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Evaluation of an educational intervention workshop for medical students aimed at improving their knowledge and attitudes about breastfeeding. Quasi-experimental study

Evaluación de un taller de intervención educativa para mejorar conocimientos y actitudes sobre lactancia materna en estudiantes de medicina de México. Estudio cuasi-experimental

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Abstract

OBJECTIVE: To evaluate the impact of an educational intervention workshop for medical students aimed to improve their knowledge and attitudes about breastfeeding.

MATERIAL AND METHODS: We conducted a workshop addressing various topics and activities related to breastfeeding with the participation of 154 medical students. Their knowledge and attitudes were assessed at the beginning and end of the workshop. The data were analyzed using non-parametric statistical tests.

RESULTS: The results showed that the majority of the students improved their knowledge level, female 29.8% to 95.2% ($p<0.05$) and male 26.0% to 84.0% ($p<0.05$); and positive attitudes increased, female 29.8% to 91.3% ($p<0.05$) and male 34.0% to 82.0% ($p<0.05$). The knowledge and positive attitudes that changed significantly after the workshop were: information on breast milk nutrient content, the correct breastfeeding technique, the most common breastfeeding problems and solutions, and the need to provide mothers with counseling, support and accompaniment.

CONCLUSIONS: The educational workshop resulted an effective practice in medical students to increase knowledge and acquire positive attitudes towards breastfeeding. It is important to consider that educational interventions aimed at modifying the knowledge and attitudes related to breastfeeding through the practical training of future physicians are a positive action that could have an impact on the increase in women who achieve successful breastfeeding.

KEYWORDS: Breast feeding, educational intervention, medical students, health promotion.

Resumen

OBJETIVO: Evaluar el impacto de un taller de intervención educativa para estudiantes de medicina dirigido a mejorar sus conocimientos y actitudes sobre la lactancia materna.

MATERIAL Y MÉTODOS: Se llevó a cabo un taller con 154 estudiantes de medicina donde se abordaron diversos temas y actividades relacionadas con la lactancia materna, al inicio y fin del taller se evaluaron sus conocimientos y actitudes. Los datos se analizaron utilizando pruebas estadísticas no paramétricas.

RESULTADOS: Se encontró que la mayoría de los estudiantes incrementó su nivel de conocimientos, en mujeres de 29.8% a 95.2% ($p<0.05$) y en hombres de 26.0% a 84.0% ($p<0.05$); y sus actitudes positivas aumentaron, en mujeres de 29.8% a 91.3% ($p<0.05$) y en hombres 34.0% a 82.0% ($p<0.05$). Los conocimientos y las actitudes positivas que cambiaron significativamente después del taller fueron: información sobre

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CONCLUSIONES: El taller educativo resultó ser una práctica efectiva en los estudiantes de medicina para aumentar los conocimientos y adquirir actitudes positivas hacia la lactancia materna. Es importante considerar que, las intervenciones educativas encaminadas a modificar los conocimientos y actitudes relacionados con la lactancia materna a través de la formación práctica de los futuros médicos son una acción positiva, que podría repercutir en el aumento de mujeres que logran una lactancia materna exitosa.

PALABRAS CLAVE: Lactancia materna, intervención educativa, estudiantes de medicina, promoción de la salud.

INTRODUCTION

One of the priorities of Public Health is the promotion, protection and support of breastfeeding (BF) as a determining factor for maternal and infant health. Scientific evidence shows that BF is the best choice for infant nutrition and health, in addition to offering multiple benefits for the mother. The World Health Organization (WHO) recommends that, for optimal physical growth and mental development of the infant, BF be started within one hour postpartum and exclusive breastfeeding should continue for six months, with timely introduction of adequate, safe, and appropriate complementary foods thereafter and continue to breastfeed up to two years if both the mother and the baby are willing to.[1]

In Mexico, according to the National Health and Nutrition Survey (ENSANUT) 2018[2] only 28.4% of women exclusively breastfeed during the first six months of life. This figure is below the global nutrition goal, which is of at least 50.0%.[3]

There are many risk factors and social determinants that influence the abandonment of BF. Among these factors are the mother's lack of information on the advantages of BF and lack of knowledge of the correct breastfeeding technique. Research carried out with Mexican population has shown that the main obstacles to BF are the inexperience of mothers to breastfeed, their little confidence in producing enough milk, and their need to return to work.[4,5] Therefore, counseling and accompaniment by health professionals would be of great benefit to achieve a successful BF.

