

Important Role of Medical Training Curriculum to Promote the Rate of Human Milk Feeding

Yong Joo Kim

Department of Pediatrics, Hanyang University College of Medicine, Seoul, Korea

The rate of human milk feeding has been decreasing despite the diverse efforts of many physicians and nurses, as well as numerous professional organizations and various international health institutions. The number of physicians and nurses who can provide proper guidance for human milk feeding and offer appropriate knowledge and techniques to allow the most beneficial and convenient manner of breastfeeding is quite deficient. It is suggested that physicians and nurses be trained to teach and educate about the medical importance of human milk feeding to lactating mothers. This can be accomplished through systemic changes in medical education and clinical practice. However, the curricula of medical schools in Korea do not provide enough education and training to effect an increase in human milk feeding. The author strongly recommends that the educational objectives for medical schools and resident training offer more education and training concerning so that they are well aware of breastfeeding basics and techniques, and have ability to solve lactation-associated clinical problems.

Key Words: Human milk, Breast feeding, Medical education, Curriculum

INTRODUCTION

Many physicians are well aware of the benefits of human milk feeding. It is well-known that human milk-fed infants correlate with higher IQ than formula-fed infants as documented from a meta-analysis study [1]; this may be one of the most attractive advantages of human milk. Other benefits include that milk is species specific, so human breast milk is evolved for human infants and must be regarded as the standard. It is associated with improved outcomes

in childhood health, maternal health and public health. Most antenatal pregnant women commit to a goal of exclusive breastfeeding (BF), but the rate of BF even during the first 6 months remains quite low despite the aggressive and sincere efforts of the World Health Organization (WHO), and the United National International Children's Emergency Fund (UNICEF). To enhance appropriate human milk feeding just after birth, WHO and UNICEF initiated the "Baby-Friendly Hospital Initiative" (BFHI) in 1991 (Table 1) [2]. The Certificate of BFHI is awarded according to a hospi-

Received : August 23, 2017, Accepted : September 20, 2017

Corresponding author: Yong Joo Kim, Department of Pediatrics, Hanyang University College of Medicine, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Korea. Tel: +82-2-2290-8390, Fax: +82-2-2297-2380, E-mail: kyjoo@hanyang.ac.kr

Copyright © 2017 by The Korean Society of Pediatric Gastroenterology, Hepatology and Nutrition

This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Table 1. Ten Steps to Successful Breastfeeding Organized by World Health Organization (WHO), United National International Children's Emergency Fund (UNICEF)

Every facility providing maternity services and care for newborn infants should

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in the skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in allow mothers and infants to remain together-24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial nipples or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospital or clinic.

Adapted from WHO, UNICEF. Baby friendly hospital initiative: revised, updated and expanded for integrated care. Section 1: background and implementation. Geneva: World Health Organization, 2009 [2].

tal's fulfillment of the "Ten steps program for BFHI". The American Academy of Pediatrics (AAP) endorsed the Ten Steps program in 2009, and promotes adherence to these 10 steps in order to enhance the rate of BF initiation after birth, the proper duration of BF during infancy, and a commitment to exclusive BF (EBF). Most hospitals with maternity practices are managed under BFHI, but the mean score for execution of all Ten Steps was only 65% [3,4]. Even worse, studies have shown that 58% of participating hospitals erroneously advised lactating mothers concerning BF-related problems and baby care [5]. By implementation of the AAP recommendations based on the initiative began by the WHO and UNICEF, the rate of BF in USA has been greatly increased: ever human milk feeding, the rate is 81.1%, and EBF continuing to 6 months stands at 22.3% by a CDC survey taken in 2014-2015 among 2013 births [6].

On the other hand, the rate of EBF at the age of 1 month in Korea is 52.6%, at 3 months 47.2%, and then it drops sharply down to 9.4% according to a recent government report from 2015 [7]. In 2015, the Ministry of Health and Welfare of South Korea set 2020 health project goals which include achieving a 66.8% BF rate at the age of 6 months [8]. This may be an even more difficult goal since a more recent Korean government report from 2016 showed a much lower rate of EBF in Korea. The rate of EBF at 1 month of age was improved at 55.8% but then radically falls to the bottom with a rate of only 5.6% at 6 months old [9].

