EYL Leung 梁琬翎
KYA Au 區嘉殷
SSW Cheng 鄭斯穎
SY Kok 郭笑欣
HK Lui 呂凱琪
WCW Wong 黃志威

Practice of breastfeeding and factors that affect breastfeeding in Hong Kong

香港餵哺母乳的行為模式及影響餵哺母乳的因素

Objectives. To describe the patterns of and factors affecting breastfeeding and to find out any significant relationship between breastfeeding and health of the child.
Design. Cohort study.
Setting. Postnatal ward of the Prince of Wales Hospital.
Participants. A total of 243 infants born in 1998 to 2001 at the hospital. Each infant was followed up for 3 years. Home visits were carried out at 3, 15, 24, and 36 months of age by medical students from the Chinese University of Hong Kong. A questionnaire was completed at each visit. Independent sample *t*-tests and Pearson Chi squared tests were used.
Results. Of the 243 subjects, 213 provided data on the method of infant feeding. There were 66.7% of mothers initiating breastfeeding, with a median duration of 1 month. Only 13.4% met the World Health Organization's recommendations on breastfeeding. Breastfeeding was found to have a statistically significant relationship with (i) the infant's birth order and (ii) the mother's and father's education level. During follow-up, 44.6% of the infants were hospitalised but there was no significant relationship between breastfeeding and number of hospitalisations.
Conclusions. The current breastfeeding rate in Hong Kong falls below expectations when compared with other developed nations. To raise this rate, more support is needed for families with parents having a lower education level or more than two children, as they are the least likely to breastfeed. This might be achieved by encouraging antenatal class attendance, counselling of husbands, and more support for breastfeeding from doctors.

目的：研究香港婦女餵哺母乳的行為模式及有關因素，並探討餵哺母乳及兒童健康的關係。
設計：隊列研究。
安排：香港威爾斯親王醫院產後病房。
參與者：1998至2001年243名於香港威爾斯親王醫院出生的嬰兒。每個受訪嬰兒被跟進三年。香港中文大學醫院的醫科學生於小兒3、15、24及36個月大作家訪，並填寫問卷。使用independent samples *t*-test和Pearson Chi squared test來分析資料及調整會影響結果的有關因素。
結果：在243個受訪者中，213人提供了有關她們餵哺母乳情況的資料。當中66.7%曾嘗試餵哺母乳，餵哺時間的中位數為一個月；只有13.4%的受訪者符合世界衞生組織對餵哺母乳的指引。調查發現餵哺母乳和嬰兒在家中的排行次序及父母的教育程度有統計學上的關係。有44.6%嬰兒曾入住醫院，但統計資料顯示入住醫院的次數和餵哺母乳並沒有重要的關係。
結論：香港婦女餵哺母乳的比率較其他發展國家的數據為低。本研究結果顯示，教育程度較低及已育有兩名孩子的母親較少餵哺母乳。對這兩類母親提供針對性的支援與宣傳尤為重要。鼓勵婦女參與產前講座，向丈夫提供輔導，以及家庭醫生鼓勵婦女餵哺母乳，都可以令婦女持續餵哺母乳。

Key words:
Breast feeding;
Infant, newborn;
Infant nutrition

關鍵詞：
餵哺母乳；
新生兒；
嬰兒營養

Hong Kong Med J 2006;12:432-6

Department of Community and Family Medicine, School of Public Health, Faculty of Medicine, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, Hong Kong
EYL Leung
KYA Au
SSW Cheng
SY Kok
HK Lui
WCW Wong, DCH, FRCGP

Correspondence to: Dr William CW Wong (e-mail: cwwong@cuhk.edu.hk)