Hence, it is of fundamental importance that during their academic training, health professionals are educated on BF and its benefits on health promotion and disease prevention, so that the students acquire the knowledge and develop the attitudes that will allow them to guide mothers, through support and accompaniment, emphasizing the many benefits of BF for the mother's and infant's health.

Several studies in different countries have explored the knowledge and/or attitudes on BF in medical students, the results are variable, but most point out that their knowledge on BF is limited, which makes them unable to provide effective counseling and support to mothers who wish to breastfeed. On the other hand, it has been observed that educational interventions aimed at modifying the knowledge and attitudes regarding BF implemented during the academic training of medical students are effective actions for students to become well-trained lactation promoters.[6,7]

Researches carried out in Mexico have evaluated the degree of knowledge and attitudes in health professionals. Hurtado et al. (2014)[8] reported a score of 6.5 in physicians and 6.0 in nurses on a scale of 1 to 10, while Sánchez (2016)[9] found that family physicians have poor knowledge and few skills on BF.

OBJECTIVE

To evaluate the impact of an educational intervention workshop for medical students aimed to improve their knowledge and attitudes about breastfeeding.

MATERIAL AND METHODS

Design and study sample

A quasi-experimental epidemiological design was used, the type of study was before and after (pretest-posttest). The convenience sample was formed by 154 undergraduate medical students, 67.5% female and 32.5% male, with an average age of 20±1 years, from seven groups. All students were informed of the study goal and their informed consent was required to answer the evaluations and participate in the study, ensuring the privacy and confidentiality of the information provided.

Characteristics of the educational intervention workshop

The general goal of the workshop was to provide evidence-based information so that students understood the benefits and importance of initiating, maintaining, and continuing BF and to provide them with practical tools to enable them to show women a proper breastfeeding technique. The workshop was part of the subject Health Promotion in the Life Cycle and was planned as a practical activity, providing the students the opportunity to participate in health promotion actions.

The educational workshop had a constructivist design with a focus on using case-based reasoning, which promotes complex thinking and practice-focused learning by facing significant problems, to allow the students to internalize, rearrange, or transform new information.[10]

The educational workshop was held in a classroom with the appropriate setting for teamwork and interaction with the speaker. The duration was of four hours in one day, alternating between theory and practice. It was given by four female speakers (a pediatrician, a pediatrician IBCLC (International Board Certified Lactation Consultant), a physician, and a dietitian) experienced in BF. The speakers agreed to standardize teaching to achieve homogeneity in all groups.

During the workshop, the theory was approached using visual support materials (PowerPoint presentations, infographics, and videos) and different group teaching techniques, such as brainstorming, role playing, and questioning to help the students construct new knowledge. The practical part of the workshop consisted on exercises with anatomical models (dolls the size of a newborn), a mammary gland simulator, modeling a mammary gland with various materials. This was done in order for the students to practice and learn the correct breastfeeding technique with an emphasis on rooting, sucking and swallowing reflexes, the proper positions of mother and baby, latching, sucking, and transferring milk.

Assessment instruments

Two assessment instruments were designed, one for knowledge and the other for attitudes. For these instruments, the items were developed using a combination of the evaluations proposed by Lou et al. (2014),[11] Kavanagh et al. (2012),[12] and Brodribb et al. (2008).[13] Once drafted, the instruments were reviewed by BF experts for the face validity process who verified that the questions were appropriate, relevant and representative of the topic. For content validity and internal consistency, a pilot test was carried out in order to correct the deficiencies of the instruments. Criterion validity was not measured.

