TITLE: Declared reasons for cessation breastfeeding during the first year of life: Multidisciplinary analysis based on a cohort study in northern Spain.

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ABSTRACT

Background: It is clear that breastfeeding is the gold standard of infant feeding because of the many advantages it offers to both the child and the mother.

Objective: to identity the main reasons for cessation breastfeeding declares by the mother themselves during the first year.

Design: A prospective cohort study was conducted, recruiting 969 newborns in a third level hospital in Spain. The main maternal variables studied were: maternal age, parity, educational level, work occupation, smoking habit, gestational age, birth, weigh, feeding type, and duration of breastfeeding. All the participants were followed for a year to determinate the duration of breastfeeding and to know the reason of the abandonment.

Results: At 6 months, the percentage of maternal lactation was cut in half and only 24.6% of these mothers maintain. Mainly 15.80% of the mothers decide to give up the exclusive maternal lactation of their own free desire, and 15.41% because they suspect hypogalactia. The work cause is the third reason of abandonment in both cases.

Conclusions: Our results show the need to improve the health policies of promotion, protection and support the initiation of breastfeeding. In particular, our results show the importance of the work factor with particular emphasis on improving conciliation measures.

KEY WORDS

Breastfeeding; Evidence-based Nursing; Health Promotion; Women's Health; Newborn.
INTRODUCTION

It is clear that breastfeeding is undoubtedly the gold patron for infant feeding due to the many advantages that it offers to both, the infant and the mother [1-4].

In this way, from the perspectives of public policies, the World Health Organization (WHO) adopted both the Global Strategy on Diet, Physical activity and Health (2004) and the Action Plan to Implement the Global Strategy for Prevention and the Control of Non-Communicable Diseases (2008), including the promotion of breastfeeding as complementary feeding among the interventions to reduce the common modifiable risk factors for non-communicable diseases, highlighting maternal and child nutrition as a priority intervention area [5,6].

Likewise, the comprehensive implementation plan on maternal infant nutrition and young children (2014) includes as the World Goal nº 5 for 2005 to increase the breastfeeding rate of exclusive breastfeeding in the first 6 months of life to at least 50% [7].

Equally, in the field of national scientific societies, The Academy of Medicine, The American Academy of Pediatrics (AAP) and The Spanish Association of Pediatrics (AEP), recommend exclusive breastfeeding for up 6 months and to continue together with complementary feeding for two 2 years or more [8,9].

From the perspective of its effective implementation, according to the map published in 2016 by UNICEF, the highest rates of exclusive breastfeeding in the world are presented by the South Asian countries with 60% followed by the East and South Africa with 57% [10, 11]. In Europe, in the study carried out by Bagi Bosi, the data of 53 European Members States of the WHO were investigated, finding a wide disparity in rates. Nine out of 21 countries (a big quantity of countries did not provide any data) had an initiation rate higher than 50%. The lowest prevalence was observed in Bulgari (5%) and Serbia (8%), and the highest in Kirgizstan (Asia) where 84% of infants started the breastfeeding 1 hour after birth.
For the 4th month, the percentages are as follows: From 2% of Bulgaria and 3.7% of Poland to 56.1% of Kyrgyzstan (Georgia) and 52.4 of Croatia. To the 6th month, Greece, Finland and United Kingdom only reach 1% in opposition to 49% of Slovakia and a 44% of Hungary. To the year, the highest rate was in Uzbekistan with 78%, followed by Turkmenistan with 6% and the lowest rate was for Greece with 65 and Tajikistan with 1% [12].

Regarding the current prevalence in Spain, we found limitations in its determination due to we have not an adequate official record of follow-up and monitoring of breastfeeding. The main sources of information about the percentage of breast fed children are the Health Survey by interview according to the 2017 national health survey. 74% of mothers continue to breastfeeding at six weeks. Subsequently, there is a decrease at 6 months when only 9% of them continue to breastfeed [13].

Having established these premises, numerous factors have been describe which can influence both the onset and the duration if the breastfeeding: Higher maternal education [14, 15], parity [16], delivery at term [2], vaginal delivery [17, 18], the skin to skin contact between mother and child just after the birth [21], the previous experience, the non-separation of the binomial mother-child and the breastfeeding education received [19, 21, 22].

In this way, the objective of our study was to identity the main reasons for cessation breastfeeding declares by the mother themselves during the first year, for later check it if there was a correspondence with others studies and indicate possible causes of a possible divergence.

**MATERIALS AND METHODS**

A prospective cohort study was carried out recruiting 970 consecutive newborns in a third level hospital in the North of Spain from 1st January, 2018 to 31th August, 2018.
Data source:

The data analyzed in this studio were obtained from the medical history of the newborn and the mother. The main maternal variables studied were maternal age, parity, educational level, work occupation and smoking habit. The neonatal variables studied were gestational age, birth weight, feeding type and duration of breastfeeding. All the participants were followed for a year to determine the duration of breastfeeding and to know the reason of the abandonment were classified as: maternal desire, low milk supply, weaning of the child, medical contraindication and labor cause.

