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Breastfeeding in Malaysia: Results of the Third National Health and Morbidity Survey (NHMS III) 2006

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ABSTRACT

In Malaysia, the National Breastfeeding Policy recommends exclusive breastfeeding for the first six months of life and continued up to two years. Since the 1990s, several breastfeeding promotion programmes had been implemented in the country. This article reports the findings on the prevalence of breastfeeding practice from The Third National Health and Morbidity Survey (NHMS III) which was conducted in 2006. A total of 2167 mothers or carers of children below two years old were interviewed representing 804,480 of the estimated population of children aged below 2 years in Malaysia. Respondents were asked whether various types of liquid or solid food were given to the child at any time during the preceding 24-hour period. The overall prevalence of ever breastfed among children aged less than 12 months was 94.7% (CI: 93.0 - 95.9). The overall prevalence of exclusive breastfeeding below 6 months was 14.5% (CI: 11.7 - 17.9). Prevalence of timely initiation was 63.7% (CI: 61.4 - 65.9) and the continued prevalence of breastfeeding up to two years was 37.4% (CI: 32.9 – 42.2). The findings suggest that the programmes implemented in the last ten years were effective in improving the prevalence of ever breastfeeding, timely initiation of breastfeeding and continued breastfeeding up to two years. However, the challenge is to improve exclusive breastfeeding practice. Long-term community-based interventions need to be carried out in partnership with the existing health care system, focusing on discouraging the use of water and infant formula, especially in the first few months of life.

Keywords: Breastfeeding, NHMS III, Malaysia, prevalance

INTRODUCTION

Breastfeeding brings clear, short, and long term benefits for child health. It not only improves child survival, health outcomes, and cognitive performance (AAP, 2005), it also appears to be a protective factor against overweight as well as chronic diseases such as insulin-dependent (type 1) and non–insulin-dependent (type 2) diabetes mellitus and hypercholesterolemia, later in life (Bernardo *et al.*, 2007). Important health benefits of breastfeeding and lactation have also been described for mothers. The benefits include decreased postpartum bleeding, increased child spacing, earlier return to pre-

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pregnancy weight, decreased risk of breast and ovarian cancer, as well as possibly decreased risk of hip fractures and osteoporosis in the postmenopausal period (Stanley *et al*., 2007; AAP, 2005; Labbok, 2001). A recent study found that the percent body fat loss was significant across time in exclusively breastfeeding mothers suggesting a protective effect of exclusive breastfeeding against cardiovascular disease and other chronic health conditions (Irene *et al*., 2008). The effect of exclusive breastfeeding on weight loss is of public health importance in the face of a dramatic increase in the prevalence of obesity and chronic diseases that Malaysia is experiencing over the last decade.

The World Health Organisation (WHO) recommends that infants should be exclusively breastfed for the first six months of life and complementary food should be introduced at the age of six months. These recommendations were adopted following a systematic review of current scientific evidence on the optimal duration of exclusive breastfeeding and an expert consultation on the subject (Kramer and Kakuma, 2002; WHO, 2002).

In Malaysia, the National Breastfeeding Policy was formulated in 1993 whereby exclusive breastfeeding was recommended for the first four to six months of life and continued up to two years. Since the introduction of this policy, breastfeeding promotion in Malaysia has been intensified. The Baby Friendly Hospital Initiative (BFHI), training programme for health staff, extension of maternity and paternity leave for the government sector and the Code of Ethics for the Marketing of Infant Formula Products were some of the programmes that have been implemented in the country. Following the recommendation by WHO, the Malaysian Breastfeeding Policy was revised in 2005 in accordance with World Health Assembly Resolution 54.2 (2002) whereby exclusive breastfeeding was recommended for the first 6 months of life and continued up to two years.

Through most of the twentieth century, initiation and duration of breastfeeding declined worldwide as a result of rapid social and economic change, including urbanisation and marketing of breast milk substitutes. In recent years the global trend has shifted towards improved breastfeeding practices (Grummer-Strawn, 1996; Lutter, 2000). Survey data from 43 countries indicated a significant increase in exclusive breastfeeding, from 39 to 46% between 1989 and 1999, with wide variations within and between geographic regions. The Demographic Health Surveys indicated that exclusive breastfeeding rates for infants 0–3 months of age ranged from 25% (Dominican Republic, 1996) to 78% (Peru, 2000) in Latin America, and from 4% (Côte d-Ivoire, 1998/99) to 63% (Malawi, 2000) in Africa.

