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Prevalence and Characteristics of Breastfeeding Pain - A Prospective Multicentric Study in Primary Care

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Abstract: Introduction: Painful breastfeeding (BF) has a very negative impact on the establishment of BF and is one of the main causes of BF cessation, and is therefore considered an important public health problem. Unfortunately, this problem is underestimated by the health care community and few studies have been devoted to its prevalence, characteristics and the attitude of the mothers who experience it. Sample and methods: The study was conducted in the framework of the Breastfeeding and Child Development Study (LAyDI) and focused on BF pain in the first 4 months after birth in a cohort of 203 lactating women managed in primary care centres of the Community of Madrid (Spain). Results: We found a high incidence of pain in women with BF (68.5%), most frequently with onset in the first days after birth, although in 13% of cases it developed after several weeks. In 44% of cases, the pain resolved within 15 days, but in 46% it lasted longer (in 17%, longer than 2 months). We found that 30.9% of mothers contemplated BF cessation at some point due to severe or sustained pain. However, despite having access to professional support, mostly provided by midwives, nearly half of the women who considered weaning did not seek help. Conclusions: Current efforts in different fields of study need to converge urgently to explore the aetiology and pathogenesis of pain and safe and effective approaches to its management in a nonjudgmental and unbiased environment.

Key words: breastfeeding pain; dysbiosis; milk culture; primary care; public health

1. Introduction

The benefits that breastfeeding (BF) provides to mothers, children, society, and the environment are widely recognized worldwide, which is why it is considered a key element of public health and not just a matter of lifestyle choice. Despite this, worldwide, the rates of early breastfeeding cessation are too high and fall far short of the World Health Organization (WHO) goals of achieving at least 50% of babies exclusively breastfed (EBF) in their first six months of life. [2]

In Spain, state-level breastfeeding prevalence data are taken from the National Health Survey, although it is not updated and does not use indicators or methodology recommended by the WHO. In the most recent survey, conducted in

2017, the estimated prevalence of EBF was 73.9% at six weeks postpartum, 63.9% at three months, and 39% at six months postpartum. [3]

The Breastfeeding and Child Development Study, a prospective, multicenter, nationwide study, was designed to study the characteristics of breastfeeding in our population and factors associated with its initiation and duration, among other aspects. [4] This study collected data from a cohort of 2,066 children born between April 2017 and May 2018, who were assigned to the primary care clinics of 202 pediatricians. These data were distributed proportionally to the population of each autonomous community, so that the results would be representative of the state. The data collected showed that 67.23% of children were breastfeeding at two weeks postpartum and only 39.2% at six months, although with significant differences between autonomous communities. [5]

Although breastfeeding is often considered pleasurable and simple, the reality is that many mothers encounter difficulties that lead to frustration and early abandonment. In this sense, pain is one of the factors that most negatively influences the enjoyment of breastfeeding and the main reason given for abandoning breastfeeding, along with the sensation of secreting a small amount of milk [7-9].

Painful breastfeeding is a challenge for mothers, who often experience it as a stressful experience, as it creates a conflict with their self-esteem and interferes with bonding with their infants. [10, 11] Despite its relevance, this issue appears to be undervalued by much of the healthcare community, as many studies investigating the prevalence of breastfeeding and mothers' satisfaction levels do not typically include or clearly define this variable. Furthermore, the lack of research on the severity of pain and the characteristics of breastfeeding mothers can lead some physicians to question the pain threshold of women who experience persistent pain. [11]

Primary care is an ideal platform for directly observing mothers' progress and experiences related to breastfeeding and also offers prompt and close support when problems arise. In this context, this study is part of the LAyDI Study and focuses on the study of aspects related to pain during breastfeeding and mothers' attitudes toward this problem.

2. Patients and Methods

An observational, descriptive, longitudinal, and prospective study was conducted to gain a deeper understanding of the characteristics, factors, and experiences related to painful breastfeeding in a cohort of breastfeeding mothers who attended their health centers in the Autonomous Community of Madrid for the first checkup of their children born between April 2017 and May 2018.

