

# EXCLUSIVE BREASTFEEDING AND ASSOCIATED FACTORS IN MOTHERS WHO ATTEND HEALTH ESTABLISHMENTS OF LIMA, PERU

LACTANCIA MATERNA EXCLUSIVA Y FACTORES ASOCIADOS EN MADRES QUE ASISTEN A ESTABLECIMIENTOS DE SALUD DE LIMA CENTRO

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## ABSTRACT

**Introduction:** Breastfeeding is a natural biological process that is of utmost importance during the development of newborns. **Objective:** To find the association between exclusive breastfeeding and various factors at different times: during gestation, during birth and in the puerperium in mothers who come to DIRIS Lima Centro health centers. **Methods:** A survey was used to find out the factors associated with exclusive breastfeeding, such as the number of prenatal check-ups, talks given, and whether she had breastfed her child in the last 6 months. The data obtained were statistically processed to obtain the values of Odds Ratio and association variables. **Results:** Of the 140 mothers surveyed with less than 12 months of lactation, 77.85% stated that they had attended six prenatal controls, this attitude had a statistically significant relation with Exclusive Breastfeeding ( $p: 0.012$ ). Vaginal delivery was found to be significantly associated with Breastfeeding. However, the use of milk formula could be a risk factor ( $p < 0.001$ ). **Conclusion:** Three factors were found to be associated with SCI: attendance to six pre-natal controls, vaginal delivery and as a risk factor, the use of milk formula, one in each time period, before, during and after delivery.

**Key words:** Breast feeding; Newborn; Mother-child relations; Human milk (source: MeSH NLM).

## RESUMEN

**Introducción:** La lactancia materna es un proceso biológico natural que es de suma importancia durante el desarrollo de los neonatos. **Objetivo:** Encontrar la asociación entre la lactancia materna exclusiva y diversos factores en espacios de tiempo diferentes: durante la gestación, durante el parto y en el puerperio en madres que acuden a centros de salud de la DIRIS Lima Centro. **Métodos:** Se utilizó una encuesta para conocer los factores asociados a la lactancia materna exclusiva como el número de controles prenatales, asistencia a controles pre natales, y si había dado de lactar a su hijo en los últimos 6 meses. Los datos obtenidos fueron procesados estadísticamente obteniendo los valores de Odds Ratio y las variables de asociación. **Resultados:** De las 140 madres encuestadas con menos de 12 meses de lactancia, 77,85% manifestó haber acudido a seis controles prenatales, esta actitud tuvo relación estadísticamente significativa con la Lactancia Materna Exclusiva ( $p: 0,012$ ). Se observó que el parto vaginal tiene asociación significativa con la Lactancia Materna. Sin embargo, el uso de fórmulas lácteas podría presentarse como factor de riesgo ( $p < 0,001$ ). **Conclusión:** Se encontraron tres factores asociados a la LME: asistencia a seis controles pre natales, parto vaginal y como factor de riesgo, el uso de fórmulas lácteas, uno en cada espacio de tiempo, antes, durante y después del parto.

**Palabras clave:** Lactancia materna; Recién nacido; Relaciones madre-hijo; Leche humana (fuente: DeCS BIREME).

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## INTRODUCTION

Breastfeeding (BF) is a natural biological process in women during pregnancy and its purpose is to feed and protect the newborn baby until six months of age. Evidence of the benefits of exclusive breastfeeding (EBF) has been widely disseminated, some of them are its association with decreased infant mortality, also the prevention of acute diarrheal diseases (ADD), acute respiratory infections (ARI), improved intelligence level of the child; Benefits for the mother: breast and ovarian cancer and prevention of diabetes M2<sup>(1)</sup>.

Several publications report that at discharge from the hospital where the child is born, a high percentage of mothers start breastfeeding on the first day, but in the following months it gradually decreases to very low levels<sup>(2,3)</sup>, among the causes of abandonment of EBF, The mother's return to work or study<sup>(4)</sup> and hypogalactia (perception of producing little milk and that the child is left hungry)<sup>(4)</sup> also the lack of support from the baby's father or family (help with domestic tasks that deplete their energy, producing fatigue)<sup>(5)</sup>.

