

Breast-feeding and infant feeding practices in selected rural and semi-urban communities in Kemaman, Terengganu

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ABSTRACT

A survey was carried out in the district of Kemaman, Terengganu, Malaysia to study infant feeding practices in rural and semi-urban communities. A total of 593 mothers were interviewed and their socio-demographic information recorded. Data on infant feeding practices were collected from mothers who had children up to 15 months of age. Among breast-feeding mothers (n =157), 42.0 % fed their babies for less than 3 months and 58.0% bottle fed for more than 6 months. Sixteen children were found to be fed on sweetened condensed milk with 62.5% of them for the first 3 months. Among those who breast fed their babies, 40.1% were found to have bottle fed at one time or another. The majority of breast feeding mothers belonged to the groups having incomplete primary schooling or completed primary education only and household income below RM600 per month. A substantial number of breast fed babies were given weaning foods in the form of porridge mixture (rice + egg, rice + vegetables, rice + meat, rice+ fish and cereals) between the age of 0 - 3 months. The findings of this study concluded that although breast-feeding is widely practiced, however, their duration has dwindled, and early introduction of solid foods is widespread.

INTRODUCTION

The benefits of breast-feeding for both infants and mothers have been widely acknowledged, and in 1981 the World Health Organization (WHO) has introduced the code of ethic to safeguard the marketing practices which are detrimental to breast-feeding (WHO, 1981). The advantages of breast-feeding include fulfilling the nutritional needs of infants, immunological protection,

bacteriologically safe, minimal allergic reaction, economically cheap, mother-child bonding, birth spacing and many others (Jelliffe & Jelliffe 1978; WHO/NRC, 1983; Pebley & Millman, 1986; Jelliffe, 1986). Despite great benefits from breast-feeding, the demands of modern living have seemingly affected breast-feeding practices including duration in many developing countries (WHO, 1982).

Apart from exclusive breast-feeding, mothers are also exposed to other forms of feeding which are strongly promoted by breast milk substitutes companies through the mass media and their representatives. Earlier studies in Malaysia have documented that breast-feeding is widely practiced in rural areas, particularly among Malay mothers (Teoh, 1975; Pathmanathan, 1975; Balakrishnan & Hasbullah, 1977). Recent findings from Sarawak reported that more children are being breast fed than earlier decades (84% vs 74%), however, the median duration of breast-feeding is the same as earlier studies in Peninsular Malaysia which is 3 months (Kwa, 1993).

This study examines the prevalence of breast-feeding bottle feeding and introduction of weaning foods among rural mothers in the District of Kemaman, Terengganu, Peninsular Malaysia.

METHODS

The sample population was obtained from a larger socioeconomic survey in Kemaman District, Terengganu, Malaysia, by random sampling. A total of 593 Malay mothers residing in 18 villages were interviewed using prepared interviewed questionnaires. Information on infant feeding practices and socioeconomic characteristics were collected by trained interviewers from respondents' homes (n=258).

Data on Infant feeding practices included the time and duration of breast-feeding, bottle feeding, introduction of solid foods and the types of weaning foods given to infants. Socioeconomic data

consist of educational status of mothers, household income, food expenditure, basic facilities, land ownership, vehicle ownership, kitchen equipment and facilities, and furniture ownership (including television and radio). Even though only 258 mothers were interviewed on their infant feedings practices, but for the purpose of data analysis on socioeconomic variables the total sample (N=593) were used (see Table 6).

The collected data was analyzed using the Statistical Analysis System (SAS) computer software.

RESULTS

Among mothers who had children aged 15 months and younger (n=258), 157 (61%) of them practiced breast-feeding. The number of mothers who bottle fed their babies was 85 (33%). We also recorded 16 (6%) mothers who fed their infants with sweetened condensed milk.

Table 1 presents the duration of breast-feeding among 157 mothers. Forty-two percent breast-fed less than 3 months, while 53.5% breast-fed under 6 months. Only 22.3% of the breast-feeding mothers breast-fed their children more than 12 months.

Table 2 shows the length of bottle feeding as practiced by 85 mothers (n=85). Bottle feeding in this instance refers to feeding with infant formula of various brands. Almost 26% of the mothers bottle fed their babies less than 3 months, and only 17.6% continued to bottle

feed after 12 months. The majority of mothers (82.4%) bottle fed less than 12 months.