Introduction

Breastfeeding is known to give multiple benefits to the infants, mothers, and society. This has culminated in a publication by the World Health Organization (WHO) recommending that infants up to 6 months of age should be exclusively breastfed.[1] A policy statement was also published by the American Academy of Pediatrics to promote breastfeeding.[2] Benefits of breastfeeding to the child include:

a decrease of the incidence and/or severity of infectious diseases such as diarrhoea, respiratory tract infections, otitis media and urinary tract infection; decreased incidence of types 1 and 2 diabetes mellitus, overweight, obesity, and asthma.[2] These benefits are likely due to maternal immunoglobulin A antibodies and macrophages in breast milk, thus protecting the infant.[3] An association also exists between breastfeeding and "enhanced performance on tests of cognitive development"[2] possibly mediated by the presence of docosahexaenoic acid (DHA) in breast milk. Infants fed on DHA-supplemented formula were more advanced in the neurological maturation process than those fed on non-DHA supplemented formula.[4,5] Breastfeeding also increases the maternal-infant bonding. In the long run, it may decrease the risk of breast and ovarian cancers, and osteoporosis in the mother.[2]

In the United States, it has been estimated that an increase in breastfeeding has the potential to decrease annual health care costs by $3.6 billion; a significant benefit to society.[2] Despite these known benefits there is still a great variation of the ever breastfeeding rate in different industrialised countries. In the year 2000, it was 69% in the United Kingdom and 91% in Finland[6]; the rate in Hong Kong was a mere 55%.[7] Nevertheless, the duration of breastfeeding must also be addressed in order to truly reflect the current situation of Hong Kong. One study reported that 44% of Hong Kong mothers intending to exclusively breastfeed their child for the first 6 months of life, had stopped doing so within 6 weeks.[8] A study conducted by the Hong Kong Department of Health in the year 2000 found that only around 10% of women practised breastfeeding for at least the initial 6 months of the baby's life[7] as recommended by the WHO.

Currently, there are very few studies describing the prevalence of breastfeeding in Hong Kong. In view of short breastfeeding durations as well as the dose-dependent relationship between breastfeeding and infant health, this study aimed to discover the percentage of mothers actually meeting the WHO recommendations, as well as factors affecting this practice in Hong Kong. We also aimed to find out the possibility of any significant relationship between breastfeeding and child health in terms of the number of hospitalisations.

Methods

This was a 4-year cohort study conducted from 1998 to 2001 inclusive, by medical students of the Chinese University of Hong Kong. Interview questionnaires were distributed and interviews conducted with mothers after their delivery in Ward 8E of the Prince of Wales Hospital. Only those women who met the following criteria: an uncomplicated pregnancy and delivery; permanent Hong Kong residency status; plans to live in Hong Kong for the next 4 years, and willingness to participate in the study were invited to participate. They were recruited as part of a convenience sample. These women were then assigned to the medical students to conduct the first interview. Further follow-up interviews and home visits were carried out at 3, 15, 24, and 36 months. A response rate was not recorded because participation was a prerequisite. However, it can be assumed that respondents were more willing to help.

Before the first interview, first-year medical students had attended a briefing session in which information regarding the impact of a child on family life was given. Students were then divided into eight groups with each group having an assigned tutor. The tutor's role was to enhance the students' interview and assessment skills to ensure that the information collected would be standardised. These tutors were qualified and experienced doctors from four departments of the Chinese University of Hong Kong: Community and Family Medicine, Obstetrics and Gynaecology, Paediatrics, and Psychiatry. Students were required to meet up with their tutors after each interview to discuss any problems encountered.

The questionnaire was designed by the joint efforts of the aforementioned departments and targeted: family background, environment, child's physical growth and development as well as psychological development, nutrition and infant feeding, neonatal screening, immunisation coverage, postpartum complications, child care (prevention of diseases and common childhood diseases), pattern and behaviour in utilisation of health services, help-seeking behaviour, responses to illness condition and choice of action, pregnancy and delivery experience, post-delivery problems, family planning and contraception, and social support. A simple assessment on the developmental milestones achieved by the child was carried out during each visit. The questionnaire was pilot-tested to ensure validity. Since our study focused on the breastfeeding practice of the mothers, we mainly referred to the data related to breastfeeding in the questionnaire.