In Malaysia, nationally representative data on levels of exclusive breastfeeding was virtually unavailable before the 1990s. The Second National and Health Morbidity Survey (NHMS II) which was conducted in 1996 was the first national survey that used the indicators recommended by WHO for assessing breastfeeding (WHO, 1991) and provided baseline data for the country.

Findings of the NHMS II showed that although the overall prevalence of children ever breastfed in Malaysia was 88.6%, the prevalence of exclusive breastfeeding was only 29.0%, (Fatimah *et al*., 1999). Significant differences were seen between states as well as urban and rural localities. The prevalence of timely initiation of breastfeeding was 41.4 % and continued breastfeeding up to two years was 11.7%.

In this paper we report the breastfeeding practices estimated from the Third National Health and Morbidity (NHMS III) conducted in Malaysia from April through August 2006. The survey was representative at the national level and for rural and urban populations.

METHODOLOGY

Study design and sampling

The Third National Health and Morbidity Survey (NHMS III) is a population based cross sectional study using a two-stage stratified sampling design proportionate to population size throughout all states in Malaysia. The NHMS III utilised the sampling frame of the Department of Statistics, Malaysia using Enumeration Blocks (EBs). A total of 2,150 EBs consisting of 17,200 living quarters (LQ) were selected using a probability proportionate to size (PPS) linear systematic selection scheme based on the latest updated size measures. The details of the methodology of study had been reported previously (Institute for Public Health, 2008b). Data on breastfeeding practice was collected in the NHMS III and the respondents for this part of the survey were mothers or carers of children below the age of 24 months in the household. However, the population of children below 24 months in the household was not taken into account during the sample size calculation; hence the sample was not representative of the state population. Based on the estimated exclusive breastfeeding below four months of 25% and the precision of 20%, the minimum sample size per state should be 300. In this survey, all states except Selangor and Sabah had a sample size of below 300 (Table 1).

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Data collection

Data collection was conducted between April and August 2006, using a bi-lingual (Malay and English) structured questionnaire. Mothers or carers of children below two years old were interviewed by trained data collectors. The questionnaire included data on socio-demographic characteristics; gender, age, ethnicity, marital status, occupation, household monthly income, education level and stratum (urban or rural areas). Questions on breastfeeding practices were based on the WHO Sample Questions for Use in Household Surveys which uses a recall of 24 hours of breastfeeding practice (WHO, 1991).

Mothers or carers were asked whether various types of liquid or solid food were given to the child at any time during the preceding 24-hour period (past day and night). This information was used to determine the proportion of children who were exclusively breastfeeding, breast-feeding and receiving supplemental food or not breastfeeding at all.

Children were classified into one of several breastfeeding categories based on the World Health Organization infant feeding indicators (WHO, 1991). The breastfeeding categories were exclusive breastfeeding (when infant receives only breast milk and no water or other liquids or foods), 'predominantly breastfeeding' (when infant receives breast milk and water or water based drinks) and 'complementary breastfeeding' (when infant receives breast milk and any other fluid or food including non-human breast milk). Timely initiation of breast-feeding rate was defined as the percentage children aged less than 12 months who were breastfed within the first hour of life, ever breastfeeding rate was the percentage of children less than 12 months who were breastfed, and continued breastfeeding rate was the percentage of children aged 20 months to less than 24 months who were breastfed.

Data analysis

Analysis of the data was conducted using STATA version 10.0 and SPSS version 15.0 computer software. All analyses took into account the complex survey design and unequal selections of NHMS III. Findings

Table 1. Characteristics of respondents (n= 2167)

	Characteristics	*n*	*%*
State			
	Johor	239	11.0
	Kedah	157	7.2
	Kelantan	144	6.6
	Melaka	49	2.3
	N.Sembilan	81	3.7
	Pahang	97	4.5
	Pulau Pinang	74	3.4
	Perak	123	5.7
	Perlis	17	0.8
	Selangor	410	18.9
	Terengganu	87	4.0
	Sabah	351	16.2
	Sarawak	185	8.5
	W.P Kuala Lumpur	103	4.8
	W.P Labuan	50	2.3
	Total Malaysia	2167	100.0
Strata			
	Urban	1292	59.6
	Rural	875	40.4
Ethnic Groups			
	Malays	1316	60.7
	Chinese	301	13.9
	Indian	137	6.3
	Other *Bumis**	331	15.3
	Others	82	3.8

* *Bumis*: Indigenous groups

are reported as the weighted estimates of the prevalence (mean value and mean at 95% confidence interval).