Knowledge assessment: 15 items, each with three response options: agree, disagree and don't know. Each correct answer (hit) received one point, the final score range was from zero

to 15. The 75th percentile was considered as the cut-off point to classify knowledge level as: acceptable (greater than or equal to 12 points) and not acceptable (less than 12 points). The contents evaluated were: initiation, frequency and duration of breastfeeding (items 1, 4, 7 and 14), breastfeeding myths (item 5), breastfeeding benefits (items 2, 6 and 10), nutritional contribution of breast milk (items 3, 8, 11, 12 and 13), and breastfeeding technique (items 9 and 15).

Attitude assessment: 15 items, each one with five response options on a Likert-type scale: totally disagree, disagree, not sure, agree, and totally agree. Each response was assigned a score from one to five, higher scores were considered more positive attitudes towards BF; negatively worded items were scored inversely. The final score range was 15 to 75 points and it was divided into quartiles. The 75th percentile was considered as the cut-off point to classify the type of attitude towards BF as: positive attitude (when it was greater than or equal to 62 points) and less positive when it was less than 62 points. The contents evaluated were: breast milk benefits (items 1, 2, 3, 4 and 7), questions related to the mother and father roles (items 5, 6, 9, 11 and 12), differences between breast milk and milk formula (items 8 and 10), breastfeeding in public (items 13 and 14), and support provided by health professionals (item 15):

The BF knowledge and attitudes assessments were applied before and after implementing the workshop to compare answers.

Statistical analysis of data

The percentages obtained for each item before and after the educational workshop were calculated and compared by sex, applying the chi-square test (X^2) with a statistically significant difference with a value of $p \leq 0.05$, looking for differences in the answers between male and female students.

The classification results for knowledge level obtained before and after the workshop were compared using the McNemar statistical test with a statistical significance of $p \leq 0.05$. To compare attitudes towards BF before and after the workshop, we used Wilcoxon signed-rank test ($p \leq 0.05$), a nonparametric test that compares two-paired samples. This statistical analysis was intended to identify changes in knowledge and attitudes through the number of correct answers in the items. If the observed changes resulted statistically significant, the workshop would be considered an option to improve knowledge and attitudes towards BF. Statistical analysis was performed using the SPSS 20.0 software for Windows.

RESULTS

The initial knowledge assessment showed that 44 (28.6%) of the students presented an acceptable level, of which 31 (29.8%) were female and 13 (26.0%) male; no statistically significant differences were found between sexes.

In female students, the items with the highest and lowest number of correct answers were *breast milk is the only food that provides sufficient nutrients during the first six months (99.0%) and the nutritional content of breast milk is constant during each feeding (19.2%). In male students, the items with the highest number of correct answers were BF should begin immediately after the baby is born (98.0%) and BF helps prevent infections and allergies in the infant (98.0%); the item with the lowest number of hits was the nutritional content of breast milk is constant during each feed (28.0%).*

After the workshop, it was found that 141 (91.6%) of the students presented an acceptable level of knowledge; of these, 99 (95.2%) were female and 42 (84.0%) were male; the difference by sex was statistically significant ($X^2=5.5$; $p=0.01$), female students showed a higher increase in knowledge level **(Figure 1)**.

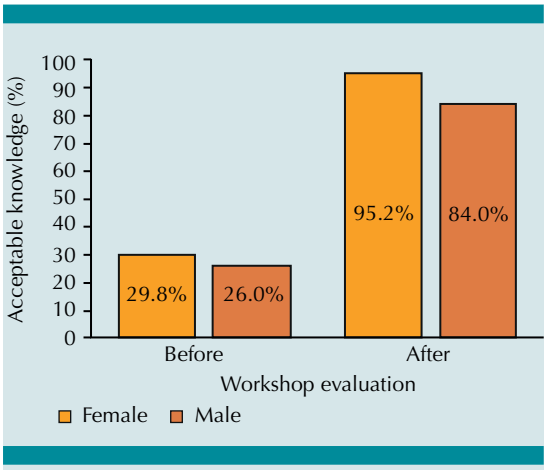

Figure 1. Evaluation of acceptable knowledge (12/15 hits) on BF before and after the workshop, by sex.