Statistical analysis

Data collected from all questionnaires concerning a single child over the 3 years of follow-up were analysed using the Statistical Package for the Social Sciences (version 14.0, SPSS Inc, Chicago [IL], US). Student helpers of the Department of Community and Family Medicine of the Chinese University of Hong Kong entered the data, which were audited by a research assistant to ensure correct entry. Data of 243 subjects were collected but only 213 answered the questions concerning breastfeeding. Based on data from the latter 213 subjects, statistical tests were carried out to evaluate any significant relationships between breastfeeding and physical health (with number of hospitalisations as the parameter). Independent sample *t*-tests were used to analyse continuous variables, whereas the Pearson Chi squared test was used for categorical data.

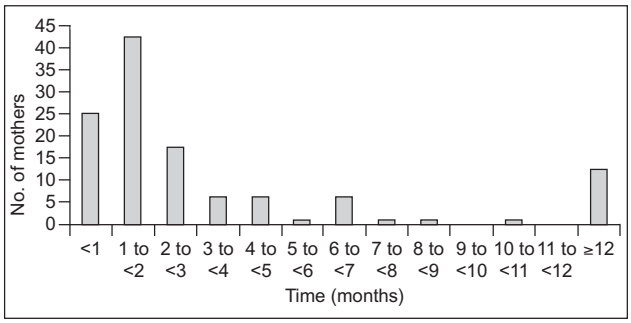

Fig. Distribution of breastfeeding duration

Results

A total of 213 subjects provided data on infant feeding, of whom 142 (66.7%) mothers initiated breastfeeding. Among the latter, the median duration of breastfeeding was 1 month (range, 1-30 months). There were 13.4% of breastfeeding mothers who breastfed for 6 months or more (Fig). The method of delivery, age of mother, mother's education level, father's education level, mother's working status, infant's birth order, infant's sex and mother's socio-economic status (possible factors affecting the initiation of breastfeeding), in the breastfed and non-breastfed groups are summarised in the Table.

There were statistically significant associations between the initiation of breastfeeding and (i) infant's birth order, (ii) mother's education level, and (iii) father's education level. First and second birth order infants were more likely to be breastfed than those of successive birth orders (77% in those of the first and second birth order versus 56% in those of a lower birth order). Mothers of a higher education level were also more likely to initiate breastfeeding (65% among those with senior secondary or higher levels of education versus 48% in mothers with lower education levels). For corresponding high and low education levels among fathers, breastfeeding was initiated in 78% versus 49% of the infants.

On the other hand, there were no statistically significant associations between the initiation of breastfeeding and (i) the mode of delivery, (ii) infant's sex, (iii) age of mother, (iv) mother's working status, and (v) parents' socio-economic status.

Of the 213 participants, the number of corresponding children hospitalised in the first 36 months of life was 95 (45%). The proportions hospitalised in the breastfed and non-breastfed groups (46% versus 41%) were very similar. There were altogether 108 hospitalisations; the three commonest reasons being: general/unspecified illness/fever (32%, 35/108), digestive system disorder (28%, 30/108), and respiratory symptoms (26%, 28/108). There were no statistically significant differences between the breastfed and non-breastfed groups in the proportions hospitalised within the first 1, 2, and 3 years of life.

Discussion

Despite a breastfeeding initiation rate of 66.7%, only 13.4% of our breastfeeding mothers met WHO recommendations (to practise exclusive breastfeeding for the initial 6 months). The median duration of breastfeeding was 1 month. In agreement with other studies,[9-11] in our series a higher tendency to breastfeed was associated with parents of higher education levels and children of higher birth orders (ie first and second).