In our country, according to the Demographic and Family Health Survey 2018 of the National Institute of Statistics and Informatics<sup>6</sup> the prevalence of ARI from 2009 to 2018 has ranged between 13.3 and 16.8%, corresponding to 14.4% by 2018, nationally. In the case of the prevalence of ADD, from 2007 to 2018 it has remained relatively stable, oscillating between 14.9% and 10.9%, corresponding to 10.7% for 2018, nationally. With differences according to areas, urban 10.3% and rural 12.1%. However, according to the Oficina de Epidemiología de la Dirección de Redes Integradas de Salud (DIRIS) Lima Centro, of the 14 districts that integrate it, those with the highest percentage of cases of ARI, except pneumonia, are the districts of San Juan De Lurigancho (41.5%), Lima Cercado (14.9%) and La Victoria (9.2%), the other districts are below 4%. For cases of ADD are also higher percentages of cases for the districts of San Juan De Lurigancho (34.3%), Lima Cercado (20.1%) and La Victoria (5.4%), the other districts are below 3%.<sup>(7)</sup> These morbidities, as already mentioned, are related to EBF.

Also, knowing that vaginal delivery favors EBF<sup>(9)</sup>, another worrying aspect is the increase in the number of cesarean deliveries from 26.4% in 2008 to 41.0% by 2018 in the urban area (ENDES 2018). The WHO establishes that a maximum of interventions for cesarean deliveries should be 15%<sup>(8)</sup>. It has also been reported that there is a strong inverse association between BF and breast cancer<sup>(10)</sup>. According to the 2018 Cancer Health Situation Analysis, breast cancer is the main neoplasm in women in our country<sup>(11)</sup>,

this situation could be reduced if BF is promoted and practiced more frequently and for a longer period of time, since the effects of BF in the prevention of breast cancer are well known<sup>(1)</sup>.

It have been published numerous articles related to the practice of breastfeeding and the factors that may favor or hinder it. A study in Spain reports that the lack of support and information negatively influences the EBF, also mentions that some health professionals are not well informed of the benefits of BF, however, women who have been prepared during the prenatal stage about the benefits of BF, are successful in providing their milk to the baby for a longer time and exclusive<sup>(12)</sup>.

For these reasons it was decided to investigate the factors that were associated with the practice of EBF in mothers who attended health facilities of the DIRIS Lima Centro, in three districts in which the prevalence of ARI and ADD were high. The objective of this study was to find the association between exclusive breastfeeding and various factors in different periods of time: during pregnancy, during childbirth and postpartum in mothers who go to health centers of the DIRIS Lima Centro.

## METHODS

### Design

An observational analytical cross-sectional study was conducted.

### Population and sample

We selected level I-3 health facilities (called Health Centers) located in three districts that make up the DIRIS Lima Centro, because in them the prevalence of ARI and ADD for 2018 was very high in relation to the other eleven districts of the said DIRIS. In these districts families that correspond to strata C, D and E predominate<sup>(13)</sup>. For the calculation of the sample, it was considered the population of mothers who regularly attended the three selected health centers per month, a sample size was calculated, obtaining a sample of 129, to which 10% was added, anticipating a similar rejection rate, in the end, a total of 140 surveys were analyzed.

### Procedures, variables and instruments

The instrument used to obtain information was a questionnaire designed to know the factors that may be associated with the practice of exclusive breastfeeding, in three periods of time: before delivery, which is, during pregnancy; during childbirth, and after childbirth. The questions were oriented about the number of prenatal visits attended by the mother and

the instructions received about breastfeeding, such as its importance for her and for the child, the techniques of stimulation and extraction of milk in case she could not give it directly, the risk of using other milk usually offered in bottles and other aspects, in the second part there were questions about the type of delivery, early contact of the baby with his mother, accommodation together and breastfeeding on the first day of the baby's birth. The third part consisted of what happened after birth, such as home visits by some health personnel, if they perceived that they had little milk, if they had family support to breastfeed. In the end she was asked if she had breastfed her last child until she was six months old without any additional food. The questionnaire was validated by expert judges and a pilot test. A group of six interviewers were trained, nutrition students to conduct interviews with mothers in each health center.

When approaching a woman with her child waiting for care, she was asked if she answered questions about her baby's feeding and if the baby was between 6 and 12 months old. If she accepted, she was asked to sign the informed consent form before proceeding with the questionnaire questions. Once completed the surveys in number corresponding to the total sample, it proceeded to the revision of the same to detect errors or forgetfulness of some data, if it could not be corrected or completed, the survey was discarded and was replaced by others that were carried out again.

### Statistical analysis

The next step was to transfer the survey information to an Excel database that was then transferred to the SPSSV22 program for analysis. The odds ratio and significance level of the associations of variables were calculated.

### Ethical issues

The research project was approved by the Comité de Ética de la Facultad de Medicina de la Universidad Nacional Mayor de San Marcos.

