Observational Study

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Breastfeeding with and without the WHO/UNICEF baby-friendly hospital initiative

A cross-sectional survey

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Abstract

The World Health Organization and United Nations Children's Fund's Baby-Friendly Hospital Initiative is aimed at the global promotion, protection and support of breastfeeding. In this study, we compared breastfeeding-related information received, knowledge and behaviours among postpartum women in Baby-Friendly Hospital Initiative accredited and non-accredited hospitals. We selected 10 hospitals: 9 non-accredited hospitals in the Campania region in southern Italy and one accredited hospital in the Piedmont region in northern Italy. In total, 786 women (580 (73.8%) in Campania and 206 (26.2%) in Piedmont) in the hospitals' maternity wards completed a questionnaire comprising 5 sections within 24 to 72hours after giving birth. The questionnaire investigated breastfeeding activities in the days immediately following childbirth, as well as the information provided by health personnel, knowledge about breastfeeding before and during hospitalisation, and participation in antenatal classes. To evaluate the comparison between the 2 regions, we performed at first a bivariate analysis and then a multinomial and a multivariate logistic regression. Compared with Piedmont, in Campania hospitals there was a rate of breastfeeding of 44.3% vs 89.3%, a skin-to-skin contact between mother and child of 74.5% vs 90.7% and first milk feed within 2hours of 15.0% vs 87.2%. The Campania group had fewer problems with child latching. The Campania group reported receiving less information about breastfeeding in general compared with the Piedmont group. In general, both groups showed good basic knowledge about different aspects of breastfeeding. In both regions, about 90% reported that the information received during the antenatal classes simplified the breastfeeding experience. Our study confirms the importance of systematic promotion of breastfeeding and subsequent delivery of adequate support to maternity departments, in accordance with international guidelines.

Abbreviations: BFHI = baby-friendly hospital initiative, HDI = Health Development Index, UNICEF = United Nations Children's Fund's, WHO = World Health Organization.

Keywords: Baby-Friendly Hospital Initiative (BFHI), benchmark, breastfeeding, skin-to-skin contact

1. Introduction

Studies have shown that breast milk has many benefits for infants whereas breast milk deprivation can predispose such children to significant risks.[1–7] It is also well known that, for every year of lactation, women who breastfeed have a breast cancer risk reduction of 4%[8] and an ovarian cancer risk reduction of 24%.[9] Recently, it has been estimated that a global increase of breastfeeding rates could save approximately 800,000 lives a year – mostly those of children under 5 years of age.[10] In addition, societies in which breastfeeding is supported and encouraged tend to experience significant socio-economic benefits. It is estimated that if 80% of infants born in the United States were exclusively fed on breast milk for the first 6 months of life, this would result in annual savings of 10.5 billion dollars in paediatric care.[11]

In Italy, for every child who is not breastfed, it is estimated there is an increase in outpatient and hospital care amounting to 140 euros per year.[12] Data on breastfeeding in Italy are incomplete, and the lack of a valid monitoring system does not allow researchers to obtain reliable data. However, a survey sponsored by the Italian Ministry of Health and conducted by an interdisciplinary technical operating committee on the promotion of breastfeeding (Tavolo Tecnico Operativo Interdisciplinare sulla Promozione dell'Allattamento al Seno) showed that there are strong interregional disparities in breastfeeding duration due to socio-economic and geographical differences.[13] This indicates that breastfeeding culture should be strengthened across Italy because health operators do not always clearly promote breastfeeding over artificial feeding.[14–16]

The Baby-Friendly Hospital Initiative (BFHI), developed by the World Health Organization (WHO) and United Nations Child-

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ren's Fund (UNICEF), is a global program aimed at promoting, protecting and supporting breastfeeding.[17] Hospitals in the BFHI community must develop clear policies related to staff training and breastfeeding promotion from pregnancy until hospital discharge following childbirth.[18–19] Participating institutions must also comply with the International Code of Marketing of Breast-milk Substitutes.[20] Thus far, the initiative has proven to be effective in many studies; women who are assisted in BFHI-accredited hospitals show a higher breastfeeding rate,[21,22] even in the long term,[23,24] and increased milk production[25] compared with women in non-BFHI-accredited hospitals.

