

A Breastfeeding e-Learning Project Based on a Web Forum

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ABSTRACT

Objective: The Internet has introduced new ways of learning that may complement medical training during the residency period. We describe the experience with a new method of e-learning for training in human lactation and breastfeeding counselling. Pediatric residents participated in the Human Lactation Forum maintained by the Spanish Pediatric Association Breastfeeding Committee, a site on the Internet where parents may write in for pediatric advice on breastfeeding.

Methods: From April 2005 to May 2006, 42 pediatric residents from four hospitals in Spain received a month of intensive theoretical training on breastfeeding, and afterward, they took weekly turns answering parents' questions in the forum. Before and after the experience, they completed a pre-post knowledge test and an opinion postexperience questionnaire with open questions. A t-test was used to analyze the differences pre- and posttest; the opinion questionnaire was analyzed qualitatively.

Results: The mean age of participants was 28.3 years; 88% were women, and 80% were in their third or fourth year of residency. The percentage of correct answers was higher after participation in the program, and the difference had statistic significance. The residents estimated that nearly a half of their patients needed breastfeeding advice, and they thought that the program improved their knowledge of breastfeeding and their communication skills with mothers. On average, they spent 2.9 hours daily to answer the questions.

Conclusions: The learning experience was positively evaluated by the participants and contributed to increase their knowledge and skills in breastfeeding issues. We think it is a good method for training future pediatricians on breastfeeding management. In addition, the instrument may contribute to improve lactation knowledge among pediatricians.

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INTRODUCTION

BREASTFEEDING IS NATURE'S WAY of nurturing the human infant and young child. Exclusively offering human milk to human babies, up to the sixth month of life, and complementing it afterward with other adequate, safe, opportune, and properly prepared foods is the best way to achieve an infant's optimal health, growth, and development. It also ensures the best health for the mother, and saves unnecessary costs both to families and society. Artificial feeding, which exposes children and their mothers to unnecessary health risks in both the present and the future, also subjects society and the environment to preventable harm.¹ Nevertheless, most European countries still have low rates of breastfeeding, and the duration of lactation is far below International Recommendations. Furthermore, observed high rates of early abandonment are usually due to inadequate routines or lack of knowledge or support from the mother's or child's healthcare providers or the mother's family or friends. The European Commission, aware of this as a Public Health Problem of Priority in Europe, has recently launched the Strategic Plan for Breastfeeding Protection, Promotion and Support² and Standard Recommendations for feeding the infant and young child in Europe.¹ Some of the recommendations included in this strategic plan are: pregraduate education, continuing education, and in-service training for health professionals; development of materials for interdisciplinary continuing education and the use of the Internet for the improvement and exchange of knowledge and experience.

Even though there is no adequate official system for monitoring breastfeeding rates and practices in Spain, the results of several studies indicate that human lactation in Spain remains well below World Health Organization (WHO) recommendations:³ breastfeeding at 6 months lies between 6% and 28%;⁴⁻¹⁰ only 12 maternity hospitals in the whole country have the UNICEF Baby Friendly award, and several authors have described deficiencies in breastfeeding knowledge among health professionals, health authorities, and pediatric residents.¹¹⁻¹⁷ In 1996, aware of the important role pediatricians may and should play in the pro-

motion, protection, and support of breastfeeding, a few pediatricians constituted the Committee on Breastfeeding of the Spanish Pediatric Association. The group's objectives were the expansion of knowledge and interest in breastfeeding and human lactation among Spanish pediatric professionals. Over the past few years the group has organized, participated in, and coached three Congresses on Human Lactation, several professional education courses, and in-service training for physicians (pediatricians and family medicine doctors) and other healthcare providers (nurses and midwives). The committee also published "Breastfeeding. A Guide for Professionals"¹⁸ in 2004, besides various articles in scientific journals. In 2001, the Committee inaugurated a web page (www.aeped.es/lactanciamaterna/) linked to the Spanish Pediatric Association's website (www.aeped.es). In 2002, two interactive forums were created: a forum for professionals and another for mothers, fathers, and significant others. The experiences in the forums have been published elsewhere,¹⁹ and some of these experiences were described and discussed in the Breastfeeding Guide for Professionals.¹⁸

New technologies offer new methods in learning (e-learning) which seem to be at least as efficient as the traditional ones. e-Learning is an excellent way to complement other teaching methods and to help students in theory application,²⁰⁻²³ especially if the system used is based on case reports.²⁴

In 2005, after considering the above, the committee designed this learning method, which uses the forums to train pediatric residents in human lactation and breastfeeding issues. This article describes the e-learning project, the learning results, and the opinions of the participating residents after their experience.