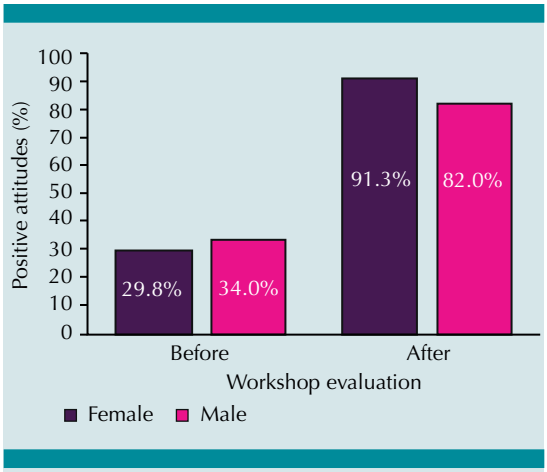

Figure 2. Evaluation of positive attitudes (62/75) towards BF before and after the workshop, by sex.

When comparing the knowledge level of the students before and after the workshop, a statistically significant difference was observed ($p \leq 0.05$). An increase in the number of correct answers after the workshop was observed in the following items: 4, 6, 7, 9, 12, and 13 ($p \leq 0.01$). When analyzed by sex, females showed an increase in the number of correct answers in the items: 3, 6, 7, 9, 10, 11, 12, and 13 ($p \leq 0.01$), with the exception of the item *alcohol and caffeine do not pass through breast milk,* where fewer hits were observed after the workshop. For male students, statistically significant differences ($p \leq 0.01$) were found towards an increase in the number of correct answers in six items: 4, 6, 7, 9, 12, and 13 **(Table 1)**.

In the pretest of attitudes before the workshop, a more positive attitude towards BF was observed among male compared to female students (34.0% and 29.8%, respectively). However, at the end of the workshop, women reported a more positive attitude towards BF than men, 91.3% and 82.0%, respectively **(Figure 2)**. The items with the most positive attitudes towards BF at the beginning of the workshop, in both male and female students, were *breastfeeding in public and the importance of the support to nursing mothers by health professionals*.

At the end of the workshop, it was found that 136 (88.3%) of the students presented positive attitudes, of which 95 (91.3%) were female and 41 (82.0%) were male. The most positive attitude in women was regarding the benefits of breast milk over milk formula (99.0%) and in male it was breastfeeding in public (96.0%). In women there was a significant change in all attitudes in contrast to men, who did not show differences in the item about the father feeling excluded if the mother breastfeeds. When comparing the positive attitudes before and after the workshop, a significant increase was obtained in both sexes **(Table 2)**.

DISCUSSION

According to the initial evaluation in the present study, it was found that medical students need to improve their knowledge and positive attitudes towards BF in general. This has been referred to in other studies such the one by Tawfik et al. (2014),[14] who mention that despite having found positive attitudes towards BF among female

Table 1. Distribution by sexes of hits regarding knowledge on BF before and after the educational intervention in medical students