This study, called LAyDI-Dolores, complements the information obtained from the LAyDI study, conducted by pediatricians from the Primary Care Pediatrics Research Network (PAPenRed), part of the Primary Care Pediatrics Association (AEPap). It is limited to the Community of Madrid and focuses on the study of risk factors associated with painful breastfeeding and on observing women's attitude towards this problem. The inclusion criteria for participants, also part of the LAyDI Study, were determined by the requirements of the national study. Therefore, the program was offered to mothers who had given birth within the previous 15 days to a healthy child who had been fully or partially breastfed, after voluntarily agreeing to participate. Exclusion criteria were: prematurity, multiple births, hospitalization of the mother or child for more than five days, malformations, or serious pathology of the mother or newborn.

Data were collected through individual interviews conducted by the pediatrician or nurse once they were familiar with the study protocol. Each breastfeeding mother included in the study was interviewed within 15 days postpartum using an anonymized questionnaire, which was completed again at one month (a minimum of seven days after the initial interview), at two months, and at four months of the infant's life.

To determine risk factors that may be implicated in the development of pain, all participants completed the standard

survey established for the LAyDI Study, with predefined response questions and open-ended questions designed to obtain information on the variables included in Table 1. To supplement this information, they were also asked, in each of the surveyed periods, whether they had experienced pain during breastfeeding, beyond what was considered "mild breast discomfort".

Table 1. Bivariate analysis of risk factors for pain during breastfeeding related to socioeconomic and health variables, pregnancy, childbirth, postpartum, and lactation

Variables			Breastfeeding mothers without pain, n* (%)	Breastfeeding mothers with pain, n* (%)	OR	IC 95	*p*
Demographic and health	Age	<30 years and >40 years	19 (30.2%)	52 (37.4%)	1.38	0.13-2.62	0.317
		30-40 years	44 (69.8%)	87 (62.6%)	Ref		
	Origin	Spanish	49 (76.56%)	100 (71.94%)	0.78	0.40-1.56	0.488
		Other origins	15 (23.42%)	39 (28.05%)	Ref		
	Educational background	Primary/ Secondary	29 (46.03%)	49 (35.25%)	0.64	0.35-1.17	0.145
		University	34 (53.96%)	90 (72.58%)	Ref		
	Occupation before pregnancy	Self-employed	52 (82.53%)	109 (78.41%)	Ref	0.60-2.80	0.499
		Other	11 (17.46%)	30 (21.58%)	1.30		
	Body mass index (BMI)	Overweight/ obesity	20 (33.33%)	36 (27.69%)	0.77	0.40-1.98	0.428
		Normal weight	40 (66.67%)	94 (72.31%)	Ref		
Pregnancy, childbirth, postpartum and breastfeeding	Parity	Primiparous	21 (33.3%)	62 (44.6%)	1.61	0.87-3.00	0.132
		Multiparous	42 (66.7%)	77 (55.4%)	Ref		
	Information on the benefits of breastfeeding during pregnancy	Yes	48 (75.0%)	107 (77.0%)	Ref	0.45-1.79	0.758
		No	16 (25.0%)	32 (23.0%)	0.90		
	Practical classes on breastfeeding during pregnancy	Yes	33 (51.6%)	70 (50.4%)	Ref	0.58-1.90	0.874
		No	31 (48.4%)	69 (49.6%)	1.05		
	Antibiotic therapy during pregnancy and/or childbirth	Yes	20 (31.25%)	50 (35.98%)	1.24	0.66-2.33	0.511
		No	44 (68.75%)	89 (64.02%)	Ref		
	Type of delivery	Cesarean	15 (23.4%)	24 (17.3%)	0.68	0.33-1.41	0.299