MATERIALS AND METHODS

The forum

The forum can be visited at <http://www.aeped.es/lactanciamaterna/>, the web page of the Committee on Breastfeeding of the Spanish Pediatric Association. The breastfeeding forum

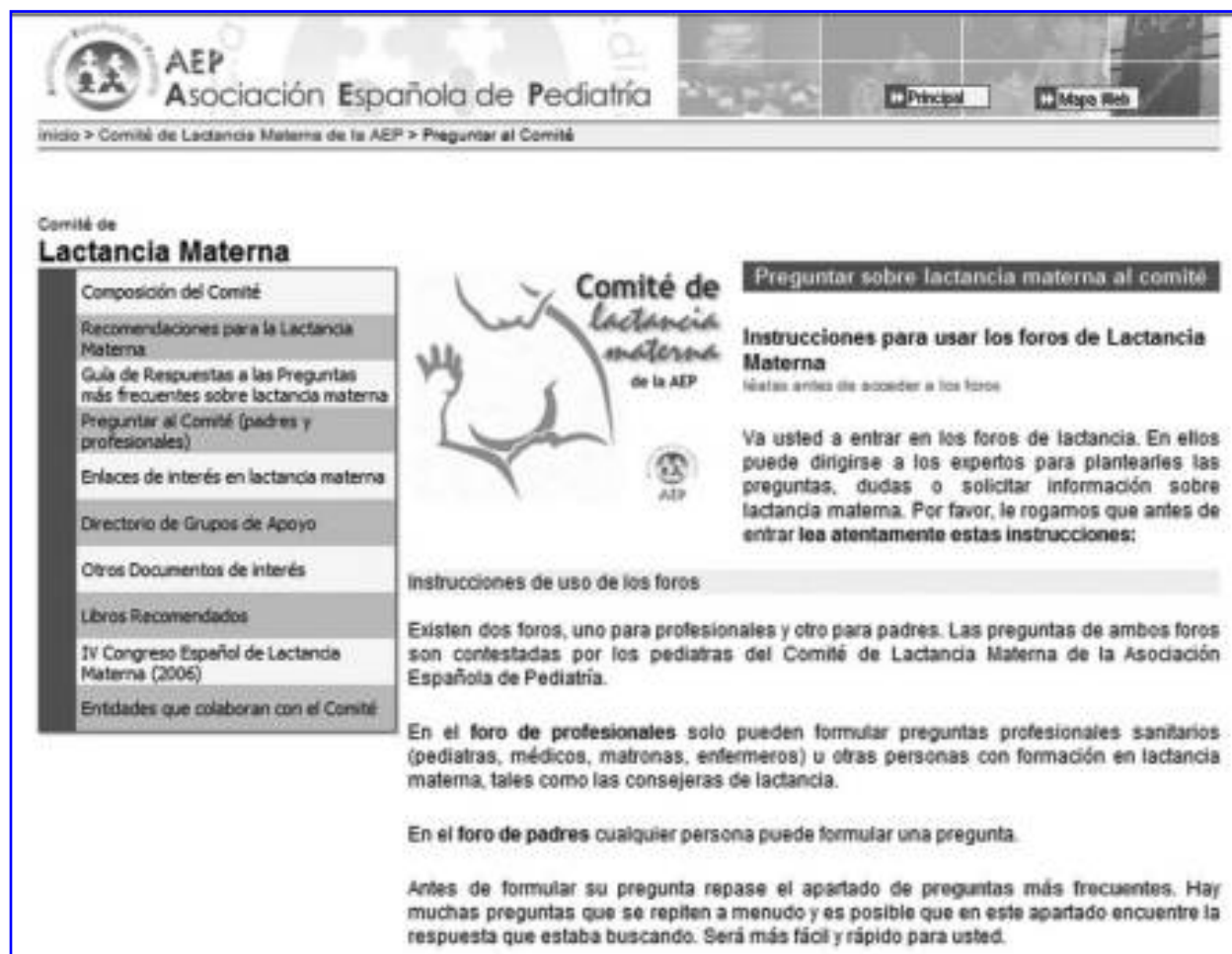


FIG. 1. Forum home page.

is subdivided into a professional forum (access restricted to health professionals) and a forum for breastfeeding mothers or families. Both sites are access-free and no registration is needed (Figs. 1 and 2). In the parents' forum anyone may submit questions or comments on those sent by others. Each question gets an answer from a member of the committee, who, after reading the question and the comments made by other participants, sends an answer which will appear in the forum site within 24 to 48 hours. The result is that each new question starts a chain of comments and answers, apart from the committee answer.