Items	Before				After			
	Female		Male		Female		Male	
	n	%	n	%	n	%	n	%
1. Breastfeeding must be started immediately after birth								
	99	95.2	49	98.0	104	100	50	100
2. Breastfeeding helps prevent infections and allergies in the infant								
	102	98.1	49	98.0	104	100	50	100
3. Alcohol and caffeine do not pass through breast milk								
	84	80.8	34	68.0	69*	66.3	35	70.0
4. Mothers with an appropriate breastfeeding technique produce enough milk supply to feed their babies**								
	74	71.2	35	70.0	104	100	49*	98.0
5. Women with small breasts cannot breastfeed								
	101	97.1	45	90.0	103	99.0	46	92.0
6. Women who breastfeed have the same risk of breast and ovarian cancer as those who do not**								
	61	58.7	29	58.0	97*	93.3	45*	90.0
7 Breastfeeding frequency should be every time the baby demands**								
	59	56.7	27	54.0	102*	98.1	46*	92.0
8. The nutritional content of breast milk is constant during each feed								
	20	19.2	14	28.0	26	25.0	17	34.0
9.To prevent sore nipples it is important that the baby attaches to the nipple and part of the areola**								
	39	37.5	25	50.0	97*	93.3	45*	90.0
10. Breastfeeding prevents the mother from returning to her pre-pregnancy weight								
	77	74.0	33	66.0	89*	85.6	38	76.0
11. The hormones that allow breast milk production and letdown are independent of the baby's suckling								
	66	63.5	33	66.0	85*	81.7	39	78.0
12. The most common cause of an infant not gaining weight properly is not supplementing breast milk with milk formula**								
	70	67.3	26	52.0	100*	96.2	45*	90.0
13. Breast milk changes according to the infant's needs and time of day**								
	31	29.8	21	42.0	94*	90.4	43*	86.0
14. Exclusive breastfeeding provides sufficient nutrients during the first six months of life								
	103	99.0	47	94.0	104	100	49	98.0
15. To make sure an infant is taking enough supply of breast milk an audible swallow should be heard when suckling and the infant's proper growth should be monitored								
	68	65.4	38	76.0	104	100	50	100

*Indicates a statistically significant difference ($p \leq 0.05$) before and after the workshop by sex.
**Indicates a statistically significant difference ($p \leq 0.05$) before and after the workshop by total population.

Table 2. Distribution by sexes of positive attitudes towards BF before and after the educational intervention in medical students

Items	Before				After			
	Female		Male		Female		Male	
	n	%	n	%	n	%	n	%
1. Breast milk is less expensive than milk formula**								
	99	95.2	43	86.0	102*	98.1	47*	94.0
2. Breastfeeding benefits last just for the lactation period**								
	71	68.3	31	62.0	94*	90.4	46*	92.0
3. Breastfed babies are healthier than formula fed babies**								
	83	79.8	39	78.0	97*	93.3	47*	94.0
4. Babies enjoy breastfeeding more than bottle feeding**								
	68	65.4	28	56.0	97*	93.3	41*	82.0
5. Women know how to breastfeed instinctively**								
	32	30.8	22	44.0	62*	59.6	33*	66.0
6. Fathers feel left out when mothers breastfeed**								
	67	64.4	30	60.0	62*	59.6	27	54.0
7. Milk formula and breast milk provide the same benefits for the infant**								
	90	86.5	38	76.0	103*	99.0	47*	94.0
8. There is greater tendency to overfeed a formula fed baby than a breastfed baby**								
	52	50	33	66.0	86*	82.7	42*	84.0
9. Breastfeeding makes women's breasts less attractive**								
	90	86.5	42	84.0	98*	94.2	46*	92.0
10. Current milk formulas are nutritionally equivalent to human milk**								
	65	62.5	28	56.0	100*	96.2	46*	92.0
11. Formula feeding is the best option if the mother plans to go back to work**								
	58	55.8	26	52.0	94*	90.4	44*	88.0
12. Nipples hurt when baby suckles**								
	23	22.1	12	24.0	94*	90.4	41*	82.0
13. I would be embarrassed to breastfeed in public or if my partner does**								
	95	91.3	43	86.0	98*	94.2	48*	96.0
14. Seeing a woman breastfeed makes me uncomfortable**								
	100	96.2	46	92.0	100*	96.2	47	94.0
15. The support of health professionals to nursing mothers is necessary for a successful breastfeeding**								
	99	95.2	46	92.0	101*	97.1	47	94.0

*Indicates a statistically significant difference ($p \leq 0.05$) before and after the workshop by sex.
**Indicates a statistically significant difference ($p \leq 0.05$) before and after the workshop by total population.

medical and education students, their knowledge level was rated as low on items related to BF initiation, duration, and exclusivity.

