

INFANT FEEDING PRACTICES IN RIYADH, SAUDI ARABIA

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ABSTRACT

أجريت دراسة على ٦٦٢٣ أسرة سعودية مختارة بصفة عشوائية من سكان الرياض حول نمط تغذية الأطفال. كانت أعمار الأطفال موضوع الدراسة (وعدددهم ٤٧٩٦ طفلاً) تقل عن سنة واحدة وكانت تتم تغذيتهم بحليب الأم علاوة على التغذية الإضافية بالرضاعة - إلا أن نسبة من بدأت تغذيتهم بالرضاعة في الشهر الأول عقب الولادة كانت ٢٧.٣٪. وكان متوسط العمر الذي بدأ عنده تقديم الأطعمة الصلبة هو ٣٤.٥ شهر. أشارت النتائج بصورة عامة إلى تناقص في معدلات الرضاعة الطبيعية وتضاؤل في فترة الرضاعة.

Infant-feeding patterns were studied in 6,623 randomly selected Saudi families living in Riyadh. The 4,796 infants studied were under 1 year of age and were fed with breast milk plus bottle complements. Bottle-feeding was started in 27.3% of infants during the first month after birth. The mean age at which solid food was introduced was 3.45 months. The overall results suggest a decreasing incidence of breast-feeding along with diminishing length of nursing period.

MeSH KEYWORDS: Feeding behavior—in infancy and childhood

INFANT-FEEDING habits in a community are constantly changing. Despite the considerable advantages of breast-feeding,¹⁻³ breast-feeding rates have declined.^{4,5} We investigated current infant-feeding practices among a representative sample of Saudi mothers living in Riyadh. The study was part of a larger survey being conducted to determine the auxanological variance and growth standards among Saudi preschool children.

Materials and Methods

The study consisted of a community field survey using a structured questionnaire of 6,623 randomly selected Saudi families living in the Riyadh area.

The sample design was essentially based on quota sampling using two interlocked controls of preschoolers' age and sex. To introduce the necessary element of randomness (both geographic and socioeconomic) during the actual selection process, a stratified three-stage random sampling frame of Riyadh administrative areas and roads was established.

The city of Riyadh was first divided into 93 administrative areas. These areas were further divided into six strata according to socioeconomic homogeneity. About one fifth of the identified areas in each stratum were chosen randomly to be included in the study. Based on random selection,

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17 of 93 areas were selected for the survey. Each randomly selected area was further subdivided into roads. Altogether, there were 1,376 roads in the 17 randomly selected areas. To obtain an overall sampling fraction of 1/30, about one sixth of the roads in each of the 17 areas selected from the first sampling stage were chosen randomly (224 roads). Finally, each road was subsequently divided into smaller, more manageable blocks of approximately equal size, and a sample of such blocks was randomly selected and surveyed.

Forty trained interviewers were assigned randomly to the selected blocks. Each Saudi mother included in the survey was asked whether her child had been or was still being fed breast milk alone, breast milk plus formula, or formula alone. The sampled mothers were also asked about the duration of breast-feeding, when formula use was first introduced, and when solid food was first given. Information about mother's age, educational level, and the age and sex of her child was also collected.

The completed questionnaires were edited and coded. They were processed by computer using the SPSS program for statistical analysis. There were 4,796 infants under the age of 1 year in the total sample population of 6,623 families.

Results

A total of 4,796 Saudi infants under 1 year of

age were included in this study; 49.9% were boys and 50.1% girls. Their age distribution is given in Table 1. The ages of the mothers questioned and feeding practices are summarized in Table 2, and Table 3 indicates family income levels as a sociodemographic characteristic of the sample.

The pattern of feeding practices in relation to the infants' ages is shown in Table 4. Duration of breast-feeding in months is shown in Table 5. The average duration of breast-feeding was 5.05 months.

There was no relationship between maternal age and pattern of feeding (Table 2), but level of mother's education did affect feeding practice (Table 2). More educated mothers tended to breast-feed their children for a shorter period of time.

Bottle-feeding was started in 27.3% of infants below the age of 1 month (Table 6) and the average age at which infants were given solid food was 3.45 months (Table 7).

TABLE 1. Ages of sampled Saudi infants ($N = 4,796$).

Age, mos	% of sample
Newborn	4.6
1.0-2.9	12.9
3.0-5.9	32.2
6.0-8.9	24.4
9.0-11.9	25.9

TABLE 2. Maternal age, educational level and infant-feeding practice (total sample $N = 6,623$).

Age and educational level of the mother (% of sample)		Breast-fed (%)	Bottle-fed (%)	Breast and bottle (%)	Total
<i>Age (yrs)</i>					
Less than 20	(20.5%)	25.0	11.1	63.9	100.0
21-25	(36.3%)	25.7	8.8	65.5	100.0
26-30	(24.2%)	29.7	9.1	61.2	100.0
31-35	(11.5%)	26.6	11.0	62.4	100.0
36 and over	(7.5%)	31.5	14.0	54.5	100.0
<i>Educational level</i>					
Illiterate	(40.3%)	31.6	10.2	58.2	100.0
Read and write	(10.2%)	28.1	8.4	63.5	100.0
Completed elementary	(19.2%)	23.7	8.8	67.5	100.0
Completed intermediate	(12.3%)	27.3	9.6	63.1	100.0
Completed secondary and higher	(18.0%)	19.9	12.1	68.0	100.0

TABLE 3. Average monthly income of families sampled ($N = 4,796$).