In this paper, only national prevalence and strata differentials are reported as the sample size was insufficient to describe other differentials.

RESULTS

The total number of eligible respondents for this module was 2,303. The number of respondents who answered the module on infant feeding practice was 2,167 (94.1%) representing 804,480 of the estimated population of children aged below 24 months in Malaysia. Peninsular Malaysia accounted for 72.9% of the population while Sabah, Sarawak and Labuan, 16.2 %, 8.5% and 2.3% respectively (Table 1). Urban locality accounted for 59.6% while rural 40.4%. The ethnic composition of the respondents consisted of Malays (60.7%) followed by Chinese (13.9%), Other Bumiputras (15.3%), Indian (6.3%) and Others (3.8%).

Prevalence of timely initiation of breastfeeding

Table 2 shows that the overall prevalence of infants initiated breastfeeding within one hour of birth was 63.7% (CI: 60.6 – 66.6). There was a significant difference in the prevalence when compared by strata. The

Table 2. Prevalence of timely initiation of breastfeeding among children aged less than 12 months compared to NHMS II

	N	*Prevalence*	*95% CI*	
			Lower	*Upper*
NHMS III				
Malaysia	246,995	63.7	60.6	66.6
Urban	152,734	59.4	55.4	63.2
Rural	94,260	72.1	67.4	76.4
NHMS II*				
Malaysia	799354	41.4	38.7	44.1
Urban	412666	38.6	34.9	42.3
Rural	386688	44.4	40.5	48.3

**Source:* Fatimah *et al.*, 1996

Table 3. Prevalence of ever breastfeeding among children aged less than 12 months compared to NHMS II

	N	*Prevalence*	*95% CI*	
			Lower	*Upper*
NHMS III				
Malaysia	367259	94.7	93.0	95.9
Urban	240905	93.6	91.3	95.4
Rural	126355	96.7	94.4	98.1
NHMS II*				
Malaysia	799354	88.6	87.2	90.1
Urban	412666	84.5	82.1	86.9
Rural	386688	93.0	91.3	94.6

**Source:* Fatimah *et al.*, 1996

prevalence in the rural was 72.1% (CI: 67.4 – 76.4) compared to 59.4% (CI: 55.4 - 63.2) in the urban. When compared to the findings of NHMS II, there was a significant increase of 22.3% in the prevalence of timely initiation of breastfeeding and the increment was higher in the rural areas.

Prevalence of ever breastfeeding

The overall prevalence of children ever breastfed among children aged less than 12 months was 94.7% (CI: 93.0 - 95.9). This represented a significant increase of 6.1% compared to the NHMS II in 1996 (Table 3).

Prevalence was higher in the rural areas [96.7% (CI: 94.4 – 98.1)] than in the urban localities [93.6% (CI: 91.3 – 95.4)]. However, the difference was not significant. When compared to the findings in the NHMS II, the increase in prevalence of ever breast feeding tended to be higher in the urban localities.

Table 4. Prevalence of exclusive, predominant and complementary breastfeeding of infants below the age of four months compared to NHMS II

	Types of breastfeeding						
		Exclusive		*Predominant*		*Complementary*	
	N	*Prevalence (95% CI)*		*Prevalence (95% CI)*		*Prevalence (95% CI)*	
NHMS III							
Malaysia	113871	19.3	(15.5, 23.9)	19.7	(15.6, 24.7)	46.7	(41.2, 52.2)
Urban	72939	12.9	(8.9, 18.5)	20.0	(14.7, 26.6)	48.4	(41.3, 55.5)
Rural	40932	30.7	(23.3, 39.2)	19.3	(13.3, 27.1)	43.6	(35.2, 52.4)
NHMS II*							
Malaysia	799354	29.0	(26.7, 31.3	10.0	(8.4, 11.6)	46.9	(44.4, 49.5)
Urban	412666	25.5	(23.5, 28.6)	8.7	(6.9, 10.6)	47.9	(44.3, 51.5)
Rural	386688	32.7	(29.3, 36.1)	11.3	(8.8, 13.9)	45.8	(42.2, 49.4)

**Source*: Fatimah *et al.,* 1996

Prevalence of exclusive, predominant and complementary breastfeeding among infants below four months of age.