There is a general forum coordinator who constantly supervises the questions and comments of the forum (from time to time offensive messages appeared which were immediately eliminated). He coordinates the work of

the committee members (who answer the forum in biweekly sessions) and is responsible for updating the page and links. One of the links is to a page of frequently answered questions (FAQs) which forum users are encouraged to visit. The web visitors have mostly (77%) participated in the forum by sending one or two questions each, but there is a small percentage (3%) of participants who have sent more than 10 questions per person.

The questions were related to problems with the baby's weight gain or quality and quantity of the mother's milk (14%), children's diseases (13%), mother and infant use of medications (9%), complementary feeding (9%), and questions related to the mother's return to work (19%).^{18,19} Data on the number of questions received and answers given per month and per year can be seen in Table 1.

volver al principal de foros

Cómo usar el Área de Preguntas y Respuestas para PADRES

Antes de formular una pregunta repase el apartado de "respuestas a las preguntas más frecuentes"

Para formular una nueva pregunta pulse en "escribir un nuevo mensaje"

- incluya siempre su nombre y apellidos, profesión, lugar de residencia y e-mail (compruebe que este está escrito correctamente). De no ser así su pregunta no será contestada.
- pégale un título a la pregunta que permita identificar bien a qué se refiere esta.
- antes de enviar el mensaje, para evitar ataques SPAM al Foro, deberá escribir en la casilla inferior, el texto o números que aparecen en la imagen justo superior.

Para volver a visualizar el foro como al principio pulse "recargar este foro"

Preguntas sobre Lactancia Materna (PADRES)

Recargar este foro | Escribir un nuevo mensaje | Últimos mensajes | Mensajes antiguos

Temas	Autor	Fecha
MI HIJO DE 7 AÑOS QUIERE MAMAR	Silvia	02-04-07 08:49
Re: MI HIJO DE 7 AÑOS QUIERE MAMAR	comite de lactancia	02-04-07 08:52
Re: MI HIJO DE 7 AÑOS QUIERE MAMAR	Désirée Sanz	02-04-07 08:58
Re: MI HIJO DE 7 AÑOS QUIERE MAMAR	Montse	02-04-07 08:59
Anestesia local y LM	Eva María	30-03-07 16:33
Re: Anestesia local y LM	Inma	31-03-07 22:59
Re: Anestesia local y LM	Désirée Sanz	31-03-07 23:16
Re: Anestesia local y LM	Eva María	02-04-07 00:23
Re: Anestesia local y LM	comite de lactancia	02-04-07 08:56
Rayos UVA compatible con Lactancia??	Santiago	02-04-07 07:47
Re: Rayos UVA compatible con Lactancia??	comite de lactancia	02-04-07 08:46
vuelta al trabajo	natalia	01-04-07 19:06
Re: vuelta al trabajo	gema	01-04-07 19:50
Re: vuelta al trabajo	comite de lactancia	02-04-07 08:29
Pildora	Cristina	01-04-07 21:36
Re: Pildora	comite de lactancia	02-04-07 08:27

FIG. 2. Questions and answers appearing in the forum.

The e-learning project

This program took place from April 2005 to May 2006.

The coordinator of the forum was also the coordinator of the project, and his role was to register participants, coordinate the program, and supervise the evaluations and the participation in the forum by the pediatric residents.

Selected hospitals were "Hospital 12 de Octubre" (Madrid), "Hospital Universitario de Canarias" (Tenerife), "Hospital Joan XXIII" (Tarragona), and "Hospital Miguel Servet" (Zaragoza) (Table 2).

The hospitals were not randomly chosen. They were selected among those willing to participate and which had a member of the pediatric staff with wide breastfeeding knowledge. Thus, three of the hospitals were selected because the advisor was a member of the breastfeeding committee, and in the fourth hospital

the advisor was a member of the pediatric staff with special commitment to human lactation and breastfeeding.