## RESULTS

### General characteristics

We analyzed the information provided by 140 mothers of children under 12 months, 97% from three districts: Lima Cercado, La Victoria and San Juan De

Lurigancho. (See Table 1) 46.4% of all interviewees said they had exclusively breastfed (EBF) their child.

Among the health facilities where the baby was born (the last child in case of multiple births) shows the Instituto Materno Perinatal (Maternity) 27.14%; in various Hospitals in Lima, both MINSA and Social Security, 56.4%. Hospitals in the province 5%, private clinics 11.4%.

The age of mothers surveyed was in the range of 20 to 35 years (81.4%). In the group that reported having achieved secondary education (58.6%), we found a higher percentage that provides EBF to their baby, whereas among those with higher education (36.4%) is higher percentage that does not give EBF to their child.

Almost three quarters (74.3%) have a partner, with a slightly higher percentage giving EBF to their children. Of those who do not have a partner, 69% do not get the EBF.

The 81.4% of the children (last children of the women surveyed) were born with normal weight (2 500g to 4 000g), only 5.7% were registered as low weight (less than 2 500g) and 12.9% as macrosomia.

### Factors before delivery

The 77.85% of mothers reported having attended six controls, this result reflected a statistically significant relationship with the practice of EBF. ( $p: 0.012$ ) (See Table 2). The analysis of the aspects treated during these controls with the EBF showed no statistical significance. No significance was found for other factors such as parity, planned pregnancy and successful experience of having given EBF to previous children (Table 2).

### Factors during childbirth

In this group it was observed that the type of vaginal delivery has a significant association with EBF. No significance was found for accommodation and skin-to-skin contact (See Table 3).

### Factors after childbirth

In the postpartum period, no significant association was found in the factors asked to the mother, except for the use of formula, which could be interpreted as a risk factor ( $p<.001$ ). (Table 4)

**Table 1.** Characteristics of the sample of mothers surveyed and establishments where their last child was born. Lima 2019.

		Exclusive breastfeeding up to 6 months				Total
		Yes		No		
		n	%	n	%	
Characteristics of the mother		65	46.2	75	53.8	140
Current age (Years completed)	< 19	5	62.5	3	37.5	8
	20 a 35	50	43.8	64	56.1	114
	> 36	10	55.6	8	44.4	18
Education level	Primary o none	4	57.1	3	42.9	7
	Secondary	43	52.4	39	47.6	82
	Higher	18	35.3	33	64.7	51
Marital situation	With partner	11	31	25	69	36
	Without partner	54	51.9	50	48.1	104
District of origin	Lima Cercado	30	56.6	23	43.4	53
	La Victoria	17	47.2	19	52.8	36
	San Juan de Lurigancho	16	34	31	66	47
	Others	2	50	2	50	4
Health facility where the last child was born		Exclusive breastfeeding up to 6 months				Total
		Yes		No		
		n	%	n	%	
Instituto Nacional Materno Perinatal (Maternity)		19	50	19	50	38
Hospitals Lima (MINSA y EsSalud)		41	51.9	38	48.1	79
Hospitals province		0	0	7	100.0	7
Clinics			31.3	11	68.7	16
Total		65	46.2	75	53.8	140

**Table 2.** Level of association of factors during pregnancy in health facilities Lima Centro June 2019.

Factor	Condition	n	EBF (%)	OR	CI 95%	p significance
Attendance at prenatal visits	≥ 6 controls	109	61.5	2.9	(1.26 - 6.65)	0.012
	< 6 controls	31	35.5			
<b>Aspects of prenatal care sessions</b>						
Importance of skin-to-skin contact Mother and child	Yes	120	55.8	1.03	(0.39 - 2.67)	0.9446
	No	20	55.0			
Stimulation techniques so that the child has no difficulty sucking	Yes	101	57.4	1.28	(0.61 - 2.69)	0.5122
	No	39	51.3			
Breastfeeding techniques	Yes	112	56.3	1.11	(0.48 - 2.55)	0.7986
	No	28	53.6			
Early initiation of breastfeeding before 24 h. of being born	Yes	110	54.5	0.80	(0.35 - 1.81)	0.5943
	No	30	60.0			
Importance of EBF during the first 6 months of birth	Yes	126	56.3	1.29	(0.42 - 3.89)	0.6507
	No	14	50.0			
Extraction of EBF for storage , unfreeze and give to the child	Yes	84	53.4	0.71	(0.35 - 1.41)	0.3315
	No	56	60.7			
Balanced nutrition during pregnancy and breastfeeding	Yes	114	56.1	1.09	(0.46 - 2.58)	0.8317
	No	26	54.8			
Benefits of BF and colostrum for the child	Yes	107	57.9	1.46	(0.67 - 3.20)	0.3402
	No	33	48.4			
Benefits of BF for the mother	Yes	98	56.1	1.06	(0.51 - 2.8)	0.8819
	No	42	54.8			
Risk of using formula (other milk in bottles)	Yes	83	55.4	0.97	(0.49 - 1.91)	0.933
	No	57	56.1			
<b>Other factors before childbirth</b>						
Successful experience in giving EBF to other children	Yes	53	64.2	1.75	(0.87 - 3.53)	0.1183
	No	87	50.6			
Parity	Primiparous	72	54.2	0.88	(0.45 - 1.71)	0.7045
	Multiparous	68	50.6			
Support from the child's father	Yes	114	59.6	2.36	(0.98 - 5.66)	0.0536
	No	26	38.4			
Planned pregnancy	Yes	62	56.5	1.06	(0.54 - 2.07)	0.8756
	No	78	55.1			