Variables			Breastfeeding mothers without pain, n* (%)	Breastfeeding mothers with pain, n* (%)	OR	IC 95	*p*
		Vaginal	49 (76.6%)	115 (82.7%)	Ref		
	Mother-child separation after birth	Yes	14 (21.9%)	31 (22.3%)	1.03	0.50-2.09	0.946
		No	50 (78.1%)	108 (77.7%)	Ref		
	Hours until first breastfeeding	<1 hour	49 (76.56%)	106 (77.37%)	Ref		
		≥1 hour	15 (23.44%)	31 (22.63%)	0.96	0.47-1.93	0.890
	Anatomical problems with the nipple	Yes	4 (6.3%)	15 (10.8%)	1.81	0.58-5.70	0.302
		No	60 (93.8%)	124 (89.2%)	Ref		
	Pacifier use in the first 15 days of life	Yes	20 (31.3%)	35 (25.2%)	0.75	0.39-1.45	0.398
		No	44 (68.8%)	102 (73.4%)	Ref		
	Duration of breastfeeding with previous children	0-3 months	9 (22.5%)	19 (25.7%)	1.19	0.48-2.95	0.707
		More than 3 months	31 (77.5%)	55 (74.3%)	Ref		
	Weaning/ mixed breastfeeding in previous breastfeeding due to pain	Yes	1 (2.6%)	6 (8.2%)	3.40	0.39-29.34	0.239
		No	38 (97.4%)	67 (91.8%)	Ref		

Note: IC 95: 95% confidence interval; OR: odds ratio; Ref: Reference.

If the onset of pain was reported, questions were included about how they experienced it (location of pain, approach to weaning, duration of pain, request for help with pain management, etc.). Regarding the duration of pain, it was considered "temporary" if it resolved in less than two weeks; "sustained" if it lasted more than two consecutive weeks; and "recurrent" if the pain recurred on non-consecutive visits.

2.1 Statistical analysis of the data

Potential risk factors for pain during breastfeeding were expressed as categorical variables. To assess a possible association between the presence of pain during breastfeeding and each risk factor, the values of these categorical variables were compared between controls and cases using the chi-square test. To compare exposure to each of the variables in the two groups of women, the odds ratio (OR) and 95% confidence interval (95% CI) associated with each risk factor were calculated, with an association considered statistically significant when a p-value <0.05 was obtained.

2.2 Ethical considerations

The LAyDI study was approved by the Research Ethics Committee of the Principality of Asturias (No. 213/16) on December 29, 2016.

3. Results

Twenty-four primary care pediatricians from different health areas in the Community of Madrid participated in the study, collecting data from 203 mother-child dyads. Initially, 215 women were included, but 12 women dropped out due to a change of residence. Most of the women (68.5%; n = 139) experienced pain while breastfeeding at some point during the first 4 months of breastfeeding. Among the mothers who experienced pain, 82.01% (n = 114) experienced pain in both breasts.

Of the 139 cases of pain, only five breast milk cultures were requested, all of which were positive and, therefore, diagnosed with mastitis, according to the criteria proposed by the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC) [12]. However, 11.3% (n = 23) of the participants were diagnosed with mastitis by healthcare professionals based on disparate clinical criteria that did not comply with the SEIMC recommendations. There was only one case of breast abscess.

As shown in Fig. 1, most participants (87%; n = 121) experienced pain during the first 15 days of breastfeeding, but 13% (n = 18) of women began experiencing it for the first time after several weeks, and some mothers began experiencing it after two months of breastfeeding (2.2%; n = 3).

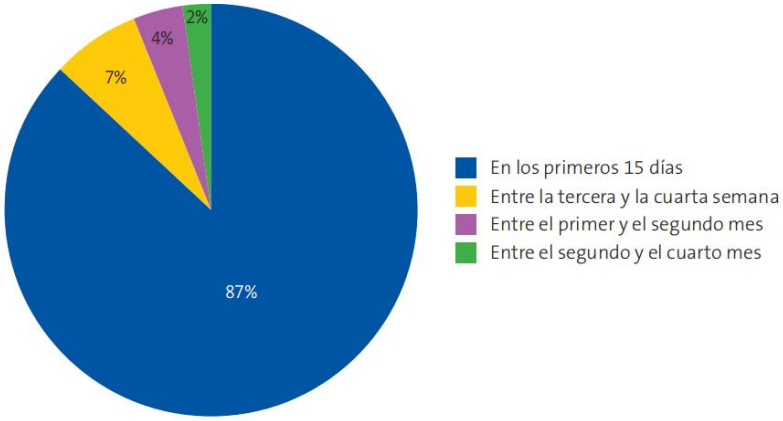

Figure 1. Onset of pain in breastfeeding women participating in the study.