Once hospitals and advisors had been selected, the project was presented to all of the pediatric residents in each hospital. Participa-

TABLE 1. NUMBER OF QUESTIONS AND ANSWERS SENT TO THE FORUM FROM MARCH 2002 TO AUGUST 2006

Year	Questions n	Committee answers	Other users' answers	Total
Total 2002 (Mar-Dec)	91	100	32	223
Total 2003	537	590	986	2113
Total 2004	2255	2300	3670	8225
Total 2005	2456	2548	4639	9643
Total 2006 (Jan-Aug)	2175	2159	3767	8101
Total	7514	7697	13,094	28,305

TABLE 2. CHARACTERISTICS OF PARTICIPANTS

Age (years)	Mean 28.5 years	Range 25–37
City of selected hospital	Participants N	% of Total
Madrid	20	47.6
Tenerife	10	23.8
Zaragoza	8	19
Tarragona	4	9.5
Total	42	100
Year of residence	N	% of Total
4°	19	45.2
3°	15	35.7
2°	5	11.9
1°	3	7.1
Total	42	100
Gender	N	%
Women	37	88.1
Men	5	11.9

tion was voluntary, and those interested in participating were asked to send an e-mail of acceptance with their personal data to the general project coordinator. Forty-two pediatric residents participated from a total of 95 who were invited to participate (44%).

During the training period, the advisors provided the residents with recommended readings^{18,25–28} directed their learning process, and helped them become familiar with two main web pages: www.aeped.es/lactanciamaterna/index.html and www.e-lactancia.org (a useful tool for questions on medication and breastfeeding). They were given a month to read the documentation, to discuss doubts with their advisor, and to visit the forum exclusively as spectators at that time. They also learned how it worked, what type of language should be used, and how to manage questions and answers properly. After that and before beginning their active participation, residents were tested with four case reports. These were chosen from past real questions posed by mothers to the forum. The residents had to answer them as if they were actually participating in the forum. The evaluation was conducted by the general coordinator and by another member of the

committee. Its objective was to check whether the residents were ready to answer questions suitably. The results of these tests, with orientation and advice if needed, were sent back to the residents. If the resident passed the evaluation, she and her advisor received the authorization to participate for a whole week in the forum and to answer the questions sent in by users. During that period and under the supervision of the advisor, they read and answered daily e-mails sent by mothers, fathers, or other users (residents did not answer the professional forum). The coordinator and another member of the committee supervised these answers. Whenever it was necessary, residents' answers were modified, completed, or eliminated, but this was unusual.

Pre- and postevaluation

In three of the four participating hospitals, residents had to complete a questionnaire that evaluated their breastfeeding knowledge. This questionnaire was a modified version of the ones published by Jaquenod and Vallone²⁹ and later modified by Temborry.¹⁷ These have been widely used in several settings, but before using it, some minor changes were introduced and the questionnaire was validated (publication pending).

In addition, after participating in the forum, residents were also asked to complete a satisfaction questionnaire which asked for their opinions and other issues such as the time they spent answering e-mails in the forum. This was designed as a qualitative questionnaire but it did not include a Likert scale.

Data analysis

Epi Info 3.3.2 statistical package for windows³⁰ was used for data processing and analysis.

RESULTS

Participants

Most of the participating residents (82%) were in their third or fourth year of residency (pediatric residency in Spain lasts 4 years).

Eighty-eight percent of them were women between the ages of 25 and 37 (average age, 28.3 years) (Table 2). Participation was voluntary, and we did not ask why some did not participate.

Quantitative analysis

The pre- and postexperience evaluation results can be seen in Table 3. The percentage of correct answers increased from 79.5% preexperience to 88.3% postexperience; this difference was statistically significant ($p = 0.0028$). The residents reported having spent an average of 2.9 hours/day in reading and answering the questions in the forum.

We were able to collect 34 (out of 42) satisfaction questionnaires. When these were completed, 41.2% of the respondents already had jobs as pediatric staff in a pediatric hospital or in Pediatric Primary Health Care (8.2%), and 38.2% were still completing their residency program. The satisfaction questionnaire asked about the strengths and weaknesses of the experience. They were also asked to estimate the percentage of patients attended each day who needed help with breastfeeding issues.

The respondents answered that, on average, 44% of their patients needed support with breastfeeding. Six of the participants noted that 100% of their patients needed counselling on the topic, and more than half of the participants said that at least 25% of the patients visited each day needed breastfeeding help. Only two of them said that they had had no opportunity to use the acquired knowledge.

Regarding their training before being allowed to answer questions in the forum, most of them (80%) thought that the knowledge acquired had been sufficient, and those who did not feel so would have liked to have had more practical learning or specific courses on breastfeeding.