This study recorded an increasing trend towards breastfeeding, which is encouraging. Factors influencing Hong Kong Chinese mothers to breastfeed included: higher education level, knowledge about breastfeeding, feelings of responsibility and closeness to baby, and encouragement and support from the husband.[10] Antenatal classes were the most informative about breastfeeding; despite midwives being the major source of such information, advice from doctors was evidently more popular.[10] The husband's opinion was the second most important influence in the mother's decision to breastfeed.[10] Older maternal age, attendance at antenatal class, and intended weeks of breastfeeding also had a positive impact.[12]

In our series of Hong Kong Chinese mothers, reasons not to breastfeed included: embarrassment at being seen to do so in public, inadequate breast milk, and lack of breastfeeding facilities in public places and at work. The last of these was a particularly important barrier[10]; there being many examples of mothers asked to leave public places such as restaurants, shopping centres, and hotels for that reason.[13]

Despite having initiated breastfeeding, most mothers discontinued the practice because of the many above-mentioned restrictions. Another important barrier was the work place. As of 2001, around 75% of women of childbearing age were employed mostly in full time jobs,[13] in which case a mother's role as wage earner seemed to greatly exceed that of breastfeeding. Since mandatory maternity leave is granted for 8 weeks postpartum, most return to work when their child reaches 3 months of age.[13] Breast milk is then replaced by formula as the workplace environment was not conducive to breastfeeding, which may explain the marked decline noted between month 1 and months 2 and 3 (Fig).

Our study showed no relationship between breastfeeding and hospitalisation. However, another report about Hong Kong Chinese children revealed a positive correlation between breastfeeding and decreased numbers of "illness related doctor visits throughout the first 18 months of life".[14] In the latter series, breastfed children were more likely to receive out-patient care due to jaundice, especially during the first 3 months and importantly, breastfeeding (whether exclusive or mixed) was associated with more hospital admissions. Therefore, although

Table. Parental and birth characteristics of groups with breastfed and non-breastfed infants

Characteristic	Breastfeeding group	Non-breastfeeding group	P value
Mean maternal age (years)	30.3	29.5	0.375
Sex of infant			0.534
Female	69% (82/119)	31% (37/119)	
Male	65% (59/91)	35% (32/91)	
Mean birth weight (kg)	3.16	3.11	0.381
Method of delivery			0.713
Normal spontaneous delivery	67% (102/152)	33% (50/152)	
Assisted delivery	74% (14/19)	26% (5/19)	
Caesarean section	63% (20/32)	38% (12/32)	
Infant's birth order			0.002
1-2	77% (81/105)	23% (24/105)	
≥3	56% (61/108)	44% (47/108)	
Father's education level			0.000
≤Junior secondary	49% (46/93)	51% (47/93)	
≥Senior secondary	78% (78/100)	22% (22/100)	
Mother's education level			0.000
≤Junior secondary	48% (40/84)	52% (44/84)	
≥Senior secondary	65% (124/191)	35% (67/191)	
Mother's occupation			0.009
Higher managerial and professional	86% (6/7)	14% (1/7)	
Lower managerial and professional	33% (2/6)	67% (4/6)	
Intermediate	80% (16/20)	20% (4/20)	
Small business employers and own account workers	100% (3/3)	0%	
Lower supervisory, craft-related	25% (1/4)	75% (3/4)	
Semi-routine	58% (7/12)	42% (5/12)	
Routine	71% (49/69)	29% (20/69)	
Long-term unemployed	38% (6/16)	63% (10/16)	
Father's occupation			0.460
Higher managerial and professional	67% (6/9)	33% (3/9)	
Lower managerial and professional	67% (16/24)	33% (8/24)	
Intermediate	67% (8/12)	33% (4/12)	
Small business employers and own account workers	50% (6/12)	50% (6/12)	
Lower supervisory, craft-related	53% (21/40)	48% (19/40)	
Semi-routine	74% (23/31)	26% (8/31)	
Routine	71% (29/41)	29% (12/41)	
Long-term unemployed	0%	0%	
Mother's working status			0.718
Yes	68% (92/135)	32% (43/135)	
No	65% (30/46)	35% (16/46)	
No. of children hospitalised	46% (66/142)	41% (29/71)	0.436
Mean No. of hospitalisations			
Within the first 1 year of life	0.268	0.296	0.718
Within the first 2 years of life	0.451	0.437	0.887
Within the first 3 years of life	0.676	0.563	0.372

breastfed appears to decrease the chance of childhood infectious diseases and possibly related hospitalisations, the chance of hospitalisation due to jaundice may negate this effect. Numerous observational studies across Europe and United States have suggested that breastfeeding has beneficial effects on child's health, growth, and development. However, till now, evidence from long-term follow-up cohort studies in Asians does not support this assertion.