Figure 2 shows that pain duration resolved permanently within the first fifteen days in 44% (n = 61), but in 10% (n = 14) of cases, the pain recurred at another point in the study. It is important to note that pain persisted in approximately half of the painful breastfeeding (46%; n = 64), even for more than two months in 17 cases, representing 17.3% of painful breastfeeding.

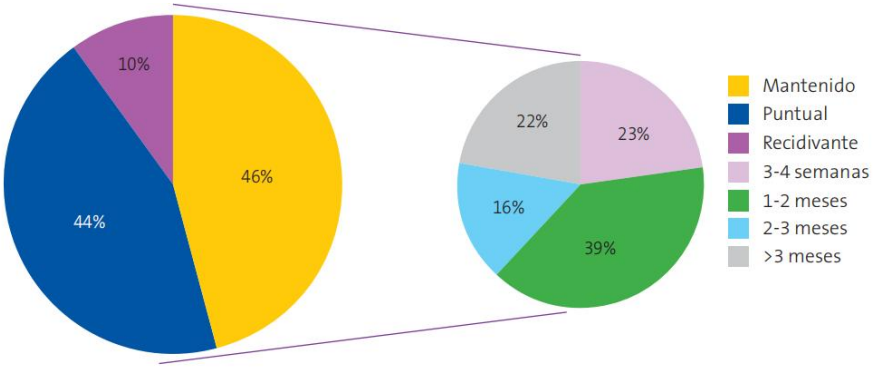

Figure 2. Duration of pain in lactating women who participated in the study.

Regarding women's attitudes toward pain, it is noteworthy that, despite the negative impact of pain during breastfeeding, many participants only acknowledged feeling pain when directly asked about it. Only 45% (n = 63) of those who reported pain while breastfeeding took the initiative to seek help; the rest felt they did not need it and that "the pain would probably resolve itself." In 30.9% (n = 43) of the cases, the pain was so intense or persistent that they considered stopping breastfeeding at some point, despite which only 26 of them sought help (60.5%). The midwife was the person most often sought for help, while family doctors and gynecologists were by far the least involved with breastfeeding problems, as shown in Fig. 3.