Table 1. Duration of Breastfeeding (N= 157)

<i>Months</i>	<i>Number</i>	<i>Percent</i>
0—3	66	42.0
4—6	18	11.5
7—12	38	24.2
> 12	35	22.3
TOTAL	157	100.0

Table 2. Duration of Bottle Feeding (N=85)

<i>Month</i>	<i>Number</i>	<i>Percent</i>
0—3	22	25.9
4—6	14	16.5
7—12	34	40.0
> 12	15	17.6
TOTAL	85	100.0

The duration of feeding infants with sweetened condensed milk by 16 mothers (n=16) is shown in Table 3. It should be noted that this milk is also given through the bottle as in the case of bottle feeding with infant formula above. There are 62.5% of the mothers who fed sweetened condensed milk to their babies from birth to 3 months. The rest of the mothers continued to feed sweetened condensed milk after 3 months old and 12.5% fed them beyond 12 months.

We found that among mothers who breast-fed, there were also those who gave their infants infant

Table 3. Duration of Sweetened Condensed Milk Feeding (n= 16)

<i>Age (mths)</i>	<i>Number</i>	<i>Percent</i>
0—3	10	62.5
4—6	2	12.5
7—12	2	12.5
>12	2	12.5
TOTAL	16	100.0

formula. Table 4 shows a crosstabulation of breast-feeding by bottle feeding with age. Among those who breast-fed, 40.4% were found to bottle feed their babies at one time or another. In mothers who practiced breast-feeding less than 3 months, 35.4% supplemented their infants' diet with infant formula, and 14% introduced bottle feeding under the age of 3 months. For mothers who breast-fed more than 12 months, 14.3% supplemented their breastmilk with infant formula as early as under 3 months of age, and 20% introduced bottle feeding after one year of breast-feeding.

Cross tabulation of the duration of breast-feeding by mothers' education and household income is presented in Table 5. It shows that the majority of mothers who breast-fed (71.53%) are those with primary education and lower. Only 28.47% of the mothers who breast-fed come from those with secondary education and higher. These findings revealed that breastfeeding is more widely practiced by mothers from the lower educational strata.

Table 5 also shows that 42.68% of mothers who breast-fed have income of less than RM400 per

Table 4. Number and percentage of breast fed babies who were bottle fed according to age.

<i>Breastfeeding</i> (Age in months)	<i>Total</i>	<i>Bottle Feeding (Age in months)</i>				<i>Total</i>	<i>Percent breastfed who were bottlefed</i>
		0—3	4—6	7—12	>12		
0—3	66	9	7	6	1	23	35.4
4—6	18	0	5	2	1	8	44.4
7—12	38	4	0	16	0	20	52.6
>12	35	5	0	0	7	12	34.3
TOTAL	157	18	12	24	9	63	40.1

Percentage of breastfed babies who were bottle fed = $63/157 \times 100 = 40.1$

month. The majority of mothers who breast-fed (68.79%) come from households whose income are less than RM600 per month. Thus, it can be said that breast-feeding is more prevalent among low income households as compared to the more well to do households.

Among breast-feeding mothers we also found that a number of them supplemented the infants diet with solid foods (weaning foods). The number of mothers who fed solid foods to breast-fed infants were as follows: rice + anchovy (bills) - 75 (47.8%), rice + egg - 49 (31.2%), rice + vegetables - 79 (50.3%), rice + meat - 29 (18.5%), rice + fish - 70 (44.6%) and cereals - 61 (38.9%) (Figure 1). Rice preparations can be in the form of rice porridge or soft cooked rice.

Figure 2(a) and 2(b) shows the proportion of breast-fed Infant who received solid foods according to age. It can be seen that among those infant who were fed solid foods the majority of them

were introduced to solid foods between the age of 4 to 6 months. However, a substantial number of infants were also given solid foods under the age of 3 months. Among those who fed cereals, 44.2% started them before their babies reached 3 months old. This was also true for those receiving rice and vegetables (23.80%), rice and anchovy (20.00%), rice and egg (16.67%), and rice and fish (11.10%).