Statistical analysis:

For the categorical and discrete variables, proportions with their corresponding IC, were estimated at 95% (IC 95%) using the Pearson’s Chi square test to compare, or alternatively the Fisher’s exact test if more than 20% of fields had a number of cases less than or equal to 5. For continuous variables, the mean and the standard derivation (SO) were estimated. The Kolmogorov-Smirnov’s test was used to determine the normality of the distribution. Odds-Ratios (OR) were estimated with their 95% confidence intervals using unconditioned logistic regression. The Alpha error was 0.05 and all the values of “p” were bilateral.

Ethical-Legal Considerations:

The study was probed by the Clinical Research Ethics Committee of Cantabria the 21th July, 2017 (project identification code 2017.142). During the stay hospital after the birth, parents were informed about the existence of the study and they were also request to sign consent to participate in it. All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki. The data was pseudo-anonymized and processed in a confidential way according to the regulation (UE) 2016/679, 27th April, 2016 on the protection of natural persons with regard to personal data processing and free movement.
of this data and the organic law 3/2018, 5th December about personal data protection and guarantee of digital rights. Each patient was identified with a unique specific code making compatible the confidentiality and the follow-up of medical data. Likewise, specific security measures were taken to prevent the re-identification and the Access of unauthorized third parties.

RESULTS

The descriptive data of the cohort were previously published [20]. The age of the mothers was 33.7 ±5.2 years, with a rank between 17 and 52 years old. 53.48 % were primiparous. 36.9% (n=350) studied at the university and about 70% were active workers. 1.5% were smokers with a consumption of approximately 7.2 cigarettes per day. In the descriptive analysis of the employment situation of the puerperal women according to the type of infant feeding method, no statistically significant differences were found [20].

In relation to the newborns 50.52% were male and 49-49% were female. The main gestational age at the birth moment was 39.09 ± 1.96. 93.81% were delivery at term, 4.02 were late preterm deliveries and 2.17% were premature deliveries. The average weight of newborns was 3244.55 ± 572.33 grams with a rank from 870 to 4840 grams [20].

The prevalence of exclusive maternal lactation at the moment of the discharge from hospital (at 48 hours of life) our was 53.40%. Following the evolution of the prevalence in 12 months studied, we can see a considerable drop of the exclusive maternal lactation between the 3-4 months leading to formula feeding. In such a way that at 6 months the percentage of maternal lactation was cut in half and only 24.6% of these mothers maintain it against 49.8% of formula feeding. At 12 months, only 24.67% of mothers continue to breastfeed their children (table 1).
The main reasons for this abandonment are shown in table 2. Mainly 15.80% of the mothers decide to give up the exclusive maternal lactation of their own free desire and 15.41% because they suspect low milk supply. If we talk about the mothers who chose a mixed feeding, the main causes are the same: 16.7% suspected low milk supply and 16.1% maternal desire. The labor cause is the third reason of abandonment in both cases.

**DISCUSSION**

The exclusive breastfeeding rate in the newborns at the time of hospital discharge was 54.95%, being this, lower than in other communities and also being far away from the required one by the IHAN initiative that establishes at least 75% of exclusive breastfeeding from the birth to the hospital discharge.

In Madrid, the ELOIN cohort published an exclusive breastfeeding prevalence of 77.6% [23], in Aragon the CALINA study 8.25% (24), in Guipuzcoa the INMA cohort was 84.8% [25], in Murcia 91.2% [26] and in Valencia community the Malam project was 81% [27].

Our study shows a drop in the breastfeeding between 3 and 4 months. In such a way that at 6 months, only 24.56% maintain an exclusive breastfeeding. This data agree with the ELOIN study carried out in Madrid where the exclusive breastfeeding rate was 25.4% [23]. In Aragon, CALINA study obtained a lower rate 54.3% but higher than in Guipuzcoa where the INMA study obtained only 15.4% [25].

In this case of mothers who began an exclusive breastfeeding, the main reasons of low milk supply (15.4%), labor causes (9, 83%). The percentages are very similar in the mixed feeding.
Our results do not match with the data obtained in the National Studies regarding the reasons for cessation breastfeeding. In the ELOIN study the most common reasons to abandon the breastfeeding are lack of milk (36%), and incorporation to work (25, 9%). In the INMA study the main reason is the labor one (31.1%) followed by the hypogalactia (19.4%).

The differences founded could be due to various aspects. First of all, the maternal desire to abandon breastfeeding can be influenced by the social and cultural context in which the mother lives, being grandmothers a key in the support and the intergenerational transmission of breastfeeding [28-30]. Sometimes, maternal desire is given by a lack of family and social support. More qualitative studies are needed to delve into maternal decisions.