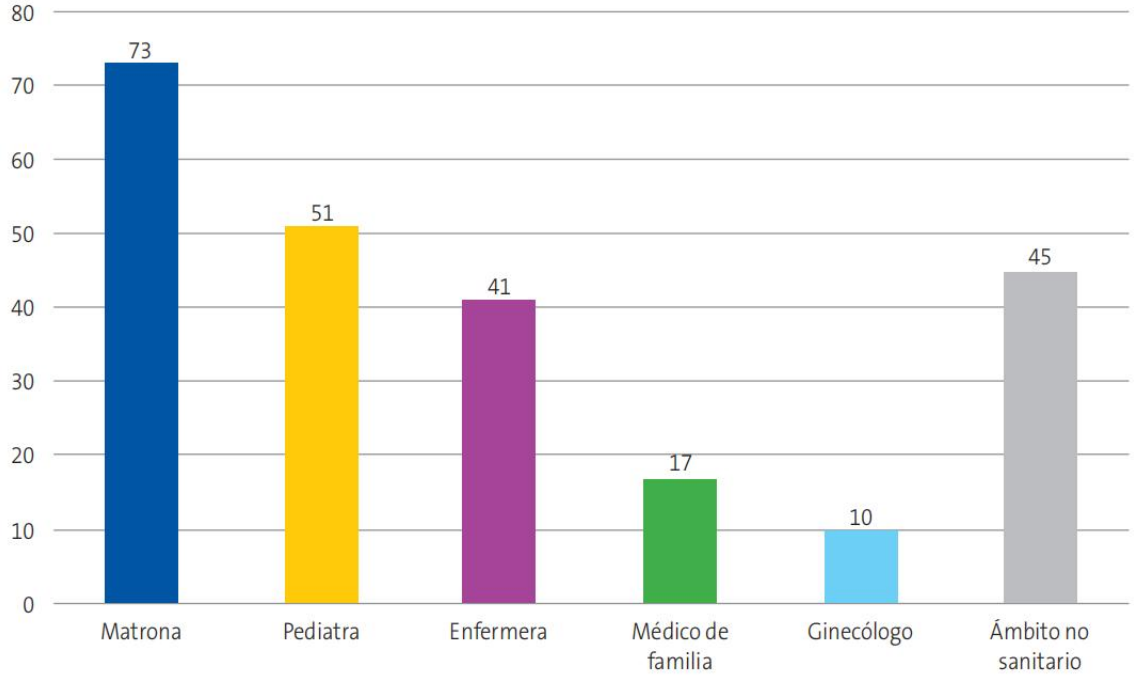

Figure 3. Sources of help received by breastfeeding mothers.

At the end of the four-month study, only 64.04% (n = 130) of the participants were exclusively breastfeeding their infants, and of these, 23.8% (n = 31) had experienced persistent pain for more than a month. Only 12.3% (n = 16) of the mothers who achieved breastfeeding at the fourth month reported not having experienced painful breastfeeding at any point during the study.

During the study, 22.2% (n = 45) of the participants discontinued breastfeeding for various reasons. Of these, 29 (64.4%) reported pain while breastfeeding at some point, with this pain being classified as persistent in 33.3% (n = 15) of these cases.

3.1 Bivariate analysis of risk factors for pain and weaning during breastfeeding

The bivariate analysis of the qualitative variables (risk factors) potentially related to pain during breastfeeding is shown in Table 1. Unlike the results obtained by other studies, [9, 13, 14, 15] it is noteworthy that none of the factors studied were statistically significantly associated with the onset of pain during breastfeeding. However, after analyzing the relationship of the aforementioned qualitative variables with weaning, as shown in Table 2, a significant association was found with maternal age (<30 or >40 years), with pacifier use during the first 15 days postpartum, and, most notably, with previous breastfeeding lasting less than three months. Interestingly, the breastfeeding pain experienced by participants during the study was not associated with an increased risk of weaning during the current lactation.

Table 2. Bivariate analysis of risk factors for weaning in the first four months postpartum related to socioeconomic and health variables, pregnancy, childbirth, postpartum, and breastfeeding of the women in the study

Variables			Breastfeeding at 4th month (mixed or exclusive) n* (%)	Weaning before the 4th month postpartum n (%)	OR	IC 95	*p*
Demographic and health	Age	<30 years and >40 years	48 (30.57%)	23 (51.11%)	2.37	1.21-4.67	0.011
		30-40 years	109 (69.43%)	22 (48.89%)	Ref		
	Origin	Spanish	114 (72.15%)	35 (77.78%)	1.35	0.62-2.96	0.451
		Other origins	44 (27.85%)	10 (22.22%)	Ref		
	Educational background	Primary/Secondary education	56 (35.67%)	22 (48.89%)	1.73	0.88-3.37	0.108
		University	101 (64.33%)	23 (51.11%)	Ref		
	Occupation before pregnancy	Employed	126 (80.25%)	35 (77.78%)	Ref		
		Others	31 (19.75%)	10 (22.22%)	1.16	0.52-2.60	0.71
	Body mass index (BMI)	Overweight/obese	44 (29.14%)	12 (30.77%)	1.08	0.50-2.32	0.84
		Normal weight	107 (70.86%)	27 (69.23%)	Ref		
Pregnancy, childbirth, postpartum and breastfeeding	Parity	Primiparous	69 (43.95%)	14 (31.11%)	0.58	0.28-1.17	0.12
		Multiparous	88 (56.05%)	31 (68.89%)	Ref		
	Information on the benefits of breastfeeding	Yes	121 (76.58%)	34 (75.56%)	Ref		
		No	37 (23.42%)	11 (24.44%)	1.06	0.49-2.29	0.886
	Practical breastfeeding classes	Yes	83 (52.53%)	20 (44.44%)	Ref		
		No	75 (47.47%)	25 (55.56%)	1.38	0.71-2.89	0.338
	Antibiotic therapy during pregnancy or childbirth	Yes	65 (41.14%)	22 (48.89%)	1.37	0.70-2.60	0.35
		No	93 (58.86%)	23 (51.11%)	Ref		
	Type of delivery	Cesarean	28 (17.72%)	11 (24.44%)	1.50	0.68-3.32	0.31
		Vaginal	130 (82.28%)	34 (75.56%)	Ref		
	Mother-child separation after birth	Yes	39 (24.68%)	6 (13.33%)	0.47	0.18-1.14	0.10
		No	119 (75.32%)	39 (86.87%)	Ref		
	Hours until first breastfeeding	<1 hour	125 (79.11%)	30 (69.77%)	Ref		
		≥1 hour	33 (20.89%)	13 (30.23%)	1.64	0.77-3.49	0.19
	Anatomical problems with the nipple	Yes	12 (7.59%)	7 (15.56%)	2.24	0.83-6.08	0.1
		No	146 (92.41%)	38 (84.44%)	Ref		