THE IMPORTANCE OF SUPPORT FOR BREASTFEEDING BY MEDICAL PROFESSIONALS

A national survey conducted through telephone interviews with 1,229 women with children less than 3 years old in the States showed that the encouragement of BF by physician or nurses inspired BF initiation in 74.6% of mothers, whereas only 43.2% of those women who had not been encouraged by their healthcare givers did BF [10]. This study strongly indicates the importance of support and education for BF by physicians and nurses.

Since a nationwide survey of pediatrician's attitudes concerning BF was conducted in 1995, pediatricians have explored the promotion and support of various methods and protocols for BF, and have conducted many studies concerning the benefits related to human milk. Owing to these efforts, the overall rate of BF in the States has jumped from 59% in 1995 to 81.1% in 2013 at the time of birth, and from 22% in 1995 to 51.8% in 2004 at the age of 6 months [11,12]. During this period, another nationwide survey of United States pediatricians performed in 2004, reported that more of them had received education about the successful management of BF while in medical school or during their pediatric residency in the period before 2004 than those trained before 1995. Pediatricians trained until 2004 recommended EBF more strongly than those trained before 1995

and were more likely to follow supportive hospital policies [13]. Since the national survey in 1995, pediatricians have been more receptive to efforts that increase the rate of BF, to receive education about BF, and to set up hospital policies for BF. But, those efforts have gradually faded, as noted in the survey performed in 2004. Pediatricians continue to discourage mothers from stopping or giving up BF with no absolute contraindications rather than those seen in the 1995 survey. The major reasons for which many pediatricians do not recommend BF were human immunodeficiency virus (HIV)-infection of the mother, drug abuse by the mother, medication taken by the mother, the mother's opposition to BF, infected nipples, too young age of the mother, inadequate nipples of the mother, inconvenience, slow weight gain of the baby, healthy jaundice in the infant, and cracked nipples. None of these reasons are an absolute contraindication for BF, and even a mother's HIV infection does not necessarily block BF if a baby's health issue is more serious, especially in a developing nation or locale.

THE IMPORTANCE OF BREASTFEEDING EDUCATION FOR MEDICAL STUDENTS AND HEALTHCARE PROVIDERS

Since the 2004 survey, additional educational resources and materials have been developed to in-

crease physician support for BF, which includes the *Breastfeeding Handbook for Physicians*, a joint publication of the AAP and the American College of Obstetricians and Gynecologists. At national meetings of the AAP, the American College of Obstetricians and Gynecologists, and the American Academy of Family Physicians, diverse educational sessions have been offered. In addition, a multispecialty BF residency curriculum has been initiated as a major priority. The policy for the Breastfeeding Residency Curriculum for pediatric residents offered by AAP includes providing training in more than one rotation, throughout the residency, with pre-tests and post-tests before and after BF medicine education, and Resident Care Evaluation through the Accreditation Council for Graduate Medical Education Core Competencies [14]. The AAP suggests that beginning this General Implementation Strategy is the best way to accomplish the curricular objectives. A summary of this strategy is introduced in Table 2 [15].

Most physicians, not only pediatricians, have opportunities to meet and support lactating mothers both in and out of the hospital. Setting aside consultations which concern a variety of lactation-associated problems and troubles, it is strongly encouraged that physicians do their best to encourage BF to mothers under any circumstances as much as possible. Therefore the education of BF medicine needs to be executed in medical school and nursing school.

Table 2. General Implementation Strategy for the Breastfeeding Residency Curriculum Provided by American Academy of Pediatrics

Step 1	Gain buy-in from other key faculty and residency and hospital administration
Step 2	Train faculty to be able to teach about breastfeeding and consider assessing the quality of care in your hospital for breastfeeding mothers and babies.
Step 3	Determine length of time that you will expect residents to participate in the curriculum
Step 4	Develop an implementation plan that includes the length of time you have decided upon for residents to complete the curriculum and how you will keep track of their progress.
Step 5	Review the resources that have been shown to be most helpful in teaching the residents about breastfeeding care.
Step 6	Consider formal evaluation of the curriculum by testing the residents before they receive breastfeeding education and after they have completed the program.
Step 7	Consider having a kick-off event to introduce and celebrate breastfeeding support and education
Step 8	Implement the curriculum. Work through each activity with the residents and be sure to evaluate and document their progress
Step 9	Continually train and update faculty on breastfeeding.
Step 10	Periodically re-assess the progress of the hospital in reaching optimal breastfeeding rates.