The levels of significance among selected socioeconomic and dietary variables is presented in Table 6. Mothers' education was associated with household income, percent of monthly income spent on food, car ownership, television ownership and family size. Those who fed their babies with sweetened condensed milk tended to spend more of their income on foods, own a car and television, whereas those who gave their babies rice and meat tend to come from higher income households and own a van

Table 5. Length of breastfeeding by mothers' education and household income

breast-feeding (age in months)	mothers' education				household income (RM per month)				
	No. school & incompl.	primary	secondary & higher	total	< 200	200 - 399	400 - 500	> 600	Total
0-3	12	30	15	57	4	25	18	19	55
4-6	2	9	7	18	0	6	5	7	18
7-12	5	20	11	36	1	14	10	13	38
>12	6	19	8	33	2	15	8	10	35
Total	25	78	41	144	7	60	41	49	157
(percent)	(17.36%)	(51.17%)	(28.47%)	(100.00%)	(4.6%)	(38.22%)	(26.11%)	(31.21%)	(100.00%)

Table 6. Levels of significance among selected correlated socioeconomic and dietary variables

	Mothers' Education	Household Income	Percent Food	Car Ownership	Van Ownership	Television Ownership	Swt Con. Milk	Porridge & Meat	Family Size
Mothers' education	0.3542*** (591)	-0.1497** (586)	-0.2449*** (593)	-0.0596 (593)	-0.1508** (592)	-0.2694 (14)	-0.1365 (35)	-0.1480** (593)	
Household income		-0.3168*** (593)	-0.2663*** (593)	-0.1484** (593)	-0.1513*** (593)	-0.1181 (16)	0.3498+ (36)	0.0568 (593)	
Percent food			0.1232* (593)	0.0279 (593)	0.0980+ (593)	0.4799+ (16)	-0.2060 (36)	-0.0932+ (641)	
Car ownership				-0.0474 (593)	0.1275** (593)	-0.6980+ (16)	0.1570 (36)	-0.0050 (647)	
Van ownership					0.118 (593)	0.0000 (16)	-0.4017+ (36)	-0.0169 (593)	
TV ownership						0.6070+ (16)	-0.1738 (36)	-0.1650*** (593)	
Swt Con. milk							-0.5223 (4)	0.2529 (16)	
Porridge & Meat								0.0233 (35)	
Family size									

Swt Con. Milk = Sweetened Condensed Milk

*** P < 0.0001

** P < 0.001

* P < 0.01

+ P < 0.05

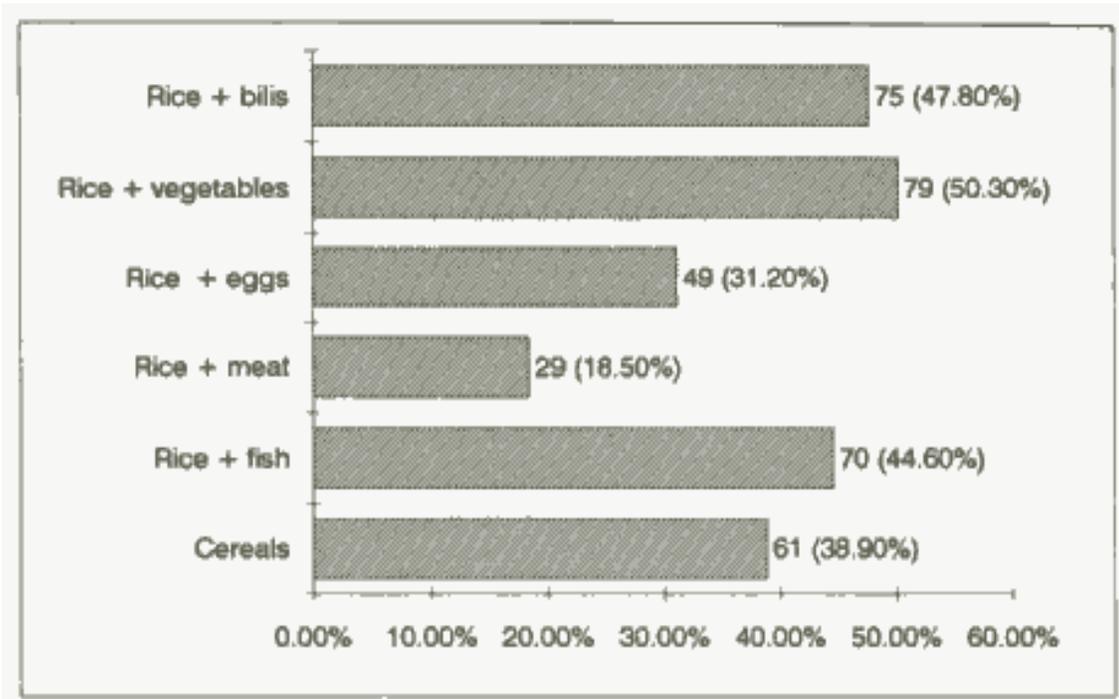


Figure 1. Numbers of mother who fed solid foods to breast fed infants (N = 157)