However, four recent reviews analyzed the impact of BFHI implementation on breastfeeding. According to Perez-Escamilla et al[26] and Munn et al,[27] adherence to BFHI has a positive impact on early breastfeeding initiation, duration and exclusivity. Conversely, another review is more cautious, stating that not all analyzed studies demonstrate a clear effect of the intervention.[28] Last, according to Gomez-Pomar et al[29] evidence do not support that BFHI is a program that can adequately increase initiation and long-term breastfeeding rates.

The aim of this study was to compare women in non-BFHI-accredited hospitals in a socio-economically homogeneous region of southern Italy (Campania region) with a "baby-friendly hospital", as recognized by UNICEF, in Verbania in the Piedmont region of northern Italy (Castelli Hospital) in terms of: 1) breastfeeding in the days immediately following childbirth; 2) the information provided by health personnel before and after childbirth; 3) knowledge about breastfeeding before and during hospitalisation; 4) participation in antenatal classes.

2. Materials and methods

Setting and participants. In Italy, Campania and Piedmont regions differ in many respects. Socio-demographic statistics show that southern Italy is poorer and less industrialized than northern Italy (income per capita: Campania = €12,265, Piedmont = €19,861).[30] Moreover, they differ also in Health Development Index (HDI) (Campania = 0.946, Piedmont = 0.971).[31] Therefore, a large number of patients move from south to north looking for better health care. For example, from Campania region about 10% of their patients moves annually for care mainly in the northern regions.

In the Campania region, to obtain reliable information on general trends and to ensure a wide coverage of the territory, we selected not only one, but nine hospitals, including four of six main hospitals in the region, one of the two teaching hospitals, two local hospitals, and two private hospitals. As the benchmark, we selected "Castelli Hospital" in Piedmont, because it is included since 2010 in the network BFHI-accredited hospitals.

Three expert health care operators in Campania, specialized in public health, and one obstetrician in Piedmont, interviewed, using a structured questionnaire, women in the maternity ward between 24 and 72 hours after they had given birth. We excluded mothers who did not speak Italian, with sons in intensive care and non-collaborating.

The interviewers explained that data would be collected anonymously and aggregated for analysis. Written informed consent was obtained from each participant. The interviews were conducted 1 or 2 days per week between October 2015 and March 2016.

Research ethics committee approval for the study was obtained from the Ethics Committee of the Second University of Naples (n. 25825/2015).

Questionnaire. We used a questionnaire comprising five sections:

1. socio-demographic characteristics of the women (age, nationality, educational level, work activity, etc.), and number of pregnancies and types of childbirth;
2. experience with breastfeeding:
   a. How long after delivery has the child attacked to first milk feed? (no breastfeeding; immediately (delivery room); less than 2 hours; more than 2 hours);
   b. In the first hours of life, your child has attacked (very well, quite well, with difficulty, not attacked);
   c. Was there any difficulty with the first suction? (open response);
   d. What kind of problems did you find during breastfeeding? (open response);
   e. Did you have consult healthcare practitioner for any problems during breastfeeding? (open response);
   f. What is your current feeding type? (only breast milk, mixed feeding, only artificial milk, unknown);
   g. If you give or planned to give artificial milk, what is the main reason? (open response);
3. information on breastfeeding received during pregnancy and hospitalisation:
   a. During pregnancy, did someone explain you how to prepare breast for breastfeeding? (yes, no);
   b. Has it been instructed on the correct position of the child's mouth at the breast? (yes, no);
   c. During hospitalization, have you been given information about breastfeeding? (yes, no);
   d. If you have received information about breastfeeding, were these clear? (yes, no);
   e. Did the information above affect the choice about breastfeeding? (yes, no);
   f. How do you evaluate the relationship with hospital staff who assisted you during your hospitalisation? (excellent, good, quite disappointing, very disappointing);
   g. In a previous pregnancy, did you receive nurse assistance at home after discharge? (yes, no);
   h. Would you like/ would you have liked nurse assistance at home after discharge? (yes, no);
4. knowledge about breastfeeding:
   a. Do you know breastfeeding positions? (yes, no);
   b. Do you know benefits of breast milk? (open response);
   c. Do you know that you can extract breast milk using a breast pump or manual compression? (yes, no);
   d. Do you know that breastfeeding increases women's metabolism allowing a faster return to pre-pregnancy weight? (yes, no);
   e. Do you know laws that protect the working breastfeeding mother? (yes, no);
   f. Do you think breastfeeding could impede daily and work activities? (very little, little, much, very much);
   g. Do you know that smoking, alcoholism and substance misuse are contraindications to breastfeeding? (yes, no);
   h. Do you know that drugs (i.e., estrogens) can reduce milk production? (yes, no); and
5. participation in antenatal classes:
   a. Do you have ever attended antenatal classes? (yes, no);