n: Number of cases

EBF: Exclusive breastfeeding (for 6 months)

OR: Odds ratio, measure of association (the likelihood that a mother exposed to a factor will give EBF up to 6 months).

CI: Confidence interval)

p : Significant if less than 0.05 (if there is an association).

**Table 3.** Level of association of factors during childbirth in health facilities Lima Centro June 2019.

Factor	Condition	n	EBF (%)	OR	CI 95%	P significance
Type of delivery	Vaginal	77	63.6	1.99	(1.01 - 3.94)	0.047
	Caesarean	62	46.7			
Skin-to-skin contact mother-newborn	Yes	116	58.6	1.98	(0.81 - 4.84)	0.132
	No	24	41.6			
Mother breastfed her baby on the first day of birth	Yes	127	58.3	3.14	(0.92 - 10.74)	0.068
	No	13	30.8			
Joint accommodation mother-baby	Yes	119	58.0	1.84	(0.72 - 4.70)	0.202
	No	21	42.9			

n: Number of cases/ EBF: Exclusive breastfeeding (for 6 months)/ OR:Odds ratio, measure of association (the likelihood that a mother exposed to a factor will give EBF up to 6 months) / CI: Confidence interval / p: Significant if less than 0.05 (if there is an association)

**Table 4.** Level of association of factors after childbirth in health facilities Lima Centro June 2019.

Factor	Condition	n	EBF (%)	OR	CI 95%	P significance
Perceived insufficient milk production	Yes	72	56.9	0.902	(0.46 - 1.76)	0.763
	No	68	54.4			
Use of formulas	Yes	58	24.1	11.175	(5.04 - 24.80)	<0.001
	No	82	78.1			
Adequate environment to breastfeed	Yes	30	43.3	0.53	(0.23 - 1.20)	0.126
	No	110	59.1			
Familiar Support	Yes	117	56.4	1.19	(0.48 - 2.90)	0.708
	No	23	52.2			
Had home visits by health personnel	SI	34	61.8	1.39	(0.63 - 3.06)	0.415
	No	106	53.7			

n: Number of cases/ EBF: Exclusive breastfeeding (for 6 months)/ OR:Odds ratio, measure of association (the likelihood that a mother exposed to a factor will give EBF up to 6 months) / CI: Confidence interval / p: Significant if less than 0.05 (if there is an association)

## DISCUSSION

The prevalence of EBF found in the studied group is 46.4%, this figure is lower than that reported by ENDES 2018<sup>6</sup>, which indicates 66.4% as the national average and 61.2% for the urban area, while in 2016 was 66.7% the national average<sup>(14)</sup>. There are reports<sup>(1,10,11)</sup> that at first there is a good willingness of mothers to give natural milk to their child, but after discharge from the institution where they have given birth, for various reasons gradually abandon the exclusivity of breastfeeding and the percentage of mothers who reach the sixth month of life of their babies providing only breast milk is very low.

In our study, 90.7% breastfed on the first day of birth, of which 58.3% were breastfed up to six months of age. In Peru, according to ENDES 2018<sup>(6)</sup>, 49.7% lactated during the first hour of birth, although there are differences

according to urban (43.4%), rural (68.7%) areas. Those who breastfed within the first day constitute 92.3%.

Regarding factors that occur before birth, a statistically significant association was found between attendance at six or more prenatal visits and the practice of EBF up to six months. Mothers who do not attend their checkups sometimes because they forget their appointments. In a study carried out in two hospitals in Huaral and Chancay, it was found that forgetting appointments was associated with adherence to prenatal control<sup>(15)</sup>. On the other hand, ENDES 2018<sup>(6)</sup> reports that 92.5% of pregnant women, at the level of Lima and Callao, received six or more controls. This situation is very positive because it expresses the interest of pregnant women in taking care of their health and anticipating risks.