Open questions

There were positive comments from all the respondents in the postexperience questionnaire: 57% of them valued the help that the forum offered to lactating mothers; 46% of them considered that participating in the forum had been a good way to learn about breastfeeding

TABLE 3. COMPARISON OF TEST RESULTS
PRE- AND POST-EXPERIENCE

<i>Answers per participant^a</i>				
	<i>Pretest</i>		<i>Posttest</i>	
	<i>Correct</i>	<i>Incorrect</i>	<i>Correct</i>	<i>Incorrect</i>
Mean	14.7	3.3	17.2	1.7
St Dev	5.7	1.7	6.5	1.3
Mode	21	3	23	2
Min	7	0	8	0
Max	24	7	24	4
<i>% of Correct answers</i>				
	<i>Pretest</i>		<i>Posttest</i>	
Mean of percentages	79.5		88.3	
Standard deviation	13.2		10.7	
<i>t-test = 0.0028</i>				
<i>Confidence interval of the increase in percentages of correct answers: 5.2–12.6</i>				

^aThe first part of the table shows descriptive statistics of correct and incorrect answers per participant before and after participating in the program.

issues and communication skills. It was also valued as an excellent way to understand mothers' worries. Another positive aspect mentioned was the fact that the forum allows mothers to participate actively and to help each other. This was valued because it was viewed as a way of empowering mothers.

Some participants (13%) felt that the experience was extraordinarily positive both personally and professionally.

We also asked the participants to write down any negative aspects of the experience. Sixty-eight percent of the respondents included some: 22% found some of the mothers' comments to be too rigid, with no scientific basis, too unrealistic, or full of inappropriate judgments. These made them feel uncomfortable.

Only 16% of the residents found that participating in the forum consumed too much time daily even though, on average, they reported spending more than 2 hours daily. Some of them (8%) did not like the repetition of the questions sent by the mothers (they felt the mothers tended to ask the same questions again

and again). Some mothers used the forum to voice negative feelings toward the healthcare system or healthcare providers and that made some residents uncomfortable (8%). Some of them (5%) also disliked the excessive participation by a minority of mothers who commented on nearly every question that was sent in by other mothers. By reading the e-mails sent in by the mothers during their participation in the forum, a small percentage of residents (11%) became aware of the lack of breastfeeding knowledge among many healthcare professionals.

DISCUSSION

In their survey on physicians' and residents' knowledge and skills on breastfeeding, Freed and Cols³¹ describe that less than 50% of the respondents had confidence in their knowledge and skills on breastfeeding, and more than 70% of the practitioners had asked for breastfeeding training especially in direct patient interaction, counselling, and problem-solving skills. These authors found that residency training does not adequately prepare pediatricians for their role in breastfeeding promotion. They noted that improvements in residency training and innovative continuing education programs should be implemented to help pediatricians meet the needs of their breastfeeding patients.

In our country, some authors^{14,15,17} have also reported a lack of knowledge and training among pediatricians and pediatric residents. The e-learning program we present here was designed to help pediatric residents improve their knowledge and skills in breastfeeding management, and offers a new way to fill this gap in our pediatric residents training. Internet has opened the gates to new information and communication³²⁻³⁴ and to new models of patient-physician interaction and relationships. It has also introduced innovative and attractive methods of learning and training.

The search for health-related topics or medical information is the third most popular activity among Internet users;³⁵ between 33% and 70% of consumers acknowledged that the information obtained via Internet influenced

their decisions. However, only a few said that it actually had had an impact on their seeking help on health problems.³⁶ The two main consequences of this search for health topics on the Internet³⁷ are that patients are better informed, and this enables them to establish a different level of communication with their healthcare providers. However, this search for information may erode, to some degree, the relationship between healthcare provider and patient. When asked, many users said that they would like their physicians to help them find reliable web pages where they could look up information. They also stated that they would be willing to discuss the information found with their doctors.^{38,39} Our e-learning method offers the future pediatrician the possibility of getting acquainted with this reality. After participating in the forum, and meeting many mothers via the Internet, they were faced with easy and not so easy questions, and they had to apply their communication skills—via Internet—to convey their knowledge, support, and caring. By reading mothers' comments they learned how mothers feel, and were able to show more empathy when addressing them in the clinic.

Many of the questions that mothers sent to the forum were not just looking for help but sought a second opinion. Several mothers asked for emotional support and more than a few complained of their doctor's negative or uninformed opinions on breastfeeding issues, a point which has also been brought up by others.^{39,40} Also, not infrequently, some displeased mothers who entered the forum extended their dissatisfaction with a particular provider to all pediatricians or to the whole public health system, making it necessary then to use subtle tactics to redirect the debate that subsequently arose in the forum. We usually suggested one or two references to bring to their healthcare provider in order to work toward a better mother-doctor relationship. The mothers' complaining on the Internet made the residents feel especially uncomfortable, but the experience was useful: they learned that pediatricians must be well informed because information is easily available on the web and they must be prepared on breastfeeding issues and skills if they want to maintain the mothers' confidence.