Limitations of the study

The subjects of this study were children born in the Prince of Wales Hospital around mid-October to mid-November with informed consent to participate in the study signed by their parents. Thus, mothers more likely to be involved/consent would be living near the hospital (New Territories area), and have a higher education level. Sampling bias also exists because the method of recruitment was through convenience sampling. Recall bias could also exist as the questionnaire relied on recalling events that had taken place between each visit. All these biases might have an effect on the external validity of the study. Regrettably, comparative data for breastfeeding initiation rates of mothers in our postnatal wards during the years 1998 to 2001 were not available.

Recommendations

Breastfeeding promotion should target families with parents of a lower education level and families with more than two children, as they are the most likely to discontinue breastfeeding early. One way to tackle the problems may be to offer more perinatal support to these parents.

Attendance of antenatal classes and support groups

All expecting couples should be encouraged to attend antenatal classes. Antenatal classes should provide the opportunity to let couples discuss breastfeeding with experienced mothers and to learn breastfeeding skills in an active way. One study of first-time mothers-to-be found that antenatal classes did not prepare them realistically for the

complexities of breastfeeding, such as the number of times/day to breastfeed and the amount of milk to be given each time.[15] Expectant mothers should also be forewarned of the possible recognised complications of breastfeeding. An alternative would be to attend support groups.

Counselling for husbands

Husbands should be counselled to have an active and encouraging role in breastfeeding support; this practice has been associated with higher rates of exclusive breastfeeding.[16]

Supportive role of the doctor

Family doctors need to take a more active and supportive role in breastfeeding, especially during the third trimester and up until 3 months postpartum.[17,18] They are usually among the first advisors pregnant women visit, and are perceived to be more popular than midwives in imparting information about breastfeeding.[10] Not just family doctors, but doctors of all specialties should encourage breastfeeding whenever they encounter a pregnant woman.

Improvement of workplace facilities

To ensure that mothers returning to work can continue breastfeeding, all workplaces in Hong Kong should implement policies similar to those of the Department of Health. These state: "employees who need to express breast milk during working hours should approach their supervisors to work out an appropriate arrangement; appropriate facilities for expression and storage of breast milk are provided in the workplace; all other staff members are requested to support colleagues to breastfeed by adopting a positive and accepting attitude."[19]

As it is reported that breastfeeding had beneficial effects in preventing particular diseases but not in others,[14] it has been suggested that relevant hospital and general practitioners' records should be scrutinised to explore such ideas more objectively. On a community-wide basis, breastfeeding promotion should aim at increasing public acceptance.[10] Furthermore, government legislation should include mandatory facilities to support breastfeeding in large public areas such as shopping centres, restaurants, and hotels.[10]

Conclusion

Breastfeeding has been demonstrated through many studies to bring more benefits to the child than formula feeding.[1] Our study has shown that only 13.4% of our series of Hong Kong breastfeeding women met WHO recommendations. Hong Kong women have a relatively low 'ever breastfeeding' rate compared with developed nations. Our study showed that children of a lower birth order (third child in family or lower) and/or of parents with lower education levels (junior secondary or less) were less likely to be breastfed. More effort is needed to foster a mother's confidence, commitment, and knowledge towards breastfeeding.

Acknowledgements

We would like to extend our heartfelt thanks to the following coordinators of the Family Follow-up Project: Profs KW Chik, S Ho, KLE Hon, KYC Lai, and MHY Tsui. We sincerely thank Prof WH Tam for helping with data collection. We would also like to thank Ms Wai-king Kan for her typing assistance.