b. Do you think that the antenatal classes simplified the feeding? (yes, no);
c. Why did you not attend the antenatal classes? (open response).

The questionnaire was mainly composed of dichotomous-choice questions (requiring a yes/no response), as well as some multiple-choice questions. The questionnaire was pilot tested in one day of interviews, and was consequently modified.

Sample size. We assume a prevalence of 90% of the main outcomes (i.e., breastfeeding, skin-to-skin contact after the delivery, and first milk feed within 2 hours after birth) in the benchmark population; a 6% of the smallest difference to be detected in the comparative population; a standard error of difference of 2.9%; a 95% confidence interval from 0.3% to 11.7%; and a P value $<.05$ as indicating statistical significance. We thereby calculated a sample size of about 200 and 500 subjects for the Piedmont and Campania groups, respectively.

Statistical analysis. First, bivariate analysis and Chi Square Test was used to compare the two geographic area for socio-demographic characteristics and for all the others variables included in the questionnaire, assuming $P<.05$ as statistically significant. Second, the comparison between the two areas against all the outcomes of interest (breastfeeding experience, knowledge, information and antenatal classes) were controlled for the socio-demographic characteristics with a P value $\leq .25$. Therefore, for the dichotomous outcomes the multivariate logistic analysis was carried out, while for the nominal/categorical outcomes the multinomial logistic regression. In Tables only the adjusted P values has been reported. Third, to verify any differences within Campania sample, a stratified analysis among the nine Campania hospitals and all the outcomes of interest was performed. Statistical analyses were performed using SPSS v. 21 (IBM Corp, Armonk, NY).

3. Results

Obstetric and socio-demographic characteristics. In total, 786 women completed the questionnaire (580 in Campania and 206 in Piedmont), and 40 (5.1%) declined to participate, 28 in Campania and 12 in Piedmont, with a response rate of 95.4% and 94.5% respectively. Most women were between the ages of 25 and 34 years (58.5%), with a mean age of 31.4 years (range: 15–49 years) and were married (98.1%); half of them were employed (46.4%) and were primipara (50.3%). In the Campania group, there was a lower proportion of foreign women compared with Piedmont (7.4% vs 32.5%; $P<.001$). In Campania, caesarean sections were more frequent (48.1% vs 28.8%; $P<.001$) (Table 1).

Breastfeeding experience. Most women, both in Campania and Piedmont, stated that their intention before giving birth was to breastfeed exclusively (93.6% vs 88.3%). However, after childbirth, women in Campania followed through and exclusively breastfed their children less than in Piedmont (44.3% vs 89.3%; $P<.001$). In Campania, although 98.6% of the

Table 1

Obstetric and socio-demographic characteristics of the study population (N = 786).

Region							
Characteristics	***Campania***		***Piedmont***		***Total***		
	N	***%***	***N***	***%***	***N***	***%***	***P***
Age							
15–19	8	1.4	0	0.0	8	1.0	
20–24	52	8.9	27	13.1	79	10.1	
25–29	146	25.2	39	18.8	185	23.5	<.001
30–34	202	34.8	73	35.4	275	35.0	
35–39	133	23.0	36	17.4	169	21.5	
≥40	39	6.7	31	15.3	70	8.9	
Nationality							
Italian	537	92.6	139	67.5	676	86.0	<.001
Not Italian	43	7.4	67	32.5	110	14.0	
Marital status[#]							
Married	568	97.9	202	98.5	770	98.1	.59
Unmarried	12	2.1	3	1.5	15	1.9	
Occupation							
Employed	261	45.0	104	50.5	365	46.4	
Unemployed	319	55.0	102	49.5	421	53.6	.18
Education							
Primary school	13	2.2	0	0.0	13	1.7	
Middle school	148	25.5	42	20.4	190	24.2	<.001
High school	266	45.9	136	66.0	402	51.1	
College degree	153	26.4	28	13.6	181	23.0	
First pregnancy							
Yes	286	49.3	109	47.1	395	50.3	.37
No	294	50.7	97	52.9	391	49.7	
Delivery type[#]							
Vaginal birth	301	51.9	146	71.2	447	56.9	
Caesarean section	214	36.9	53	25.9	267	34.0	<.001
Emergency caesarean	65	11.2	6	2.9	71	9.0	
Total	580	100	206	100	786	100	