The diagnosis of hypogalactia is the second aspect. The hypogalactia is a term frequently misinterpreted by mothers when they believe that their children are left hungry. Poor milk production can be caused by somatic and psychological factors. Morton, proposes 3-level classification: Preglandular (hormonal, nutritional or systematic causes), glandular (primary or secondary hypoplasia), postglandular (mother-child separation and inadequate emptying of the breast) [31].

The health personnel who take the real causes of hypogalactia in order to help these, others in the management and so to avoid unwanted abandonment. Third aspects that we must not forget are the psychosocial factors which can influence milk production provoking a postglandular hypogalactia [32].

To end, in relation to the labor cause, it is really important to underline the impact that legislation has on the matter. UNICEF, has expressly highlighted the importance of the enactment of national laws recooking paid maternity leave or world breaks for
breastfeeding, protected by convention 183 of the International Labor Organization of the year 2000 [11,33].

In this way, maternity leave in Spain is 16 weeks [34]. If we compare it with other countries of Europe, we can see that in Sweden for example, the maternity leave is 180 days (16 months) where it is not only shared by the father and the mother but also they receive 80% of their salary during the first 390 days. In Bulgaria, mothers have a maternity leave of 410 days receiving the full salary and having the possibility to extend it for 3 years. In this case, they will receive a percentage of their salary during the second year and nothing during the third one. Albania, United Kingdom, Bosnia and Montenegro, have 365 days (a full year). Norway has 315 days (about 10 months), Greece has 301 days (42 weeks; 10 months), Ireland has 294 days (42 weeks; Almost 10 months) [35, 36].

According to the data published in the standardized survey, the national breastfeeding initiatives committees in 11 European countries, at 6 month, the countries with the highest rate were Norway (71%), Sweden (61%) and Germany (57%) [37].

The incorporation of the mother to the world of work puts exclusive maternal lactation in risk, forcing mothers to incorporate formula milk or complementary feeding during their working hours. If mothers have a part-time work, they could do that, but if they have a full-time work they will probably have to abandon it.

It has been demonstrated in numerous previously published studies that paid maternity leave contributes to the promotion and support of exclusive breastfeeding up to 6 months [38-47]. In the studio published by Gramdahl, the maternity leave during the first 24 months (p<0.001) is associated with a longer duration of breastfeeding [44].
CONCLUSIONS

Our results show the need to improve the health policies of promotion, protection and support the initiation and continuation of breastfeeding. In particular, our results show the importance of the labor factor with particular emphasis on improving conciliation measures that allow mothers, if they so desire, to maintain an exclusive maternal lactation up to 6 months and also be able to continue with the supplementary feeding up to 2 years or more (maintenance of lactation).

In any case, further research into the causes of breastfeeding cessation is recommended, as it is essential for designing programmes to help these mothers to continue breastfeeding if they wish to do so.

Limitations

In studies based on secondary information (records), one of the main limitations is the lower quality of the information. This lower quality could be due to a lack of agreement in information provided through different records or to an insufficient completion of the histories required for the study. To minimize these biases, the variables that are collected in a more homogeneous, systematic and objective way in the electronic medical records were chosen a priori. Likewise, prior to the definitive inclusion of the variables, the concordance between the data from the different sources used was assessed.

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Author Contributions
Conceptualization, Carolina Lechosa-Muñiz, María Paz-Zulueta, Joaquín Cayón De Las Cuevas, Javier Llorca and María Jesús Cabero; Data curation, Carolina Lechosa-Muñiz and María Paz-Zulueta; Formal analysis, Carolina Lechosa-Muñiz, María Paz-Zulueta and Javier Llorca; Funding acquisition, Carolina Lechosa-Muñiz and María Jesús Cabero; Investigation, Carolina Lechosa-Muñiz, María Paz-Zulueta, Joaquín Cayón De Las Cuevas, Javier Llorca and María Jesús Cabero; Methodology, Carolina Lechosa-Muñiz, María Paz-Zulueta, Joaquín Cayón De Las Cuevas, Javier Llorca and María Jesús Cabero; Project administration, Carolina Lechosa-Muñiz, María Paz-Zulueta, Javier Llorca and María Jesús Cabero; Writing – original draft, Carolina Lechosa-Muñiz, María Paz-Zulueta, Joaquín Cayón De Las Cuevas, Javier Llorca and María Jesús Cabero; Writing – review & editing, Carolina Lechosa-Muñiz, María Paz-Zulueta, Joaquín Cayón De Las Cuevas, Javier Llorca and María Jesús Cabero.

Conflict of interest
The authors declare not to have any conflict of interest.
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Table 1. Prevalence of breastfeeding and its evolution during 12 months.

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<th>Moment</th>
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<th>95% CI</th>
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Table 2. Main reasons for cessation breastfeeding.

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