Income	% of sample
Less than SR5,000	30.3
SR5,000–9,999	42.2
SR10,000–14,999	14.9
SR15,000 and more	12.6
Total	100.0

TABLE 4. Feeding practices and infants' ages ($N = 4,796$).

Age of infants, mos	Breast-fed (%)	Bottle-fed (%)	Breast- and bottle-fed (%)	Total
Newborns	61.2	5.5	33.3	100.0
1.0–2.9	44.4	8.2	47.4	100.0
3.0–5.9	28.8	8.6	62.6	100.0
6.0–8.9	26.8	10.8	62.4	100.0
9.0–11.9	26.8	10.0	63.2	100.0
Sample average	31.3	9.3	59.4	100.0

TABLE 5. Length of breast-feeding and age of infants.

Age of infants, mos	Average duration of breast-feeding, mos
Newborn	0.84
1.0–2.9	1.55
3.0–5.9	2.99
6.0–8.9	4.66
9.0–11.9	5.99

TABLE 6. Time of introduction of bottle-feeding among the sampled Saudi infants (percentage of $N = 4,796$).

Age at which bottle-feeding was introduced, mos	Age of infants at survey, mos					Total
	Newborn	1.0–2.9	3.0–5.9	6.0–8.9	9.0–11.9	
< 0.9	38.8	34.2	27.3	24.6	24.1	27.3
1.0–2.9	—	21.4	40.5	34.5	31.1	32.3
3.0–5.9	—	—	3.4	12.8	12.8	7.5
6.0–8.9	—	—	—	1.3	4.4	1.4
9.0–11.9	—	—	—	—	0.8	0.2
Not bottle-fed	61.2	44.4	28.8	26.8	26.8	31.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Discussion

In a rapidly changing society like Saudi Arabia, it is hard to remain untouched by the pace of development and change. To study the infant-feeding practices and the factors behind them, we instituted a large-scale community and hospital-based survey in which 6,623 families were sampled.

Nearly 60% of 4,796 infants included in the survey were fed by breast milk plus bottle complements; these results are similar to other smaller studies reported previously.^{4,6} Only 31.3% of infants were breast-fed exclusively at any age. The number of infants exclusively breast-fed dropped sharply after infants reached the age of 3 months; a similar rapid decline has been previously documented by Haque.⁴

Infant-feeding practices had no marked relationship with mother's age, but older mothers tended to breast-feed their infants more than younger mothers who were more inclined to use complementary feeds. Another crucial relation-

TABLE 7. Infant age at introduction of solid foods.

Age of infants, mos	% Given solid food	Mean age at introduction of solid foods, mos
Newborn	0.0	0.0
1.0–2.9	0.5	0.01
3.0–5.9	43.9	1.56
6.0–8.9	86.9	3.88
9.0–11.9	95.5	4.72
Total	60.1	3.45

ship was between the level of maternal education and breast-feeding; the higher the educational level of the mother, the less likely she was to breast-feed her infant (Table 2). This is contrary to the finding by Haque in a hospital-based study.⁴ The data also indicated that males had a slightly longer average of breast-feeding as compared to females (5.14 versus 4.94 months); the difference was not statistically significant. In a previous study,⁴ no relationship was found between parity of the mother and her infant-feeding practices. Abdullah et al¹ found that the average age for stopping breast-feeding in a village in Saudi Arabia was about 12.5 months, and 11% of the mothers continued to breast-feed for more than 2 years.

The overall results suggest a decreasing incidence of breast-feeding along with diminishing length of the nursing period. From our study and from previously published work,^{1,4} we believe that a nationwide effort should be made through all available means to encourage and increase the rate and duration of breast-feeding.

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References

1. Abdullah MA, Sebai ZA, Swailem AR. Health and nutritional status of pre-school children. In: Monograph II. The health status of children. Saudi Med J 1982;3(suppl 2):11-8.
2. Baum JD. Nutritional value of human milk. Obstet Gynecol 1971;37:126-30.
3. Davies PA. Feeding the new-born baby. Pro Nutr Soc 1969;28:66-72.
4. Haque KN. Feeding pattern of children under two years of age in Riyadh, Saudi Arabia. Ann Trop Pediatr 1983;3(3):129-32.
5. Jelliffe OB. Breast milk and the world and protein gap. Clin Pediatr 1968;7:96-9.
6. Sebai ZA. The health of the family in changing Saudi Arabia, 3rd ed. Jeddah: Tihama Publications, 1981.

Table 2. Length of breast-feeding and age of infant.

Age of infant, mos	Average duration of breast-feeding, mos
Newborn	0.84
1.0-1.9	1.32
2.0-2.9	2.09
3.0-3.9	4.00
4.0-4.9	5.14
5.0-5.9	5.14
Total	2.98

Table 3. Rate of introduction of bottle-feeding among the sampled Saudi infants (percentage of N = 1,798).

Age of infant at survey, mos	Infants who were introduced	Infants not introduced
Newborn	38.8	61.2
1.0-1.9	34.3	65.7
2.0-2.9	40.2	59.8
3.0-3.9	3.4	96.6
4.0-4.9	1.3	98.7
5.0-5.9	0.8	99.2
Total	30.8	69.2

Table 4. Rate of introduction of bottle-feeding among the sampled Saudi infants (percentage of N = 1,798).

Age of infant at survey, mos	Infants who were introduced	Infants not introduced
Newborn	38.8	61.2
1.0-1.9	34.3	65.7
2.0-2.9	40.2	59.8
3.0-3.9	3.4	96.6
4.0-4.9	1.3	98.7
5.0-5.9	0.8	99.2
Total	30.8	69.2