

Exploration of Factors Associated with Intention, Initiation and Duration of Breastfeeding

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Abstract

Aim

To assess breastfeeding intention, initiation and duration up to three months postnatal and associated factors.

Methods

Secondary data from 131 healthy pregnant women participating in an RCT in a Dublin hospital who recorded intention to breastfeed were included. Demographic and breastfeeding data were collected.

Results

Of the 131 women, 91.6% (n=120) reported intending to breastfeed. 91.7% of those subsequently initiated breastfeeding (n=110/120). Of those intending to breastfeed, 78.9% (n=86/109) and 68.9% (n=73/106) remained breastfeeding at one and three months postnatal respectively. Higher education ($p<0.05$) and lower BMI ($p<0.05$) were significantly associated with initiation and duration of breastfeeding. Ethnicity, age, parity or mode of delivery were not significantly associated with breastfeeding.

Conclusion

Many factors are associated with breastfeeding intention and duration including education and BMI. It is important to develop tailored support measures to encourage initiation and continuation of breastfeeding.

Introduction

Breastfeeding infants from birth has been shown to improve health outcomes both for babies and their mothers¹. Breastfeeding is important for normal growth and development of infants and has both short and long term health benefits for children^{2,3}. Breastfeeding has been associated with decreased risk of neonatal infection, gastrointestinal infection and pneumonia during early childhood, as well as reduced morbidity and mortality from infection⁴. This protective role extends beyond birth and is proven to be important in reducing childhood obesity⁵, atopic conditions¹ and chronic diseases such as diabetes⁴. Research also shows that breastfeeding can substantially impact maternal health. Breastfeeding has been demonstrated to decrease women's risk of type-2 diabetes¹, ovarian and breast cancer⁴, as well as reducing postpartum weight retention¹. Several factors have been shown to be associated with both initiation and continuation of breastfeeding, however, including education⁴, ethnicity⁵, mode of delivery, parity and maternal obesity⁶.

The World Health Organisation (WHO) recommends breastfeeding be initiated within the first hour after birth⁷, with exclusive breastfeeding recommended for the first six months of life to optimise infant health, growth and development⁸.

These international recommendations have been adopted within national recommendations by the Irish Health Service Executive (HSE). Following these recommendations, the WHO developed global targets to increase exclusive breastfeeding during the first six months to 50% internationally by 2025⁹. In 2018, 41.6% of infants under six months of age were exclusively breastfed internationally, which rose from approximately 37% in 2012¹⁰. In Ireland, however, breastfeeding rates remain one of the lowest recorded internationally⁴. In 2016, 59.9% of women in Ireland initiated any breastfeeding, with almost 50% exclusively breastfeeding at hospital discharge¹¹. Although this is an increase from previous years, rates still remain below the average across Europe and internationally. A report from the HSE in 2015 found that 35% of all babies were receiving some breast milk at three months postnatal¹². The WHO COSI study (2015/2017) reported 22.6% any breastfeeding and 10.5% exclusive breastfeeding at six months in Ireland¹³.

In order to achieve proposed targets to improve breastfeeding in Ireland by 2% annually¹⁴, it is important to examine breastfeeding and associated factors to determine potential avenues for increasing breastfeeding rates¹⁵. This study aimed to assess mother's intentions to breastfeed from early pregnancy, their subsequent initiation and duration of breastfeeding up to three months postnatal, and potentially associated factors.

Methods

This study involved secondary analysis of observational data collected during a randomised controlled trial conducted in a large maternity hospital between 2017-2019. The trial involved probiotic use in pregnancy, the results of which will be published in due course. 160 healthy pregnant women were recruited in early pregnancy at approximately 12 weeks gestation and followed until three months postpartum.

Data for this analysis were collected at four timepoints; early pregnancy, delivery, one month and three months postnatal. Demographic data were recorded at the time of recruitment through completion of a baseline assessment record. Demographic information included gestation, parity, maternal age, Body Mass Index (BMI), education status and ethnicity. For multiparous women, any history and duration of breastfeeding with previous infants was also recorded. Intention to breastfeed was recorded at this timepoint with the researcher asking each woman their intention regarding breastfeeding following the current pregnancy. Responses to this included "Yes", "No" and "Maybe". Mode of delivery was also recorded from patient records following birth.