[#] missing for one participant.

participants did not report any problem during the delivery that would likely influence the choice about feeding, only 44.3% reported exclusive breastfeeding after childbirth. Among the remainder of the Campania group, 31.5% reported mixed feeding and 9.0% used artificial milk only, whereas 15.2% responded "unknown". Women Campania hospitals showed less adherence to breastfeeding best practices: in comparison with the Piedmont group, a lower proportion of women in the Campania group reported feeding within 2 hours after birth (15.0% vs 87.2%; $P < .001$), counselling with a healthcare practitioner after birth in case of breastfeeding problems (49.4% vs 92.9%; $P < .001$) and skin-to-skin contact between mother and child (74.5% vs 90.7%; $P < .001$). However, this difference is less significant after control for confounders. The Campania group, however, seem to show greater adaptability in comparison to the Piedmont group regarding some physical aspects of breastfeeding. These women experienced fewer problems during breastfeeding (50.8% reported "no problems" vs 35.9% in the Piedmont group) and latching in general (53.8% reported that the child latched very well: vs 21.7%; $P < .001$) (Table 2).

Table 2

Breastfeeding experience.

	Total		Regionn			
			Campania (non-BFHI)	Piedmont (BFHI)		
Characteristics	**N**	**%**	**N/%**	**N/%**	**Crude P value**	**Adj P value°**
Intention before childbirth						
Breast feeding+	725	92.2	543/93.6	182/88.3		
Mixed feeding	48	6.1	30/5.2	18/8.7	.043	.172
Bottle feeding	13	1.7	7/1.2	6/2.9		.182
Total	786	100	580/100	206/100		
Current feeding type#						
Only breast milk+	440	56.1	257/44.3	183/89.3		
Mixed feeding	198	25.2	183/31.5	15/7.3	<.001	<0.001
Only artificial milk	57	7.3	52/9.0	5/2.4		<.011
Unknown	90	11.4	88/15.2	2/1.0		<.001
Total	785	100	580/100	205/100		
Problems during the delivery that influenced the type of feeding#						
No problems	763	97.2	572/98.6	191/93.2	<.001	<.001
Different kinds of problems*	22	2.8	8/1.4	14/6.8		
Total	785	100	580/100	205/100		
Skin-to-skin contact after the delivery#						
Yes	617	78.7	432/74.5	185/90.7	<.001	.33
No	167	21.3	148/25.5	19/9.3		
Total	784	100	580/100	204/100		
Time from birth to first milk feed#						
No breastfeeding+	66	8.4	58/10.0	8/3.9		
Immediately (delivery room)	122	15.6	25/4.3	97/47.5	<.001	<.001
Less than 2 hours	143	18.2	62/10.7	81/39.7		<.001
More than 2 hours	453	57.8	435/75.0	18/8.8		<.001
Total	784	100	580/100	204/100		
Healthcare practitioner consulted for problems during breastfeeding						
Yes	245	63.8	127/49.4	118/92.9	<.001	<.001
No	139	36.2	130/50.6	9/7.1		
Total	384	100	257/100	127/100		
How the child latched on to the breast						
Very well+	324	45.0	281/53.8	43/21.7		
Quite well	243	33.8	136/26.1	107/54.0	<.001	<.001
With some difficulty	134	18.6	88/16.9	46/23.2		<.001
Not at all	19	2.6	17/3.3	2/1.0		.518
Total	720	100	522/100	198/100		
Difficulties at the first feed						
No	527	73.2	391/74.9	136/68.7	.093	.12
Yes	193	26.8	131/25.1	62/31.3		
Total	720	100	522/100	198/100		
Problems during the breastfeeding						
No	336	46.7	265/50.8	71/35.9	<.001	.034
Yes	384	53.3	257/49.2	127/64.1		
Total	720	100	522/100	198/100		
Women know how to prepare artificial milk						
Yes	435	69.3	391/71.4	44/55.0	.003	.022
No	193	30.7	157/28.6	36/45.0		
Total	628	100	548/100	80/100		
Breastfeeding could impede daily and work activities#						
Very little+	320	41.0	272/47.3	48/23.4	<.001	<.001
Little	305	39.1	194/33.7	111/54.1		.001
Much	137	17.6	102/17.7	35/17.1		<.001
Very much	18	2.3	7/1.2	11/5.4		
Total	780	100	575/100	205/100		

