

Infant-feeding practices in Al-Ain, United Arab Emirates

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ممارسات تغذية الرُّضْع في مدينة العين، بالإمارات العربية المتحدة

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خلاصة: أجري مسح لدراسة ممارسات تغذية الرُّضْع والعوامل المؤثرة فيها في مدينة العين بالإمارات العربية المتحدة. وشمل المسح 375 والدة من جنسيات وخلفيات مختلفة إلى جانب 300 رضيع بصحة جيدة. وتمت مقابلة الأمهات في أربع عيادات للرعاية الصحية الأولية في مدينة العين. وتبين من النتائج أن 46% من الرُّضْع ظلوا يتغذون بلبن الثدي لمدة 4-6 شهور. وكانت جنسية الأم ومستوى تعليمها عاملين مؤثرين بدرجة كبيرة في قرارات الأمهات بالاعتصام على الثدي في تغذية أطفالهن، والمدة التي يستمر فيها ذلك، والوقت الذي تضاف فيه الأغذية التكميلية. ووجد أن أكثر المكملات شيوعاً هي ألبان الأبقار والماعز الطازجة. وكانت مستحضرات أغذية الرُّضْع تضاف كمكملات غذائية في وقت مبكر، ربما بسبب الإعلانات أو لارتفاع مستوى المعيشة في مدينة العين.

ABSTRACT A survey was conducted to study the practices of infant-feeding and the influencing factors in Al-Ain, United Arab Emirates. It involved 375 mothers of different nationalities and backgrounds and 300 healthy infants. The mothers were interviewed at four primary health care clinics in Al-Ain. Results showed that 46% of infants were breastfed for 4-6 months. The mother's nationality and her educational status were significant influences on the mother's decision to exclusively breast-feed the infant, for how long and when to introduce supplementary food. Fresh cow and goat milk were the most common supplements. Inclusion of baby formula as a supplement generally occurred early, perhaps because of advertising and the affluence in Al-Ain.

Pratiques d'alimentation du nourrisson à Al-Ain (Emirats arabes unis)

RESUME Une enquête a été réalisée à Al-Ain (Emirate arabe unie) pour étudier les pratiques d'alimentation du nourrisson et les facteurs déterminants. Elle a été menée auprès de 375 mères de différentes nationalités appartenant à différents milieux et concernait 300 nourrissons sains. Les mères ont été interrogées dans quatre dispensaires de soins de santé primaires à Al-Ain. Les résultats ont montré que 46% des nourrissons étaient nourris au sein pendant 4-6 mois. La nationalité de la mère et son niveau d'instruction avait une influence importante sur la décision de la mère concernant l'allaitement exclusif au sein, la durée de cet allaitement et le moment de l'introduction d'une alimentation complémentaire. Le lait frais de vache et de chèvre était le complément le plus couramment donné. L'inclusion d'une préparation pour nourrissons comme aliment de complément avait lieu à un stade précoce, peut-être du fait de la publicité et de la prospérité régnant à Al-Ain.

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Introduction

Until a few years ago, breastfeeding was considered the best method of infant-feeding and was the most common method used. The attitudes and practices of infant-feeding among the nationals of the United Arab Emirates (UAE) may vary according to their geographical location within the country and with their tribe of affiliation. In addition, the presence of expatriates of different nationalities may have contributed to their attitudes and practices. In addition to influences stemming from social and/or religious roots, infant-feeding patterns are expected to change as more women become educated and may go out of the house to work. Mothers who work outside the home would be expected to stop breastfeeding and introduce bottle feeding considerably earlier than those who stay at home. Also, working mothers may depend on nurseries or baby-sitters for help in child care and rearing, which could be deficient or inappropriate. Members of the health services staff may have contributed directly to the decline of breastfeeding through giving misleading advice about the use of baby formulas, or because of a lack of health education or communication problems due to language barriers. Other influencing factors may include the literacy level of the mother, and the effect of the mass media and of sales representatives, who may give conflicting messages about baby formulas.

Although the above-mentioned factors may all affect infant-feeding, there are no solid data available about commonly used methods of infant-feeding in the UAE or about their suitability. Therefore, the purpose of this study was to survey the different practices of infant-feeding in Al-Ain city, UAE, which is about 160 km east of the capital city of Abu Dhabi. The popula-

tion of Al-Ain is about 200 000; it consists predominantly of expatriates but has a high percentage of indigenous UAE nationals compared with other cities.