References

1. World Health Organization. Evidence for the ten steps to successful breastfeeding. Geneva: WHO; 1998.
2. Gartner LM, Morton J, Lawrence RA, et al. Breastfeeding and the use of human milk. Pediatrics 2005;115:496-506.
3. Kliegman RM, Marcdante KJ, Jenson HB, Behrman RE. Nelson essentials of pediatrics. Philadelphia: Elsevier Inc; 2006.
4. Makrides M, Neumann M, Simmer K, Pater J, Gibson R. Are long-chain polyunsaturated fatty acids essential nutrients in infancy? Lancet 1995;345:1463-8.
5. Willatts P, Forsyth JS, DiModugno MK, Varma S, Colvin M. Effect of long-chain polyunsaturated fatty acids in infant formula on problem solving at 10 months of age. Lancet 1998;352:688-91.
6. Database on global breastfeeding and nutrition. World Health Organization website: http://www.who.int/research/iycf/bfcf/bfcf.asp?menu=21&cID=CAN-USA-ARE-BEL-DEN-FIN-FRA-DEU-IRL-LUX-NLD-NOR-SWE-CHE-GBR-AUS-CHN-JPN-NZL-SGP&iID=A01&yID=&ok=true. Accessed 31 Jul 2006.
7. Khin PP, Cheung SL, Loh T. Support and promotion of breastfeeding: where are we now? Public Health & Epidemiology Bulletin 2002; 930:25-32.
8. Chan SM, Nelson EA, Leung SS, Li CY. Breastfeeding failure in a longitudinal post-partum maternal nutrition study in Hong Kong. J Paediatr Child Health 2000;36:466-71.
9. Dennis CL. Breastfeeding initiation and duration: a 1990-2000 literature review. J Obstet Gynecol Neonatal Nurs 2002;31:12-32.
10. Kong SK, Lee DT. Factors influencing decision to breastfeed. J Adv Nurs 2004;46:369-79.
11. Leung TF, Tam WH, Hung EC, Fok TF, Wong GW. Sociodemographic and atopic factors affecting breastfeeding intention in Chinese mothers. J Paediatr Child Health 2003;39:460-4.
12. Dodgson JE, Tarrant M, Fong DY, Peng XH, Hui WH. Breastfeeding patterns of primiparous mothers in Hong Kong. Birth 2003;30:195-202.
13. Tarrant M, Dodgson JE, Tsang Fei S. Initiating and sustaining breastfeeding in Hong Kong: contextual influences on new mothers' experiences. Nurs Health Sci 2002;4:181-91.
14. Leung GM, Lam TH, Ho LM, Lau YL. Health consequences of breast-feeding: doctors' visits and hospitalizations during the first 18 months of life in Hong Kong Chinese infants. Epidemiology 2005;16: 328-35.
15. Ho I, Holroyd E. Chinese women's perceptions of the effectiveness of antenatal education in the preparation for motherhood. J Adv Nurs 2002;38:74-85.
16. Pisacane A, Continisio GI, Aldinucci M, D'Amora, Continisio P. A controlled trial of the father's role in breastfeeding promotion. Pediatrics 2005;116:e494-8.
17. Taveras EM, Capra AM, Braveman PA, Jensvold NG, Escobar GJ, Lieu TA. Clinician support and psychosocial risk factors associated with breastfeeding discontinuation. Pediatrics 2003;112: 108-15.
18. Labarere J, Gelbert-Baudino N, Ayral AS, et al. Efficacy of breastfeeding support provided by trained clinicians during an early, routine, preventive visit: a prospective, randomized, open trial of 226 mother-infant pairs. Pediatrics 2005;115:e139-46.
19. Breastfeeding policy. Department of Health website: http://www.info.gov.hk/dh/do_you_k/eng/bfpolicy.pdf. Accessed 5 Nov 2005.