ambiguous. According to Barennes et al. [42], women with the highest socio-economic status in developing countries stopped breastfeeding earlier. The relationship between the socio-economic situation and the duration of breastfeeding may also depend on the woman's professional status, including whether she plans to return to work earlier. Women with prestigious, better-paid job positions are more likely to decide to return to work earlier and, therefore, shorten the duration of breastfeeding.

Women who did not receive lactation support after childbirth were more prone to give up breastfeeding. Health strategies recommend that national healthcare systems organise a system of professional advice and assistance in feeding infants and small children, including lactation counselling [43]. In the present study, less than half of the mothers declared receiving lactation guidance after childbirth. The lack of professional lactation support results in lactation disorders or complications, unnecessary supplementation of the child with modified milk and shortening of the natural feeding duration. The procedure for support is described in the perinatal care standard [44]. The first assessment of the infant's ability to suck and take milk from the breast should take place in the maternity and newborn ward, and mothers should be taught how to learn whether the feeding is effective or not [45, 46]. However, the relevant procedures are not commonly and routinely followed, and the level of knowledge about lactation among the medical staff providing perinatal and environmental care is low, which presents a problem as well [47].

CONCLUSIONS

The factors favouring breastfeeding initiation included natural delivery and at term, the mother's age of >19 years, and having older children. On the other hand, the factors conducive to breastfeeding continuation in the child's sixth month of life included the mother's age of >26 years, a good financial situation, the mother's vocational education, having older children, natural delivery and at term, breastfeeding initiation no later than the first day after delivery, and obtaining lactation guidance.

Lactation counselling was found to be conducive to breastfeeding continuation for the first six months of a child's life. Such guidance should especially target younger (<26 years of age) and better-educated women as well as those in an adverse financial situation, giving birth to their first child, and delivering prematurely by caesarean section.

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