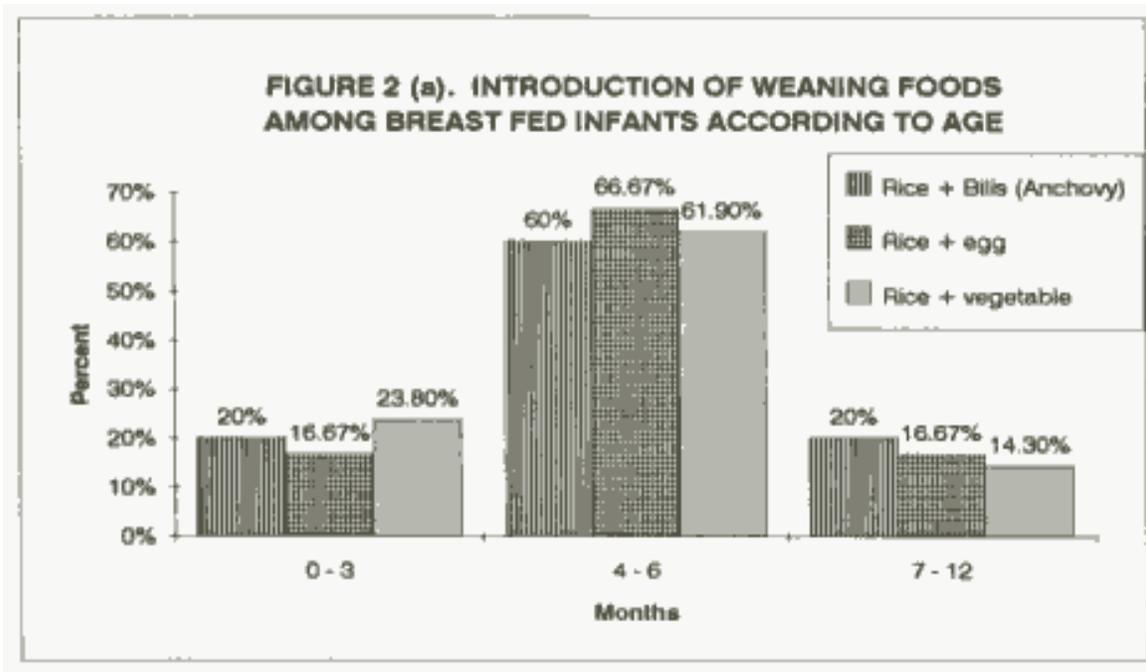


Figure 2 (a). Introduction of weaning foods among breast fed infants according to age.