Data regarding initiation of breastfeeding were collected from researcher completed checklists at the time of delivery which recorded infant feeding at this timepoint (exclusive breastfeeding/combined feeding/formula feeding). Participants were then followed up at one and three months postnatal. Data were gathered on continuation and duration of breastfeeding from participant completed lifestyle questionnaires at these timepoints.

Statistical analysis was performed using SPSS Windows's version 24.0. Demographic data were analysed through descriptive analysis to assess frequencies. Some data for ethnicity, education, and parity were dichotomised to increase statistical power as some groups were small and were therefore combined where appropriate. Associations between categorical variables and breastfeeding status were assessed using chi-square tests for independence. Yates' Correction for Continuity and Fisher's exact test were used as appropriate depending on the frequency within each category. Continuous variables including maternal age and BMI were assessed for normality of distribution using the Kolmogorov-Smirnov test. As continuous variables were normally distributed, the mean and standard deviation were calculated. Associations between continuous variables and breastfeeding were analysed using parametric tests (independent samples t-tests). A p value <0.05 was considered statistically significant.

Results

Of the 160 pregnant women participating in the original trial, this analysis included a sample of 131 women with breastfeeding intention data recorded in early pregnancy.

Of the 131 included women, 78.6% (n=103) were Irish, 84.7% (n=111) had achieved third level education and 57.3% (n=75) were primiparous. The mean maternal age was 32.68 years (SD=4.19) and the mean BMI was 25.01kg/m² (SD=3.33) (Table 1).

Table 1. Demographic factors of total study sample.

DEMOGRAPHICS		N	(%)
Ethnicity:	Irish	103	(78.6)
	White Other	23	(17.6)
	Missing	5	
Education	Completed 3rd level education	111	(84.7)
	Second level education	19	(14.5)
	Missing	1	
	Parity		
Parity	Primiparous	75	(57.3)
	Multiparous	56	(42.7)
Previously Breastfed	Yes	44	(83.0)
	No	9	(17.0)
	Missing	3	
Mode of Delivery	Spontaneous vaginal delivery	79	(60.3)
	Instrumental delivery	26	(19.8)
	Caesarean section^a	26	(19.8)
DEMOGRAPHICS		RANGE	MEAN (SD) ^b
Maternal age (years)		18 – 44	32.68 (SD±4.19)
Body Mass Index (BMI) (kg/m²)		19.41 – 34.08	25.01 (SD±3.33)

^aOf those who had a caesarean section, 50% (n=13) had an emergency section and 50% (n=13) had an elective section.

^bSD=Standard deviation

In early pregnancy, 91.6% (n=120) of women reported intending to breastfeed (Table 2). Upon hospital discharge, 91.7% of those who intended to breastfeed had initiated breastfeeding (n=110/120), of which 77.3% (85/110) were exclusively breastfeeding. At one month postnatal, 78.9% (n=86/109) of remaining participants who had intended to breastfeed remained breastfeeding, of which 70.2% (n=59/84) were known to be exclusively breastfeeding. Continuation of breastfeeding reduced further at three months postnatal, with 68.9% (n=73/106) of those intending to breastfeed continuing breastfeeding. Rates of exclusive breastfeeding were maintained at three months, with 70.8% (n=51/72) of breastfeeding mothers using breast milk exclusively as a source of infant feeding at this timepoint. Some of the 120 participants who had reported intending to breastfeed were lost to follow-up at postnatal timepoints.

Intention to breastfeed from early pregnancy was significantly higher amongst women with third level education (97.3%, n=108/111) compared to those with lower education status (57.9%, n=11/19, p<0.001). Intention to breastfeed did not differ significantly between primiparous and multiparous women (p=0.204). However, women who had breastfed a previous infant were significantly more likely to intend to breastfeed for the subsequent pregnancy (100%, n=44/44) than those who had not breastfed previously (33.3%, n=3/9, p<0.001). There was no significant difference in BMI between women intending to breastfeed (n=119, mean=24.93, SD=3.26) and those who did not (n=11, mean=25.85, SD=4.09, p=0.384). There was also no significant difference in breastfeeding intention with regards to ethnicity (p=0.210) or maternal age (p=0.476).