* more than one item in the original questionnaire.

missing data.

+ reference category.

° The models were adjusted for the following variables: age, nationality, occupation, education, delivery type, and participation to antenatal classes.

Table 3

Information received during pregnancy.

Region						
	Total		Campania (non-BFHI)	Piedmont (BFHI)		
Characteristics	N	%	N/%	N/%	Crude P value	Adj P value°
Received information about breastfeeding after childbirth#						
Yes	470	60.0	273/47.2	197/96.1	<.001	<.001
No	313	40.0	305/52.8	8/3.9		
Total	783	100	578/100	205/100		
Instructed on how to prepare the breast for breastfeeding#						
Yes	426	54.4	245/42.4	181/88.3	<.001	<.001
No	357	45.6	333/57.6	24/11.7		
Total	783	100	578/100	205/100		
Instructed on the correct position of the child's mouth at the breast#						
Yes	450	57.5	255/44.1	195/95.1	<.001	<.001
No	333	42.5	323/55.9	10/4.9		
Total	783	100	578/100	205/100		
The information above affected the choice about breastfeeding						
Yes	79	16.9	26/9.6	53/27.0	<.001	.015
No	389	83.1	246/90.4	143/73.0		
Total	468	100	272/100	196/100		

missing data.

° The models were adjusted for the following variables: age, nationality, occupation, education, delivery type and participation to antenatal classes.

Information received during pregnancy. We asked the women if they had received information about breastfeeding during pregnancy. The data indicate that a lower proportion of women in the Campania group than in the Piedmont group received information about breastfeeding in general (47.2% vs 96.1%; $P < .001$), about how to prepare the breast for breastfeeding (42.4% vs 88.3%; $P < .001$) and about the correct positioning of the child's mouth at the breast (44.1% vs 95.1%; $P < .001$). This information, however, seemed to have little effect on the behaviour of the women with respect to feeding (9.6% in Campania and 27.0% in Piedmont; $P < .001$) (Table 3). In both regions, participants reported a good rapport with hospital staff, and they perceived to have received clear information on breastfeeding (data not reported in the tables).

Knowledge about breastfeeding. In general, women in both the Campania and Piedmont groups showed good knowledge about different aspects of breastfeeding (Table 4). The Campania group showed worse knowledge on breastfeeding positions (60.9% vs 97.0%; $P < .001$) and about the laws protecting working breastfeeding women (54.7% vs 72.7%; $P < .001$); this may be due to the information provided by health personnel (Table 3). Moreover, a higher proportion of respondents in Piedmont group were able to identify several benefits of breast milk (more than one benefit identified: 43.8% vs 23.0%), while Campania women were tended to recognize only one benefit "better growth and immune system" (61.8% vs 12.8%). The knowledge of the women from the two regions did not differ regarding the possibility to extract breast milk using a breast pump or manual compression, and the possibility to store milk extracted in these ways (Table 4). Their knowledge also did not differ with respect to the fact that breastfeeding increases women's metabolism allowing a faster return to pre-pregnancy weight, and that smoking, alcoholism and substance misuse are contraindications to breastfeeding, with some drugs (e.g., estrogens) having the ability to reduce milk production.