The results of this study showed a significant increase in knowledge and positive attitudes towards BF at the end of the educational workshop. One of the contents showing a significant increase in knowledge was regarding the benefits of BF; the majority of the participants knew the benefits for the infant but lacked knowledge on the benefits for the nursing mother, such as a lower risk of breast and ovary cancer and type 2 diabetes mellitus, and recovery of pre-pregnancy weight, among others.[15] Some authors report that providing information on the benefits of BF in mothers, reinforces the decision to breastfeed.[12]

Another little-known topic among the students was regarding how breast milk adapts to the changing needs of infants. The workshop evaluation showed that it is necessary to place more emphasis on the nutritional composition of breast milk and how it is modified at each feed and throughout the nursing period.

Regarding the assessment of attitudes towards BF, at the beginning of the workshop it was observed that the students considered that the mother instinctively knows how to breastfeed, which coincides with what was reported by Bonvecchio et al. (2016)[16] who reported that physicians perceive this as a topic already known by mothers, which they can be set into practice without much difficulty, underestimating the role of lactation consultants. During the workshop, this topic was addressed theoretically and practically through various activities on the correct breastfeeding technique, most common breastfeeding problems and how to solve them, achieving increased knowledge in both women and men, especially in the correct breastfeeding technique to avoid sore nipples when the baby suckles.

At the beginning of the workshop, both male and female students reported not being uncomfortable when seeing a woman breastfeed in public; however, some of the male students reported they would feel ashamed if their partners did it, which changed positively after the workshop. It is necessary to create a culture of promotion and acceptance of BF anywhere, so as not to socially restrict the spaces where it can be done. On this matter, the question of mothers working outside the home is a well-known topic which is associated with early suspension of BF. In this study, half of the students thought that the best option for these mothers and infants was milk formulas. The workshop addressed the alternatives available for women who work outside the home, which favored a change to a positive attitude towards BF. It must be mentioned that this is an issue that must be addressed from a public policy perspective that advocates for longer maternity leaves, fostering and promotion of breastfeeding, and the allocation of adequate work schedules and spaces to make BF more accessible for nursing mothers.

An item with a significantly more positive attitude at the end of the workshop was the comparison between breast milk and milk formulas. At the beginning of the workshop, 25.0% of male students thought they both provide similar benefits for the infant, and one in three female and half of the male students considered necessary to supplement breast milk with milk formulas to achieve adequate growth.

During the course of the workshop and the times for comments and reflection, there was a topic that came up frequently, as well as the need to change the way it is approached: the feeling of exclusion of the father in breastfeeding. Even after the workshop, about half of the participants considered that the father of the infant is excluded during the breastfeeding process. In future interventions, we consider necessary to

emphasize the importance of the father's role as accompaniment, support, and engagement in the nursing process. Previous studies[17,18] have shown that the opinions of the father and grandmothers have significant influence on the mother's decision to breastfeed and for how long to do it.

It is necessary to review how some of the contents were addressed in the workshop, in particular the diet of the nursing mother and the passage of substances, such as alcohol and caffeine, into human milk since these were contents that had fewer correct answers after the workshop, and delve into content that addresses common BF problems that physicians may find in their general practice.

CONCLUSIONS

The changes in knowledge and attitudes before and after the workshop found in our study support what is referred by various authors[19] regarding the need to review and update the undergraduate curricula of health-related disciplines, to include more content and activities on BF. This workshop resulted successful in improving the knowledge and positive attitudes towards BF in medical students.

According to recommendations of the WHO, a proper education and continuous training for healthcare professionals must be ensured so that they become the major promoters of BF. Therefore, educational interventions aimed at modifying knowledge and attitudes related to BF through the practical training of future physicians, are a positive action that could have an effect on the increase of women who achieve a successful BF.

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