In the current survey, breastfeeding rates among infants aged below four months were analysed for comparison with the data from the NHMS II survey.

The overall prevalence of exclusive breastfeeding below four months was 19.3% (CI: 15.5 - 23.9) and predominant breast feeding was 19.7% (CI: 15.6 - 24.7). The prevalence of complementary breastfeeding was 46.7% (CI: 41.2 - 52.2). Exclusive breastfeeding was significantly more in the rural [30.7% (CI: 23.3 - 39.2)] compared to the urban localities [12.9% (CI: 8.9 - 18.5]. However, there were no significant differences in the prevalence of the other types of breastfeeding between strata.

When compared to the findings of the NHMS II, there was a significant decline of 9.7% in the prevalence of exclusive breastfeeding while there was an increase of 9.7% in the prevalence of predominant breastfeeding (Table 4). The prevalence of complementary breastfeeding remained almost the same over the ten-year period. The decline in exclusive breastfeeding was significant in the urban but not in the rural localities. Prevalence of exclusive breastfeeding in the urban areas declined by 12.6% (from 25.5% to 12.9%). However, there was only a decline of 2% in the prevalence of exclusive breastfeeding in the rural areas and this difference was not significant. For predominant breastfeeding, the increase was more profound in the urban localities where it rose by 11.3% (from 8.7% to 20.0%).

Prevalence of exclusive, predominant and complementary breastfeeding below six months of age

The overall prevalence of exclusive breastfeeding below six months was 14.5% (CI: 11.7 - 17.9) and predominant breast feeding was 16.9% (CI: 13.7 - 20.6). The prevalence of complementary breastfeeding was 46.9% (CI: 42.4 - 51.4). Significantly, more infants in the rural were exclusively breastfed than those in the urban localities (Table 5). The prevalence of exclusive breastfeeding was highest among infants younger than two months (26.7%), dropping rapidly to 11.7% in infants aged between two to three months (Figure 1). The prevalence further declined by almost half to 6.1% in

Table 5. Prevalence of exclusive, predominant and complementary breastfeeding of infants below the age of six months

	Types of breastfeeding								
		Exclusive			*Predominant*			*Complementary*	
	N	*Pre-valence*	*(95% CI)*	*N*	*Pre-valence*	*(95% CI)*	*N*	*Pre-valence*	*(95% CI)*
NHMS III									
Malaysia	25930	14.5	(11.7, 17.9)	30064	16.9	(13.7, 20.6)	83619	46.9	(42.4, 51.4)
Urban	12794	10.8	(7.7, 14.8)	20388	17.2	(13.2, 22.1)	54086	45.6	(40.0, 51.3)
Rural	13137	22.0	(16.5, 28.5)	9676	16.2	(11.6, 22.1)	29533	49.4	(42.2, 56.5)

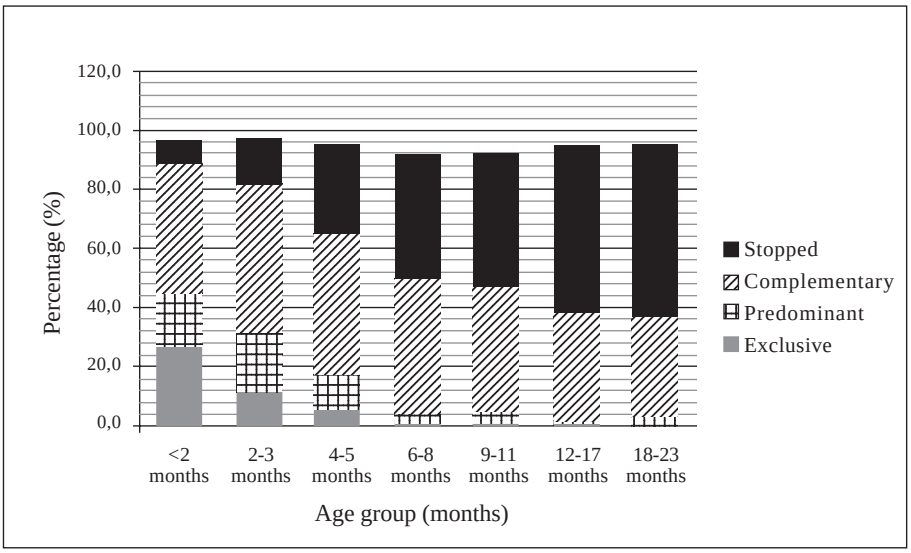

Figure 1. Breastfeeding status by age group

infants between the ages of four to five months. It was also noted that the percentage of infants who stopped breastfeeding increased rapidly in infants 4 months and above.