Adapted from American Academy of Pediatrics. Breastfeeding: implementation strategies [15].

Kakrani et al. [16] have studied the awareness about the Ten Steps for successful BF policy among medical students and nursing students in India. They were well aware about step 2 (training), step 6 (no supplement), step 7 (rooming-in), and step 9 (no pacifier). The students gave the least correct answers concerning step 10 (community support), step 8 (cues), step 1 (written policy), and step 3 (pre- and post-natal information). There was no difference between the male and female respondents except in two steps (Fig. 1).

The Academy of Breastfeeding Medicine presented a statement concerning inclusion of BF medicine in the educational objectives for undergraduate and graduate medical education curriculum in 2011 [17]. The statement strongly suggests that medical students learn about BF medicine, which includes the anatomy, endocrine control and physiology of breast and mammary glands, biochemical and immunological aspects of human milk, and the influence of BF on individual health and social issues. It also suggests that medical student have multiple opportunities during clinical training to participate in solving BF-associated problems and in supporting and encouraging BF. In order to achieve these goals, education needs to be set up as block rotations, with case- and system-based learning in preclinical learning, and clinical rotations at mother-child clinics in

pediatrics, obstetrics, and family medicine.

It is also remarkable to find that some medical schools in the States provide a system and facility for their lactating students. Taylor et al. [18] faculties in the department of Clinical Curriculum of the Medical School of Brown University, have tried to find good support guides for parent students, and reported some suggestions. One main suggestion was to institute a formal policy regarding BF and workplace support.

EDUCATIONAL METHODS FOR BREASTFEEDING MEDICINE IN MEDICAL SCHOOL AND RESIDENCY TRAINING PROGRAM

There are recommended educational methods for BF education in the medical school.

Multidisciplinary approach

A successful multidisciplinary approach was set up for the BF curriculum for residents and medical students based on the Wellstart Lactation Curriculum Guide [19] at New Mexico University [20]. This curriculum was implemented by faculties from the obstetrics, pediatrics, and family medicine departments and includes interactive teaching sessions, opportune discussions of BF issues during all clinical rounds, and

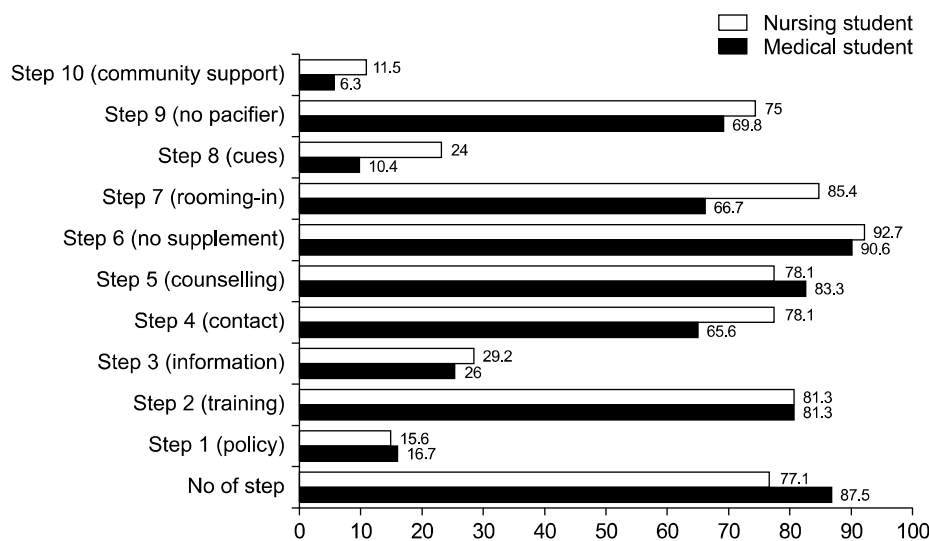


Fig. 1. Stepwise correct answer about Baby-Friendly Hospital Initiative among medical and nursing students. Modified from Kakrani et al. (Int J Prev Med 2015;6:40 [16]).