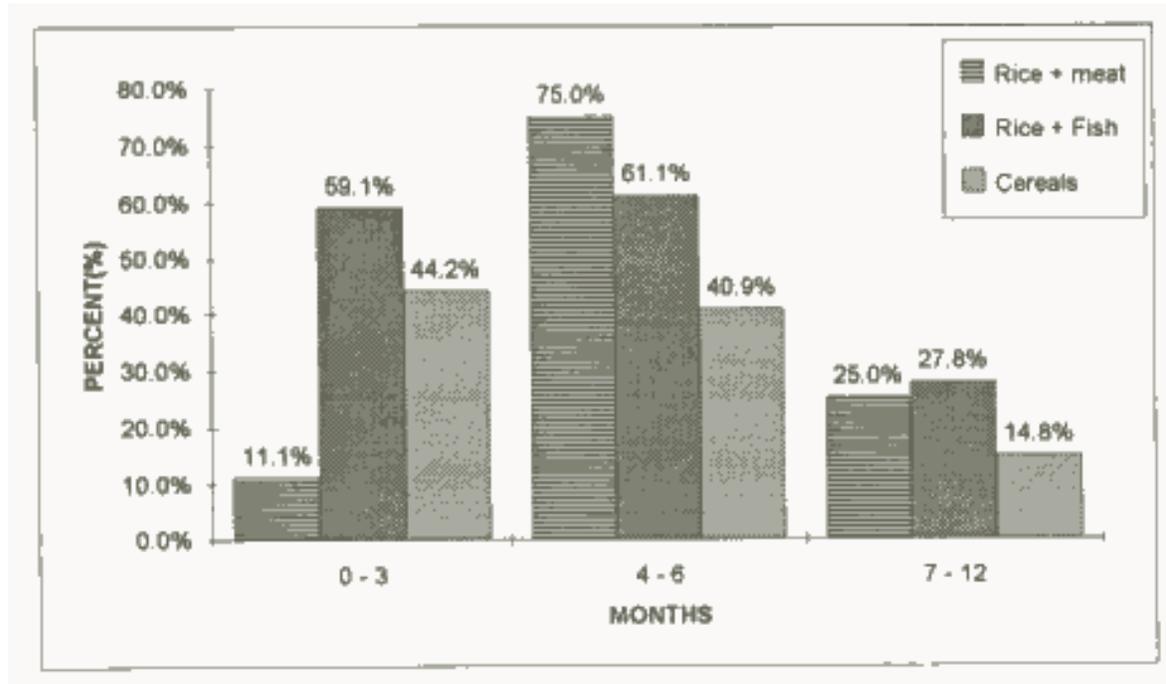


Figure 2(b). Introduction of weaning foods among breast fed infants according to age

DISCUSSION

Breast-feeding is important in preventing malnutrition, particularly in the Third World (Jelliffe, 1986). Nonetheless, recent trends indicated that breast-feeding practices in the developed and developing world have declined (WHO, 1982; Emery et al., 1990; Freed, 1993). Earlier studies in Malaysia indicated that the prevalence of breast-feeding in rural areas among Malay mothers is more than 90% (Teoh, 1975; Balakrishnan & Hasbullah, 1977). However, when the duration of breast-feeding is considered, the percentage began to change, Balakrishnan & Hasbullah, (1977) found that only 18% of the mothers breast-fed fully up to 3 months and only 9% breast-fed fully up to 6 months. Pathmanathan (1975) in her study of a rural Malay community reported that 75% of the mothers breast-fed fully and partially their

infants up to 6 months. This figure compares well with the findings by Chen (1978) in Malay mothers from an urban area.

Exclusive breast-feeding means the baby received no other food or drink, but breast milk; while partial breast-feeding means the baby received breast milk part of the time, but also consumed artificial feeds or supplements (King, 1992). One of the difficulty in retrospective studies is to ascertain the practice of exclusive breast-feeding because of problems with recall. The findings of our study indicated that only 61% of the mothers breast-fed their infant fully and partially. This figure is very much lower than the previous findings discussed above. More than a decade has passed since the earlier studies were conducted, and our results confirmed other reports that the

trends in breast-feeding has declined (WHO, 1982). The proportion of mothers who breast-fed up to 3 months is 42.0%. This percentage is higher than that reported by Balakrishnan & Hasbullah (1977), however, it is closer to what was found by Chen (1978) in her study, which was 50%.

The incidence of breast-feeding was also found to be more prevalent in the lower educational strata of women. The majority of these women were not working outside the house. Lack of exposure and mobility probably tied them to performing traditional women's role in the community which include being housewives and practicing breast-feeding which is commonly expected of them. However, it cannot be overlooked that breast-feeding is a rational and natural choice by the mothers, and apart from being a traditional practice, breast-feeding is also encourage by Islam, which is the religion of the community.

The economic aspects of breast-feeding cannot be denied either, this is affirmed by the fact that in our findings the larger number and longer duration of breast-feeding come from low income households. This results compares well with the findings of Chen (1978) and El-Mougi (1981).

A cause for alarm in our findings is the presence of a substantial number of mothers who fed their infant with sweetened condensed milk as early as 0 - 3 months old. Sweetened condensed milk is very inferior to breast milk or infant formula in nutritional composition, its

sugar content is about 45%. And most often poor mothers will dilute this milk to extreme dilution.