Variables			Breastfeeding at 4th month (mixed or exclusive) n* (%)	Weaning before the 4th month postpartum n (%)	OR	IC 95	*p*
	Pacifier use in the first 15 days of life	Yes	32 (20.51%)	23 (51.11%)	4.05	2.01-8.17	<0.0001
		No	124 (79.49%)	22 (48.89%)	Ref		
	Duration of breastfeeding with previous children	0-3 months	7 (8.33%)	21 (70.0%)	25.67	8.55-77.05	<0.0001
		More than 3 months	77 (91.67%)	9 (30.0%)	Ref		
	Pain while breastfeeding	Yes	110 (69.62%)	29 (64.44%)	0.79	0.34-1.59	0.59
		No	48 (30.38%)	16 (35.56%)	Ref		

Note: IC 95: 95% confidence interval; OR: odds ratio; Ref: Reference.

4. Discussion

In Primary Care Pediatrics clinics, painful breastfeeding is often a challenge for women, who face the dilemma of continuing breastfeeding with pain or giving up. The high percentage of women with painful breastfeeding identified in the study (68.5%) is similar to that found in a prospective study conducted in primary care that thoroughly analyzed the reality of breastfeeding pain. [15] Other studies have found even higher figures, [16, 17] indicating that pain is a common and likely underdiagnosed problem.

Publications addressing breastfeeding pain agree that it occurs during the first 15 days postpartum, [15, 16, 18] as is the case in the present study. However, it should be noted that 13% of participants began experiencing pain for the first time after several weeks without pain; Of these, 6% reported pain after one month of painless breastfeeding, a figure somewhat lower than the 9.7% found in another prospective study. [15] These data are difficult to compare with those of other research on painful breastfeeding, as it is rare for pain to persist beyond the first two weeks of follow-up. Furthermore, the considerable proportion of women with prolonged pain while breastfeeding is worrying. According to various studies, between 17% and 29% of breastfeeding mothers experience pain persistently for two or more months, [15, 16] figures consistent with the results of the present study (17.3%).

Pain while breastfeeding is very often experienced as intense and distressing. It has been described as being more intense at the beginning of breastfeeding [11, 18] and usually subsides within a few days [16, 19], although about 10% of women may continue to experience intense pain (scores greater than seven on the Visual Pain Scale) after one month of breastfeeding [15]. The present study found that almost a third of breastfeeding women considered abandoning breastfeeding due to the intensity or duration of the pain. Despite this, it is striking that women who had experienced pain while breastfeeding for more than one month achieved higher rates of EBF at the fourth month than mothers with painless breastfeeding.

It is also worth noting that, despite the availability of professional support, almost half of the women who considered weaning decided not to seek help. This attitude could be strongly influenced by the cultural normalization that suffering and sacrifice are inherent to good motherhood [20]. It would be desirable to investigate the reasons that lead them to behave in this way, in order to propose the most effective way to help. Furthermore, it must be taken into account that women do not always seek support to maintain breastfeeding; they may also need it to be able to stop breastfeeding without feeling guilty due to social pressure.