the inclusion of lactation-supporting personnel in meetings with patients. The didactic sessions covered 4 topics; anatomy and physiology of lactation, common problems confronted by lactating mothers, common problems in BF babies, and the promotion and support of BF. Medical students were required to attend all 4 didactic sessions during their clinical rotation in obstetrics. One educational effort evaluated as very fruitful was the provision of self-study modules, composed of various topics of 15-pages, which were placed in newborn nursery and delivery rooms.

Interactive learning sessions, clinical practice which includes visiting lactating mothers, and problem-solving operated by lactation professionals are not currently set up in Korean medical school curriculum. These teaching methods are strongly recommended to medical school faculties.

Web-based learning

The internet site at www.BreastfeedingBasics.org, developed by the faculty at Case Western Reserve University and available since April 1999, offered free BF education for health care providers and students. There are 7 modules: (1) benefits and barriers of BF, (2) anatomy and physiology of mammary glands, (3) growth and development in the breastfed infant, (4) BF around the world, (5) the BF couple, (6) breast-feeding issues in term infants, and (7) human milk and drugs. Each module indicates clear learning objectives; offers didactic information including pictures, radiologic findings, and case studies; and includes a pre- and post-test composed of three questions. The effectiveness was studied and reported in 2012 by Lewin and O'Connor [21]. More than 15,000 health-care providers and medical students studied BF medicine through the content offered at "Breastfeeding Basics" between April 1999 and December 2009. Their pretest and posttest score significantly increased ($p < 0.001$) for all the modules, and suggests that this online education offers time- and cost-effectiveness compared to offline education. This web site of www.breastfeedingbasics.org is not available currently, but web-based BF training and educational resources are also provided through several recently de-

veloped web-based learning tools, which are www.wellstart.org by UCSD Medical Center and Vermont College of Medicine, Tulane Knowledge to Practice Program, Supporting and Promoting Breastfeeding in Health Care Settings by Tulane University Mary Amelia Women's Center, Supporting and Promoting Breastfeeding in Health Care Settings by University at Albany School of Public Health.

Problem-based workshop

In 1998, a project for a skill-based experiential curriculum to be integrated into residency education was initiated at the University of Wisconsin-Madison [22]. Second- and third-year residents at the department of family practice were enrolled and they received baseline examinations and Objective Structured Clinical Examinations (OSCEs) over a 2 week period. In 30 days, the intervention group attended a 4.5 hour BF workshop. After another 30 days, the intervention and the control groups again completed the paper examination and OSCE. The workshop was a 4.5-hour time block during a regularly scheduled conference period. The scores for the OSCE after intervention were significantly higher than the control group for assessing feeding position and latching and for offering support for sore nipples. The residents in the intervention group reported feeling more confident in BF-related problem-solving ($p < 0.001$).

Problem-based learning (PBL) is current practice in most medical schools in Korea. If medical schools incorporate BF medicine into the basic learning objectives of PBL and OSCE, medical students will have more opportunity to study BF medicine.

CONCLUSION

A well-rounded BF education for medical students and residents through various educational modalities integrated into clinical rotations would lead medical professionals and medical students to increase support for lactating mothers and provide healthcare givers confidence to solve BF-related problems. Better support by the faculties of medical school and the health care system is needed to make

the promotion of BF for infants successful.