Table 2. Women’s intention to breastfeed in early pregnancy and subsequent initiation and continuation of breastfeeding.

BREASTFEEDING STATUS	YES	NO
	n (%)	n (%)
Intended to breastfeed at booking	120/131 (91.6)	11/131 (8.4)
Of those intending to BF;		
BF at discharge	110/120 ^a (91.7)	10/120 ^a (8.3)
Exclusive BF at discharge	85/110 (77.3)	25/110 (22.7)
BF at 1 month postnatal	86/109 ^a (78.9)	23/109 ^a (21.1)
Exclusive BF at 1 month	59/84 ^b (70.2)	25/84 ^b (29.8)
BF at 3 months postnatal	73/106 ^a (68.9)	33/106 ^a (31.1)
Exclusive BF at 3 months	51/72 ^b (70.8)	21/72 ^b (29.2)

BF=Breastfed

^a*These denominators refer to women who intended to breastfeed only. The change in the denominator value is due to the loss of participants to follow-up in the original study at each timepoint.*

^b*Denominators refer to women that did breastfeed at each timepoint who intended to breastfeed in early pregnancy. Reduction in the number is due to missing data in relation to whether women were exclusively breastfeeding or combined feeding at each timepoint.*

Although not associated with intention to breastfeed, maternal BMI was shown to be a significant factor in the initiation and continuation of breastfeeding at all timepoints (Figure 1). Of those intending to breastfeed, women who did not initiate breastfeeding had a significantly higher BMI (M=27.22, SD=4.55, p=0.02) compared to women who breastfed (M=24.72, SD=3.06). This was also seen in the maintenance of breastfeeding where, of women intending to breastfeed, the average BMI was higher amongst women who did not continue breastfeeding at both one (M=26.59, SD=4.25, p=0.039) and three (M=26.45, SD=3.92, p=0.006) months postnatal, compared to those who remained breastfeeding. Education status was also seen to be associated with initiation and duration of breastfeeding with women with higher education more likely to breastfeed at discharge (94.4% vs 63.6%, p=0.006), one month (82.2% vs 33.3%, p=0.003) and three months postnatal (73.2% vs 12.5%, p=0.001). There was no significant difference regarding feeding status at the three observed timepoints in parity, ethnicity, maternal age, or mode of delivery (Table 3 (next page)). There was also no significant association seen between any of the factors examined in this study and exclusive breastfeeding at any of the three timepoints.

Table 3. Factors associated with breastfeeding* intention, initiation and duration