Prevalence of continued breastfeeding up to 2 years

The national prevalence of continued breastfeeding up to two years was 37.4% (CI: 32.9 - 45.0). Significantly, more children in the rural locality were breastfed up to two years compared to children in the urban (Table 6). When compared to the prevalence ten years ago, there was a significant increase of 25.7%. The rise in the prevalence of continued breast feeding was greater in the rural compared to the urban localities (from 13.2% to 46.9%).

DISCUSSION

The findings of the current survey suggest that over the last ten years, the prevalence of ever breastfeeding remained high with a significant increase of 6.1%. Ever

Table 6. Prevalence of continued breastfeeding up to two years (among children 20 to 24 months) compared to NHMS II

	N	*Prevalence*	*95 % CI*	
			Lower	*Upper*
NHMS III				
Malaysia	58428	37.4	32.8	42.2
Urban	32213	32.9	27.1	39.2
Rural	26215	45.0	37.9	52.3
NHMS II*				
Malaysia	382553	11.7	9.8	13.6
Urban	199584	10.2	7.8	12.6
Rural	192969	13.2	10.3	16.1

**Source:* Fatimah *et al.,* 1996

breastfeeding rates have been reported to be above 90% in most countries in the world (Mukuria *et al.,* 2006) and Malaysia was no exception. Even though there was no significant difference between urban and rural prevalence, there seems to be a shift in the breastfeeding trends in the urban localities whereby, the increase in prevalence of ever breastfeeding since 1996 was significantly higher in the urban. Urban areas are presumed to be most susceptible to the ambient health system, social and commercial pressures against breastfeeding; support activities such as the Baby-friendly Hospital Initiative and the Code of Ethics For the Marketing of Infant Formula Products were developed to address these pressures (Labbok *et al.,* 2006).

Timely initiation of breastfeeding has been recommended not only to stimulate the suckling reflex but also to begin the process of bonding with the mother, to help the mother's uterus to retract, to provide the child with colostrums and most important to reduce the risk of neonatal death (Edmond *et al.,* 2006). The prevalence of timely initiation of breastfeeding in Malaysia in 2006 was 63.7% (CI: 61.4 - 65.9) with a significant increment of 22.3% compared to ten years ago. The prevalence was among the highest in the South-east Asian region. Breastfeeding data from 43 countries between 1998 and 2004 showed that in the South-east Asian region, the percentage of children initiated on breastfeeding within one hour was highest in the Philippines (54.0%) and lowest in Cambodia (11.0%) (Mukuria *et al.,* 2006). The significant increase in the prevalence of timely breastfeeding in Malaysia, suggests that it is a relatively easy behaviour to change at the national scale. The fact that timely initiation of breastfeeding is a 'one-time' activity also makes it easier to achieve especially with the implementation of the BFHI in most of the government hospitals in Malaysia.

Even though two-thirds of infants were initiated early for breastfeeding and almost all infants were ever breastfed, the prevalence of exclusive breastfeeding among children below six months was low (15%). Thus, the current breastfeeding patterns are still far from the recommended levels. Compared to other countries in the South-east Asian region, Malaysia is the country with the lowest prevalence of exclusive breastfeeding. In the year 2001, Nepal had

the highest prevalence at 68.3% while Cambodia was the lowest, with 11.4% infants under 6 months exclusively breastfed in 2000 (Mukuria *et al.,* 2006).

The prevalence of exclusive breastfeeding among infants below four months showed a downward trend when compared to the findings in 1996, with a significant decline of 9.7%. However, Labbok *et al.,* (2006) reported that trend analysis of exclusive breastfeeding patterns in 38 developing countries from the UNICEF global databases between 1990 and 2000, suggests that levels of exclusive breastfeeding below four months in the developing countries increased 15% overall (from 46% to 53%) and among infants younger than 6 months (from 34% to 39%).