Antenatal classes and post-discharge care. In the Campania group only 17.4% reported participation in antenatal classes compared with 69.6% of women in Piedmont group. In both groups, the information received during the course simplified the breastfeeding experience (90.1%). In the Campania group, the most prevalent explanation for the lack of participation in antenatal courses were "never heard about it/not recommended" (36.1%). In Piedmont, 53.3% of women who did not attend antenatal classes considered them not to be useful (Table 5). In both regions 98.7% of women were not assisted by a nurse at home after discharge. Less women in the Campania group expressed a desire for nurse assistance at home (49.9% vs 81.1%; $P < .001$).

4. Discussion

Our study is the first on comparison between BFHI and not-BFHI hospitals in Italy. This study investigated breast-feeding related information received, knowledge and behaviours in two groups: from hospitals in the Campania and Piedmont regions of Italy.

In our study, the Campania and Piedmont groups differed consistently in terms of 2 variables. Piedmont group had more foreign women, which may be expected given that the population of the Piedmont region is generally wealthier than that of the Campania region.[32] The Campania group had a very high rate of caesarean section (48.1%) – one of the higher rates in the world. However, the Piedmont group also had a caesarean section rate higher than the rate of 10% to 15% recommended by WHO guidelines.[33] Half of the participants in this study stated that this was their first pregnancy, and the age range most represented was 30 to 34 years; this is in line with the Italian trend of a delayed first pregnancy.[34]

Before childbirth, the majority in both groups indicated an intention to breastfeed. However, after birth, whereas the Piedmont group mostly followed through, at least in the 24 to 72 hours of our observation, less than half of the women in the Campania group who intended to breastfeed exclusively did so. This difference suggests the effectiveness of the support and promotion of breastfeeding carried out in Castelli Hospital

Table 4

Knowledge about breastfeeding.

			Region			
	Total		*Campania (non-BFHI)*	*Piedmont (BFHI)*		
Characteristics	***N***	***%***	***N/%***	***N/%***	***Crude P value***	***Adj P value°***
Breastfeeding positions#						
Yes	549	70.3	352/60.9	197/97.0	<.001	<.001
No	232	29.7	226/39.1	6/3.0		
Total	781	100	578/100	203/100		
Benefits of breast milk#						
No benefits+	20	2.6	12/2.1	8/3.9		
Yes, there are benefits	77	9.8	53/9.2	24/11.8	<.001	.584
Better growth, better immune system	384	49.1	358/61.8	26/12.8		<.001
Different kind of benefits	79	10.1	23/3.9	56/27.7		.150
More than one	222	28.4	133/23.0	89/43.8		.971
Total	782	100	579/100	203/100		
Laws that protect the working breastfeeding women#						
Yes/Partially	465	59.4	316/54.7	149/72.7	<.001	<.001
No	318	40.6	262/45.3	56/27.3		
Total	783	100	578/100	205/100		
Possibility to conserve breast milk						
Yes	549	87.1	474/86.8	75/89.3	.529	.353
No	81	12.9	72/13.2	9/10.7		
Total	630	100	546/100	84/100		
Breastfeeding increases metabolism of the women#						
Yes	542	69.1	388/67.0	154/75.1	.031	.001
No	242	30.9	191/33.0	51/24.9		
Total	784	100	579/100	205/100		
Drugs (estrogens) can reduce milk production#						
Yes	460	58.7	326/56.4	134/65.4	.025	.69
No	323	41.3	252/43.6	71/34.6		
Total	783	100	578/100	205/100		

missing data.

+ reference category.

° The models were adjusted for the following variables: age, nationality, occupation, education, delivery type and participation to antenatal classes.

Table 5

Antenatal classes and post-discharge care.

Region						
	Total		*Campania (non-BFHI)*	*Piedmont (BFHI)*		
Characteristics	***N***	***%***	***N/%***	***N/%***	***Crude P value***	***Adj P value°***
Ever attended antenatal classes#						
Yes	243	31.0	101/17.4	142/69.6	<.001	<.001
No	541	69.0	479/82.6	62/30.4		
Total	784	100	580/100	204/100		
The classes simplified the feeding						
Yes	192	90.1	87/86.1	105/93.8	.063	.14
No	21	9.9	14/13.9	7/6.3		
Total	213	100	101/100	112/100		
Reason why women did not attend the antenatal classes						
Never heard about/not recommended+	186	34.5	173/36.1	13/21.7		
Not useful	181	33.6	149/31.1	32/53.3	.002	<.001
Others*	172	31.9	157/32.8	15/25.0		.132
Total	539	100	479/100	60/100		
Women would like/would have liked nursing care at home (primipara/not primipara)						
Yes	426	57.0	289/49.9	137/81.1	<.001	<.001
No	322	43.0	290/50.1	32/18.9		
Total	748	100	579/100	169/100		

* more than one item in the original questionnaire.

missing data.