Demographic		Intention		Initiation		1 month		3 months	
		BF	No BF	BF	No BF	BF	No BF	BF	No BF
Parity	<i>Primip</i>	n=71/75 (94.7%)	n=4/75 (5.3%)	n=65/71 (91.5%)	n=6/71 (8.5%)	n=52/65 (80%)	n=13/65 (20%)	n=48/64 (75%)	n=16/64 (25%)
	<i>Multip</i>	n=49/56 (87.5%)	n=7/56 (12.5%)	n=45/49 (91.8%)	n=4/49 (8.2%)	n=34/44 (77.3%)	n=10/44 (22.7%)	n=25/42 (59.5%)	n=17/42 (40.5%)
	<i>p Value</i>	p=0.204		p=1.000		p=0.812		p=0.133	
Education	<i>3rd level</i>	n=108/111 (97.3%)	n=3/111 (2.7%)	n=102/108 (94.4%)	n=6/108 (5.6%)	n=82/99 (82.8%)	n=17/99 (17.2%)	n=71/97 (73.2%)	n=26/97 (26.8%)
	<i>Lower education</i>	n=11/19 (57.9%)	n=8/19 (42.1%)	n=7/11 (63.6%)	n=4/11 (36.4%)	n=3/9 (33.3%)	n=6/9 (66.7%)	n=1/8 (12.5%)	n=7/8 (87.5%)
	<i>p Value</i>	p<0.001		p=0.006		p=0.003		p=0.001	
Ethnicity	<i>Irish</i>	n=94/103 (91.3%)	n=9/103 (8.7%)	n=86/94 (91.5%)	n=8/94 (8.5%)	n=67/86 (77.9%)	n=19/86 (22.1%)	n=56/83 (67.5%)	n=27/83 (32.5%)
	<i>Other</i>	n=23/23 (100%)	n=0	n=22/23 (95.7%)	n=1/23 (4.3%)	n=17/20 (85%)	n=3/20 (15%)	n=15/20 (75%)	n=5/20 (15%)
	<i>p Value</i>	p=0.210		p=0.686		p=0.760		p=0.599	
Previous BF	<i>Yes</i>	n=44/44 (100%)	n=0	n=41/44 (93.2%)	n=3/44 (6.8%)	n=30/39 (76.9%)	n=9/39 (23.1%)	n=23/38 (60.5%)	n=15/38 (39.5%)
	<i>No</i>	n=3/9 (33.3%)	n=6/9 (66.7%)	n=2/3 (66.7%)	n=1/3 (33.3%)	n=2/3 (66.7%)	n=1/3 (33.3%)	n=0/2 0%	n=2/2 100%
	<i>p Value</i>	p<0.001		p=0.239		p=1.000		p=0.174	
Delivery	<i>Vaginal</i>	-	-	n=92/99 (92.9%)	n=7/99 (7.1%)	n=75/92 (81.5%)	n=17/92 (18.5%)	n=64/89 (71.9%)	n=25/89 (28.1%)
	<i>C-section</i>	-	-	n=17/20 (85%)	n=3/20 (15%)	n=11/16 (68.8%)	n=5/16 (31.2%)	n=9/16 (56.3%)	n=7/16 (43.7%)
	<i>p Value</i>	-		p=0.369		p=0.311		p=0.243	
Age (years)	<i>Mean</i>	n=120 32.81	n=11 31.27	n=110 32.89	n=10 31.9	n=86 33.14	n=23 32.35	n=73 33.15	n=33 32.55
	<i>SD</i>	3.88	6.79	3.55	6.72	3.09	5.28	2.99	4.95
	<i>p Value</i>	p=0.476		p=0.656		p=0.499		p=0.519	
BMI (kg/m²)	<i>Mean</i>	n=119 24.93	n=11 25.85	n=109 24.72	n=119 27.22	n=86 24.52	n=22 26.59	n=73 24.23	n=32 26.45
	<i>SD</i>	3.26	4.09	3.06	4.55	2.91	4.25	2.83	3.92
	<i>p Value</i>	p=0.384		p=0.020		p=0.039		p=0.006	

BF=Breastfeeding; SD=Standard deviation

*Breastfeeding refers to any breastfeeding and is not limited to exclusive breastfeeding.