According to the study results, the midwife is the professional who bears the brunt of consultations regarding painful breastfeeding, followed remotely by pediatricians and nurses. Given that early weaning is an important public health issue, it is a priority for all healthcare professionals responsible for the care of mothers to keep their knowledge of breastfeeding up-to-date, in addition to being involved in creating an appropriate space where mothers can confidently express their doubts and problems, in order to provide them with effective support if they encounter obstacles in their breastfeeding process. A first facilitating step could be to encourage the interest of future physicians by including a subject on breastfeeding in medical school.

It is important to emphasize that there is no effective and agreed-upon way to address breastfeeding pain [18], but there is strong evidence that the help offered once the pain has set in is ineffective. [22] Only half of women manage to resolve persistent breast pain while breastfeeding, despite the support they receive and their motivation. [19] Therefore, it is a priority to join forces to thoroughly investigate the etiopathogenesis of pain. This is done in order to find effective solutions that lead to higher rates of exclusive breastfeeding and to help women fully understand the benefits of breastfeeding, preventing it from becoming a stressful experience.

Inadequate breastfeeding technique has traditionally been considered the main cause of breastfeeding pain, [7] despite the lack of conclusive evidence, [15, 19, 23] as this factor is not routinely assessed in dyads who enjoy pleasurable breastfeeding. It is possible to find, on the one hand, mothers who breastfeed without problems despite a technique that could be considered deficient, and on the other hand, painful breastfeeding with adequate positioning and latching by both mothers. While some cases of painful breastfeeding can be successfully managed by changing the mother's position and the baby's latch, the inadequate technique hypothesis does not adequately explain cases in which the problem first appears after several weeks of successful breastfeeding, nor cases of recurring pain. Furthermore, the role that certain anatomical aspects of the mother's nipple or the baby's mouth, especially ankyloglossia, play in the origin of pain has been extensively debated, but there is currently no solid scientific evidence to support this. [25, 26] However, it is always important to assess this because it could aggravate other problems and influence the intensity of the pain.

In the last decade, numerous publications have provided a solid scientific basis for the loss of bacterial diversity (dysbiosis) in breast milk as the primary cause of breastfeeding pain. [15, 27, 28, 29] In fact, following the publication by the SEIMC of the Clinical Microbiology Procedure entitled "Microbiological diagnosis of bacterial infection associated with childbirth and the puerperium" [12], breast milk culture is being implemented in clinical microbiology laboratories, and since 2014, many primary care centers in the Community of Madrid have the possibility of officially requesting such cultures from their 15 reference hospitals, but, according to this work, relatively few requests are still received. Paradoxically, the Clinical Practice Guideline on breastfeeding, published by the Ministry of Health in 2017, practically limits the request for milk cultures to situations in which resistance to broad-spectrum antibiotics is suspected or at risk, [30] despite the fact that empirical antibiotic therapy does not have scientific evidence to support its effectiveness, [31] so a milk culture, with its corresponding antibiogram, should be systematically performed in all cases of painful breastfeeding, as recommended by the SEIMC [12]. According to the WHO, the increase in resistant bacterial strains caused by antibiotic overuse is one of the main global health problems. [32] This has led in recent years to an increase in interest in bacteriotherapy, a practice that uses commensal or probiotic bacteria to prevent or treat host colonization by pathogenic microorganisms. This strategy is based on the principle of competitive exclusion, whereby certain non-pathogenic bacteria dominate over pathogenic ones when they compete for the same ecological niche. The use of specific probiotics to modulate the imbalance of the bacterial microbiota of the mammary gland is an interesting strategy, as some studies conclude, [33-36] and it would be desirable to strengthen its effectiveness with well-designed clinical studies.

5. Conclusions

Breastfeeding pain is a much more common phenomenon than published reports on breastfeeding prevalence, and is sometimes even underestimated by women themselves. Greater involvement by all healthcare professionals responsible for caring for breastfeeding women is essential to detect breastfeeding pain and effectively address it, avoiding the use of antibiotics and focusing efforts on women who have had a negative experience during previous breastfeeding and those experiencing breastfeeding for the first time. There is an urgent need to join forces from different fields of research to explore safe and effective alternatives, such as bacteriotherapy, to prevent and treat breastfeeding pain, thus avoiding unwanted early weaning and helping to prolong the duration of breastfeeding.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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