+ reference category.

° The models were adjusted for the following variables: age, nationality, occupation, education, delivery type and participation to antenatal classes.

(Piedmont), according to the "10 steps to Successful Breastfeeding" indicated by the WHO-UNICEF.[18,35] These steps recommend first attachment of the child to the breast within half an hour after birth; however, because breastfeeding within 2 hours after birth is considered acceptable,[36] in Castelli Hospital this step was only applied to half of new-borns. In contrast, the first breastfeed after birth at Campania hospitals almost always occurred later than 2 hours after birth. Another step in the WHO-UNICEF guidelines is skin-to-skin contact; this practice was widely applied in Castelli Hospital and less in Campania hospitals. These two factors in Campania region hospitals could explain the relatively poorer understanding and practice of breastfeeding in the region, while also confirming the literature findings that these two practices – skin-to-skin contact after delivery and first attachment of the child to the breast within half an hour after birth – promote initiation of breastfeeding.[3,37–43]

In apparent contradiction to the issues mentioned above, the Campania group reported similar or fewer problems in terms of child latching at the first feed and later during lactation. Possible reasons for these findings could be socio-economic and cultural differences between the 2 groups producing greater adaptability among Campania group; differences in pre-existing knowledge about breastfeeding; differences in the expectation of the experience of breastfeeding. Moreover, compared with the Piedmont group, for example, the Campania group sought operator assistance less in cases of problems during breastfeeding (49.4% vs 92.9%).

The Piedmont group received more information on breastfeeding practice. However, when we analyse the level of knowledge between the two groups, the differences were not substantial. Additionally, it is expected that pregnant women would want breastfeeding-related information from many different sources throughout pregnancy; surprisingly, at the time of interview, 15.2% of women in the Campania group did not know if the child was fed with some other milk/fluids in addition to their breast milk.

Most women in the Piedmont group, but almost no women of Campania group, participated in antenatal courses. The main reasons for this were that the women had never heard about them, nor were they recommended by their physicians; others found them not to be useful. Some further results not reported in tables are as follows. Women with higher education and women who participated in an antenatal course had better knowledge about breastfeeding.[44] Primiparous women had more difficulties and problems during breastfeeding. In the Campania group, exclusive breastfeeding was more frequent after vaginal birth than after caesarean section ($P < .001$). This finding was less evident in the Piedmont group ($P = .021$). Unlike other studies,[6,24,45,46] the level of education was not found to affect the type of child feeding (data not reported in the tables).

In addition to the well-known limitations related to interviews, the main limitation of our study is the non-comparability of the two groups. We have detected little differences in the multivariate analysis for socio-economic characteristics and mode of birth. Therefore, they cannot be considered influencing confounders. However, it is possible that, even in the absence of adherence to specific international protocols, the higher per capita income of the Piedmont region and other socio-economic and cultural differences, not investigated in our study, may have influenced the results.

5. Conclusions

Breastfeeding should be an obligate choice for infant nutrition, and to support this choice there are a great amount of studies on factors to be taken into consideration for a successful breastfeeding program. Nevertheless, Campania hospitals showed inadequate adherence to international guidelines regarding women's behaviour after birth, particularly in terms of the percentage of women who breastfed. Conversely, results of Piedmont group seems to confirm the importance of systematic promotion of breastfeeding and subsequent delivery of adequate support to maternity departments, in accordance with international guidelines, such as those set out in the BFHI.

However, Campania results seem to provide a fairly reliable framework of the poor adherence to international guidelines, whereas Castelli hospital results cannot be considered conclusive of the relationship between BFHI and good practices. To have a more reliable confirmation of this relationship it would be necessary to collect data on a representative sample of hospitals without BFHI in the Piedmont region. In Campania, to improve quality of breastfeeding according to WHO/UNICEF guidelines, the next step of our study will be to inform the nine hospitals about results of our study.

Author contributions

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