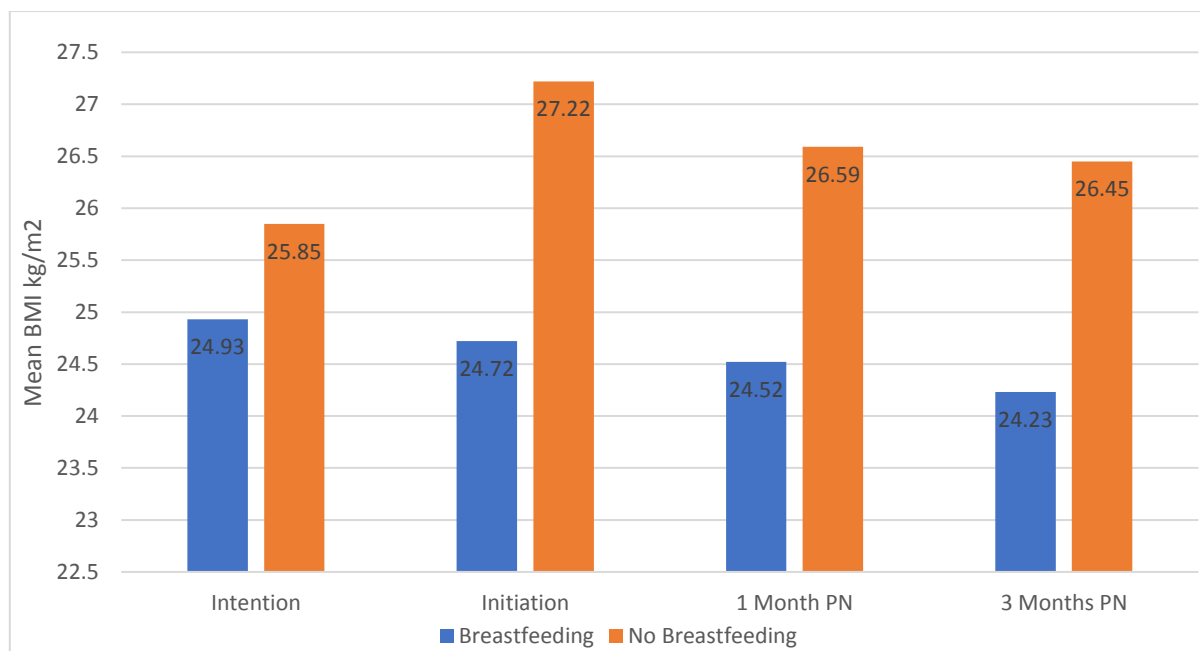


Figure 1. Association of BMI with breastfeeding intention, initiation and duration

Discussion

Of the high number of women who reported intending to breastfeed from early pregnancy in this study, the majority of these went on to initiate breastfeeding at birth, with breastfeeding rates in this sample substantially higher than the hospital and national average of approximately 76% and 59.9%¹¹ respectively. However, despite these high rates of intention to and initiation of breastfeeding, factors including maternal BMI and education level were still shown to be negatively associated with women maintaining breastfeeding.

Increased maternal BMI was associated with initiation and continuation of breastfeeding in this study. Although BMI was not associated with women's intention to breastfeed in early pregnancy, the average BMI for women who did not breastfeed at all three observed timepoints was classified in the overweight BMI category between 25-29.9kg/m²,¹⁶ compared to an average normal BMI amongst those that did breastfeed. Overweight and obesity has been highlighted as a potentially influential factor on breastfeeding initiation and duration in previous studies^{17,18}. It is important to examine barriers for breastfeeding amongst women with obesity as breastfeeding has been shown to reduce childhood obesity¹³. This benefit is of particular importance in relation to women with overweight or obesity as children of women with high BMIs are at increased risk of developing overweight or obesity in later life^{19,10}. Studies have demonstrated higher incidence of breastfeeding difficulties reported by women with overweight or obesity¹⁸, however; they are also potentially less likely to seek breastfeeding support during the first three months postpartum²¹. This highlights the need for interventions and support services provided by appropriate healthcare professionals to assist and encourage women with overweight and obesity to initiate and continue breastfeeding²².

Socio-economic status is also proven to be associated with breastfeeding rates in this study, which correlated with previous reports published in Ireland^{12,15}. Socioeconomic status was measured in this study by maternal education level. This study cohort had a high education level, with 84.7% having achieved third level education which is higher than the current national average of 47% for adults between 25-64years²³. However, women with lower education were still shown to be significantly less likely to intend to breastfeed, and to subsequently initiate and continue breastfeeding compared to higher education women. Maternal education has frequently been highlighted as an associated factor for breastfeeding⁶. Women with higher levels of education may be more aware of the importance of breastfeeding and associated benefits and may have greater access to resources and support. It is therefore important to acknowledge this difference and provide additional education and support for women with lower levels of education to promote breastfeeding.

Potential limitations of this study should be considered. This study involved a relatively small sample of 131 women which limited the statistical analysis that could be undertaken and the low number of women not intending to breastfeed potentially limiting the analysis on factors associated with intention to breastfeed. The study population

had a higher than average breastfeeding rate and education level. This may be due to the nature of participation in trials on a voluntary basis, with women willing to participate in research during pregnancy more likely to be higher educated.

In conclusion, breastfeeding is important for the health and wellbeing of not only the baby and child, but also mothers. Of the high number of women reporting intending to breastfeed from early pregnancy in this study, the majority of these went on to initiate breastfeeding. However, despite this, initiation and maintenance of breastfeeding up to three months postnatal was significantly related to factors including education level and maternal BMI. Further research is needed to explore other potential barriers to breastfeeding and to develop methods for healthcare professionals to support women highlighted in this study to improve overall breastfeeding intention, initiation and continuation to the recommended six months postpartum.

Declaration of Conflicts of Interest:

The authors have no conflicts of interests to disclose.

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