Although no significance was found among the aspects

addressed about successful breastfeeding during the controls, in all cases, the proportion of mothers who received these instructions was higher than those who did not. Other studies, such as those of Bellido-Roque and col.<sup>(16)</sup> in Lima, found that mothers had medium knowledge about the EBF. The Reglamento de Alimentación Infantil<sup>(17)</sup> establishes that in each health facility where care is provided to pregnant women, a Breastfeeding Committee must be formed to reinforce information on the benefits of breast milk for the child, for the mother in the short and long term. It is important that all health facilities comply with these directives. A post in Bangladesh<sup>(18)</sup> on the impact of an educational intervention with emphasis on nutrition gave very good results for the promotion of EBF.

During the birthing process, the factor vaginal birth was associated with EBF in our study, a similar result was found by Silva Ocampo et al.<sup>(9)</sup> in Chile, since this type of birth is considered normal, it allows, immediately the baby is expelled, to approach the mother for early contact, encouraging her to seek the nipple to feed for the first time. The WHO establishes that the frequency of caesarean delivery should be a maximum of 15%, however, in our country it has increased in recent years to 46% by 2018 in the area of Metropolitan Lima according to ENDES 2018-Salud Materna. This is worrying since caesarean section is not recommended unless is absolutely necessary and justifiable.

In the postpartum period, an association was found between the use of formula in bottles and EBF, which is a very high risk factor for not giving EBF. Lamberti and col<sup>20</sup> found that children fed with formula have nearly 15 times more mortality from pneumonia and respiratory diseases. Rollins and col.<sup>(21)</sup> calculated that by 2019 sales of alternative BF products would increase to more than 70 billion dollars. In general, the recommendations are ignored and they continue to promote their products wherever they can find mothers who are not very convinced of the benefits of providing their own milk to their children. The Marketing Code for Milk Substitutes has been updated recently<sup>(22)</sup>.

Another study<sup>(23)</sup> found an association between the abandonment of the EBF with the use of the bottle, however, there are women who declare that the EBF is the best for the baby, but in practice do not full<sup>(24)</sup>. Another factor frequently mentioned by various authors is the perception of having little milk (hypogalactia), or that their child is left hungry as reported by Ramiro-Gonzalez, in Spain<sup>(25)</sup>, in Cuba<sup>(26)</sup> and in Colombia<sup>(27)</sup>.

Of those who said they had some illness that prevented them from giving their milk to the baby, only 8 out of 140, however, half of them, that is to say four states that they have given EBF until their babies were six months

old. A publication in Argentina reports that depressive and anxiety symptoms decrease the likelihood of prolonging breastfeeding until 6 months<sup>(28)</sup>.

The majority of mothers interviewed in our study (78.57%) reported not having an adequate environment, i.e. with little noise, spacious place, without interruptions, of this group of mothers despite this inconvenience 59.1% gave EBF as reported.

Only 24.3% of mothers reported having received home visits from the health staff, of whom 61.8% answered that they gave EBF to their baby for six months, the problem is that many times, due to lack of professional staff does not make these visits that constitute the extension of the care process to the mother. In this respect, the intervention of the health personnel who visit the mother at home is important, to observe the environment and give some recommendations to minimize stress situations.

### Limitations

One of the limitations has been the sample size, considering that one of the three districts of the DIRIS Lima Centro most affected by the prevalence of ADD and ARI is San Juan de Lurigancho, which is one of the most populous in Metropolitan Lima.

### Ethical considerations

The study protocol was approved by the ethics and research committee of the UNMSM Faculty of Medicine, with Act No. 19-0014. The informed consent process was carried out for all participants, complying with the fundamental principles of the person: Autonomy, Confidentiality of their data, and Non-maleficence.

### CONCLUSION

In conclusion, three factors associated with EBF were found: attendance to six prenatal controls, vaginal delivery and, as a risk factor, the use of milk formulas, one in each period of time, before, during and after childbirth.

The recommendation for higher education institutions and universities that train health professionals is that in the curricula there are subjects that promote and deepen the importance of the practice of exclusive breastfeeding until six months as it contributes to the improvement of public health.

On the other hand, it is important the proportion of caesarean delivery be reduced and only performed when absolutely necessary.

Campaigns should also be continued to avoid bottle feeding as far as possible, although in some cases it may be necessary, it should not be common practice.

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