It has also been described that users of this

type of forums prefer to get a personal answer to their questions rather than reading the FAQs.⁴¹ Some others have also described how mothers greatly appreciate a personal answer from the pediatrician even if a similar question has just been addressed.⁴² Residents viewed the repetition of certain questions as too much of a burden, but this helped them learn that the use of patience is a must in real pediatric practice. They were also trained to direct the users to the FAQs section when a topic became very repetitive in the forum.

In general, the e-learning experience was evaluated positively by the residents and advisors. The residents' sensitivity and skills in managing breastfeeding-related problems had increased. Even though the data were collected qualitatively as a subjective impression, the results reflected the experience of others who have designed similar learning systems.⁴³

According to an objective evaluation based on valid testing, the knowledge of the residents who participated in the experience clearly improved. Since the selection of participants was not random, we cannot know whether this would have applied to the whole group. However, it is possible that those who participated were already interested in breastfeeding and had more information from the beginning than the nonparticipants. Among these, the improvement would probably have been greater.

When asked for a subjective assessment of the applicability of the knowledge they had acquired, the answers of the residents showed that more than a third of their patients needed breastfeeding help (on average, they calculated that approximately 44% of their patients required indications, counselling, or support on breastfeeding). These were clearly subjective assessments, but they did illustrate the perceptions of the trainees. It is not possible to assess whether this perception was biased due to a change in views and interests toward breastfeeding issues after participating. This aspect will be taken into account for future courses with a nonparticipating control group of similar characteristics and with the use of a Likert scale for assessing satisfaction issues.

Freed et al.⁴⁴ also stated in their conclusions that deliberate efforts should be made to incorporate clinically based breastfeeding train-

ing into residency programs. The success of these Internet forums lies in some aspects already signalled by others:^{41,45} participation may be anonymous, it is free, and easily accessible. However, in our forum there is an extra bonus: the respondents are pediatricians. As a result, large numbers of users enter the forum from different Spanish-speaking places throughout the world, making it possible for the residents to become acquainted with numerous, very different real problems which could not have been so easily addressed over such a short span of time in any single hospital or clinic.

Another drawback to the method was that it was too time consuming for the participants; some of the residents complained. Because the time factor could limit the generalization of this learning system, it might be a good idea to reduce the participation of the resident in the forum to a previously set amount of time, and perhaps even integrate the project into required residency curriculum, thereby underscoring the value of the effort.

One limitation to the study which evaluated the program was that we did not randomly select hospitals, and not all the residents in each hospital participated. We did not ask why some did not participate and nonparticipants were not tested on their breastfeeding knowledge either before or after the experience ended. This will be done in the near future.

Some residents felt that the theoretical preparation was insufficient; they would have preferred more practical learning before actively answering the forum. This is an aspect that we are considering including in the project's first phase, perhaps by having the residents participate in a breastfeeding clinic before entering the forum.

An advisor was needed to introduce the program to the participants, to monitor their progress, to direct their learning, and to be available when they entered the forum. She was readily available for their doubts and questions during their participation. As a result, when reviewing the experience of the advisors, we found that it was crucial for the advisor to be a member of the hospital's pediatric staff, and ample experience in breastfeeding greatly facilitated the process.

CONCLUSIONS

The characteristics of the forum—easy accessibility, easy to send any question, and easy to get a quick answer, free of charge, and anonymous—make it a convenient and desirable resource for mothers, fathers, families, and professionals.

It also offers good opportunities for professional learning and for health education, and it is a good way of identifying the needs of patients.

In general, we can say that the learning experience has been positively evaluated by participants and has contributed to expanding their interest, knowledge, and skills in breastfeeding-related issues.

We think this is a good method which can be considered useful and efficient. Its development and application in teaching hospitals may contribute to the increase in pediatricians' training and continuing education in breastfeeding. We have considered aspects relevant to the protection, promotion, and support of breastfeeding.

CONFLICTS OF INTEREST

The Committee on Breastfeeding of the Spanish Pediatric Association has no relation to the industry of human milk substitutes or infant foods. The web page of the Committee is partially sponsored by "NR soluciones," which commercializes accessories for breastfeeding mothers, but there is no publicity in the forum pages.

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