The prevalence of infants who were exclusively breastfed was highest among infants below the age of two months (26.7%) but declined rapidly to 6.1% among infants aged four to five months. This is reminiscent of similar patterns seen in many other countries (Haggerty *et al.,* 1999). No information was available from the NHMS III to determine factors that may be related to this finding. Other local studies have found that the odds of practising exclusive breastfeeding was higher among mothers who were not working (Chye and Lim, 1998; Fatimah *et al.,* 2008), had antenatal plans to only breastfeed, initiated breastfeeding within the first 1 hour after delivery and who believed that giving plain water can cause harm to the breastfeeding babies (Fatimah *et al.*, 2008).

Continued breastfeeding is important for older infants and young children aged 6-23 months, contributing significantly to overall nutrient intake. For older infants (aged 6-11 months), breast milk fills most of the energy needs and remains an important source of vitamin A and C as well as essential fatty acids. Even for young children 12-23 months of age, breast milk can provide as much as 35-40% of their total energy needs. In the present survey, the prevalence of continued breastfeeding up to two years old (children aged 20 to less than 24 months) in Malaysia was low (37.4%) compared to other countries in Southeast Asia. Haggerty *et al.,* (1999) reported that analysis of breastfeeding data, collected in 37 nationally representative surveys under the Demographic and Health Surveys (DHS) programme between 1990 and 1996, showed that in most countries in Asia, by the age between 20 and 23 months, more than half of all children are still breastfed. More recent data from the South-east Asian region reported the rate of breastfeeding among children aged 18 to 23 months was as high as 91.9% in Bangladesh to as low as 31.2% in the Philippines (Mukuria *et al.*, 2006). However, it is encouraging to note that in the last ten-year period, the prevalence in Malaysia had increased substantially (25.7%), especially in the rural areas.

Limitations

The current survey used the 24-hour recall method to measure breastfeeding practices i.e. the current age of the child and information for the 24 hours preceding the survey, whereas in the NHMS II survey, retrospective data were gathered where carers of children aged below 24 months were asked at what age the infants stopped breastfeeding and/or when other food or drink was introduced. The recall period could range from one day to 23 months depending on the age of the child at the time of interview. It has recently been shown that data based on current status differ from data based on daily records of feeding (Aarts *et al.,* 2000), and that long term recall provides lower estimates of the prevalence of exclusive breastfeeding in infants under 8 months of age when compared to one 24-h recall in cross-sectional studies such as Demographic and Health Surveys (Piwoz *et al.,* 1995). Hence, due to the difference in the methodology of the two surveys, direct comparison of the two data sets should be treated with caution.

CONCLUSION

The findings suggest that the programmes implemented in the last ten years were effective in improving the prevalence of ever breastfeeding, timely initiation of breastfeeding and continued breastfeeding up to two years in Malaysia. No formal evaluation of the impact of programmes such as the BFHI and the Code of Ethics for the Marketing of Infant Formula Products had been conducted in the country. However, these trends occurring over the same decade when these major programmes were implemented lend support to the argument of programme effectiveness. Nevertheless, the challenge is to improve the prevalence of exclusive breast feeding practice in Malaysia. Several studies have documented the impact of the BFHI on exclusive breastfeeding at the national level (Fairbank *et al.,* 2000; Kramer *et al.,* 2001; Marten *et al.,* 2005). The BFHI has been implemented in almost all government hospitals in the country since 1997, thus it is clear that the effectiveness of the implementation needs to be improved.

Exclusive breastfeeding for the first six months is a complex behaviour involving multiple points of intervention. However, the survey does not provide qualitative information regarding the reasons behind infant feeding decisions. Qualitative research in exclusive breastfeeding and non-exclusive breastfeeding mothers is needed to tailor better breastfeeding intervention programmes in Malaysia. Behaviour change interventions need to be more explicit by discouraging the use of water and infant formula, especially in the first few months of life; by emphasising the importance of exclusive breastfeeding; and by providing mothers with specific options for exclusively breastfeeding their children especially among working women. Several case studies have documented that to achieve sustained population-level breastfeeding behaviour change, community-based breastfeeding promotion and support is one of the most important approaches (Green, 1999). Thus, long-term community-based interventions need to be carried out in partnership with existing health care systems to achieve the desired optimal breastfeeding practice in the country.

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