REFERENCES

1. Anderson JW, Johnstone BM, Remley DT. Breast-feeding and cognitive development: a meta-analysis. *Am J Clin Nutr* 1999;70:525-35.
2. World Health Organization and UNICEF. Baby friendly hospital initiative: revised, updated and expanded for integrated care. Section 1: background and implementation [Internet]. Geneva: World Health Organization; 2009 [cited 2017 Jul 2]. Available from: https://www.unicef.org/nutrition/files/BFHI_2009_s1.pdf.
3. Centers for Disease Control and Prevention (CDC). Vital signs: hospital practices to support breastfeeding--United States, 2007 and 2009. *MMWR Morb Mortal Wkly Rep* 2011;60:1020-5.
4. Centers for Disease Control and Prevention (CDC). Breastfeeding-related maternity practices at hospitals and birth centers--United States, 2007. *MMWR Morb Mortal Wkly Rep* 2008;57:621-5.
5. O'Connor NR, Tanabe KO, Siadaty MS, Hauck FR. Pacifiers and breastfeeding: a systematic review. *Arch Pediatr Adolesc Med* 2009;163:378-82.
6. Centers for Disease Control and Prevention. Breastfeeding report cards: progressing toward national breastfeeding goals United States, 2016 [Internet]. Atlanta: Centers for Disease Control and Prevention; 2016 [cited 2017 Jul 3]. Available from: <https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf>.
7. Lee SS. The 2015 National Survey on Fertility and Family Health and Welfare. Sejong: Korea Institute for Health and Social Affairs; 2015 Dec. Report No.: 2015-31.
8. Kim DJ, Kim MH, Chae SM, Kim SE, Kim JH, Cha MR. Health Plan 2020. Sejong: Ministry of Health & Welfare, Korea Health Promotion Foundation, 2015.
9. Choi EJ, Park EJ, Kim HR, Oh MA, Lee NH, Choi JH. Report on the status of BF in Korea by Korea Institute for Health and Social Affairs. Sejong: Korea Institute for Health and Social Affairs, 2016:10.
10. Lu MC, Lange L, Slusser W, Hamilton J, Halfon N. Provider encouragement of breast-feeding: evidence from a national survey. *Obstet Gynecol* 2001;97:290-5.
11. Ryan AS, Wenjun Z, Acosta A. Breastfeeding continues to increase into the new millennium. *Pediatrics* 2002;110:1103-9.
12. Centers for Disease Control and Prevention. Breastfeeding practices: results from the national immunization survey [Internet]. Atlanta: Centers for Disease Control and Prevention; 2013 [cited 2017 Jun 25]. Available from: <https://eclkc.ohs.acf.hhs.gov/nutrition/article/breastfeeding-practices-results-national-immunization-survey>.
13. Feldman-Winter LB, Schanler RJ, O'Connor KG, Lawrence RA. Pediatricians and the promotion and support of breastfeeding. *Arch Pediatr Adolesc Med* 2008;162:1142-9.
14. American Academy of Pediatrics. Breastfeeding: welcome to the breastfeeding residency curriculum [Internet]. American Academy of Pediatrics [cited 2017 Jul 27]. Available from: <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Breastfeeding/Pages/Residency-Curriculum.aspx>.
15. American Academy of Pediatrics. Breastfeeding: implementation strategies [Internet]. American Academy of Pediatrics [cited 2017 Jul 27]. Available from: <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Breastfeeding/Pages/Implementation-Strategies.aspx>.
16. Kakrani VA, Rathod Waghela HK, Mammulwar MS, Bhawalkar JS. Awareness about "Ten Steps for Successful Breastfeeding" among medical and nursing students. *Int J Prev Med* 2015;6:40.
17. Academy of Breastfeeding Medicine. Educational objectives and skills for the physician with respect to breastfeeding. *Breastfeed Med* 2011;6:99-105.
18. Taylor J, Macnamara M, Groskin A, Petras L. Medical student-mothers. *R I Med J* (2013) 2013;96:42-5.
19. Naylor A, Cataldo J, Creer E. Lactation management curriculum: a faculty guide for schools of medicine, nursing, and nutrition. 4th ed. San Diego: Wellstart International, 1999.
20. Ogburn T, Espey E, Leeman L, Alvarez K. A breastfeeding curriculum for residents and medical students: a multidisciplinary approach. *J Hum Lact* 2005;21:458-64.
21. Lewin LO, O'Connor ME. "BreastfeedingBasics": web-based education that meets current knowledge competencies. *J Hum Lact* 2012;28:407-13.
22. Haughwout JC, Eglash AR, Plane MB, Mundt MP, Fleming MF. Improving residents' breastfeeding assessment skills: a problem-based workshop. *Fam Pract* 2000;17:541-6.