Early introduction of solid foods is also widespread, supporting the earlier findings by Chen (1978). Even though there has not been a study on the harmful effects on early introduction of solid food to infants, however, there is no evidence which shows that such practices is beneficial (Fomon, 1974). Early introduction of solid foods can encourage over feeding which can lead to infantile obesity, allergy and faulty food habits (Anderson & Fomon, 1974; Taitz, 1977; Woodruff, 1978; Cone, 1984). Nutritionists and pediatricians generally recommend that solid foods should be introduced to the infant's diet between 4 to 6 months old when they are physiologically and developmentally ready to handle the foods. By this time their kidneys may be able to tolerate larger solute loads of proteins and electrolytes (Rohr & Lothian, 1984). Also, by the age of 4 - 6 months the infants can sit with support, has control of his head and can move his tongue back and forth (Millar, 1982). In rural and poor areas of the Third World, early weaning can result in unhygienic preparation where water can be contaminated and the infant's gastro-intestinal tract is not ready to handle them.

CONCLUSION

This study found that of all mothers with children aged 15 months and younger in our sample population, 61% breast-fed, 33% bottle fed and 6% fed sweetened condensed milk. About forty

percent of mothers who breast-fed indicated that they also gave their infant bottle feeding. Breastfeeding was found to be more prevalent among women from the lower educational strata and lower household income. Among breast-feeding children, a substantial number of them were supplemented with solid foods as early as 0 – 3 months old. The findings of this study concluded that although breast-feeding is widely practiced, however, their duration has dwindled and early introduction of solid foods is widespread.

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REFERENCES

- Anderson TA & Fomon SJ (1974). Belkost. In *Infant Nutrition*. ed SJ Fomon, pp 408-434, Philadelphia: W.B. Saunders.
- Balakrishnan S & Hasbullah Haji Hussein (1977). Breast-feeding in Kelantan. *Med J Mal* 32:22-24.
- Chen ST (1978). Infant feeding practices in Malaysia. *Med J Mal* 33:120-123.
- Cone TE (1984). Infant feeding: a historical perspective. In *Nutrition and Feeding of Infants and Toddlers*. eds RB Howard & HS Winter, pp 1-20, Boston: Little, Brown and Co.
- El-Mougi M *et al.* (1981). Social and medical factors affecting duration of breast feeding in Egypt, *J Trop Pediatr* 27:5-11.
- Emery JL, Scholey S & Taylor EM (1990). Decline In breast-feeding. *Arch Dis Child* 65:369-372.
- Fomon SJ (1974). Recent history and current trends. In *Infant Nutrition*. ed SJ Fomon, pp 1-19, Philadelphia: W.B. Saunders.
- Freed GL (1993). Breast-feeding: time to teach what we preach. *J Amer Med Assoc* 269:243-245.
- Jelliffe DB & Jelliffe EFP (1978). *Human Milk in the Modern World*. New York: Oxford University Press.
- Jelliffe EFP (1986). Breast-feeding and the prevention of malnutrition. *Med J Mal* 41:88-92.
- King FS 1992). *Helping Mothers to Breastfeed Nairobi*: African Medical and Research Foundation, pp 30-31.
- Kwa SK (1993). Breast-feeding and the use of maternal health services in Sarawak. *Mal J Reprod Health* 11(1):8- 19.
- Millar LL (1982). *Feeding Recommendations for Healthy Infants -A Guide for Health Professionals*. Jefferson City (Missouri): Missouri Division of Health.
- Pathmanathan I (1975). A study of current infant feeding practices in rural North Malaysia as a basis for determining needs in

- nutrition education. *Southeast Asia J Trop Med & Public Health* 6:402-406
- Pebley AR & Millamn S (1986). Birthspacing and child survival. *Int FamPlann Perspect* 12:71.
- Rohr FJ & Lothian JA (1984). Feeding throughout the first year of life. In *Nutrition and Feeding of Infants and Toddlers*. eds HS Winter, pp 65-130, Boston: Little, Brown and Co.
- Taltz LS (1977). Obesity in practice: Infantile obesity. *Ped Clin N Am* 24: 107.
- Teoh SK (1975). Breast-feeding in a rural area in Malaysia. *Med J Mal* 30:175-179.
- World Health Organization (1981). *International Code of Marketing of Breast-milk Substitutes*. Geneva: W.H.O.
- World Health Organization (1982). The Prevalence and Duration of Breast-feeding: A Critical Review of Available Information. *World Health Statistics Quarterly* 35:92-116.
- WHO/NRC (1983). Breast-feeding and fertility regulation: Current knowledge and Programme Policy Implications. *Bull Wld Hlth Org* 61:371
- Woodruff CW (1978). The science of infant nutrition and art of Infant feeding. *J Am Med Assoc* 240:657