Subjects and methods

A questionnaire was constructed and mothers were interviewed at four primary health care clinics in Al-Ain over a period of 2 years. Information about the baby's sex, age (months), height (cm) and weight (kg) was collected, with the help of the health-care staff. Data collected from 375 mothers and 300 children were used in the assessment of feeding methods and growth. Feeding methods studied were either the use of breast milk only as a method of feeding (exclusive breastfeeding) or the supplementation of breast milk with fresh milk (camel, cow or goat milk) or with baby formula. For each of the three feeding methods, 100 infants (50 males and 50 females) were represented. All infants included in the study were healthy and were brought to the vaccination units, where the data of this study were collected. Weights and heights were measured and growth rates were determined, which is the subject of another report.

Data were analysed using *SPSS* software. Data are expressed as mean and standard deviation unless otherwise stated. The Student *t*-test was used to determine the significance of differences between mean values of two continuous variables and the Mann-Whitney test was used for non-parametric situations. Chi-squared analysis was performed to test for differences in proportions of categorical variables between two or more groups. $P < 0.05$ was considered as the cut-off value for significance.

Results

Information on the mothers and infants

The characteristics of the mothers involved in this study are shown in Table 1. Several nationalities were included, the majority being UAE nationals. Mothers' ages ranged from 15 years to 45 years and 69.4% of them were educated, i.e. able to read and write. Most mothers (78.7%) did not work outside the home. The mean age of infants of both sexes was 9.1 ± 6.3 months, with a minimum age of 1 month and a maximum of 36 months. The average height (length) of all infants was 67.6 ± 11.1 cm and their average weight was 8.1 ± 2.4 kg.

Table 1 Characteristics of mothers involved in the study

Characteristic	No.	%
<i>Nationality</i>		
Egyptian	59	15.7
Indian	37	9.9
Jordanian	42	11.2
Omani	22	5.9
Pakistani	20	5.3
Palestinian	32	8.5
Sudanese	31	8.3
UAE	88	23.5
Others	44	11.7
<i>Mother's age (years)</i>		
16-20	22	5.9
21-25	58	15.5
26-30	166	44.3
31-35	78	20.8
36-40	36	9.6
41-45	15	4.0
<i>Work status</i>		
Working	80	21.3
Not working	295	78.7
<i>Education</i>		
Educated (read and write)	260	69.3
Uneducated	115	30.7

Infant-feeding practices

Exclusive breastfeeding

The results of the survey showed that exclusive breastfeeding was practised by only 28% of the mothers and varied in duration (Figure 1). About 46% of the infants were breastfed for a maximum period of 4-6 months; a small percentage of infants were exclusively breastfed for longer than 6 months. The duration of breastfeeding was significantly influenced ($P < 0.01$) by the mother's nationality. Omani and UAE mothers used exclusive breastfeeding for a period of 12 months, Jordanians and Palestinians for 9 months, Sudanese and Syrians for 6 months and Egyptians for 3 months. The majority (89%) of mothers who breastfed for 9 months were not educated. The mother's nationality was a highly significant influence ($P < 0.001$) among those who practised breastfeeding for 12 months or longer, with the majority being from the UAE. However, the mother's educational status, whether working or not, and the mother's age did not significantly influence the decision to breastfeed exclusively or not.

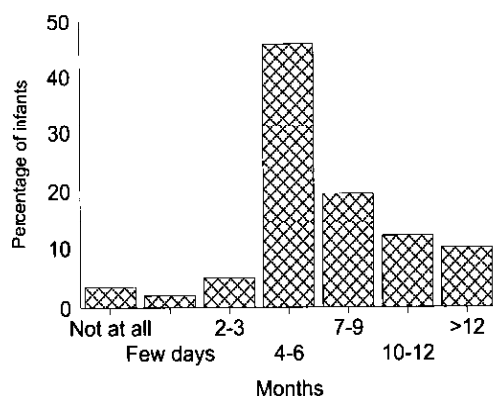


Figure 1 Percentage of infants who were exclusively breastfed for varied duration

As seen in Figure 1, 3.5% of the infants were not breastfed at all and were bottle-fed from the first day. The age of the mothers of this group of infants ranged from 26 years to 45 years and none of them was involved in work outside the home, except one woman who worked on a half-day basis. Statistical analysis revealed that the mother's nationality and educational status had a highly significant ($P < 0.01$) influence on her decision not to breast-feed at all. Most of the mothers of this group were Egyptians with only two mothers from Jordan and one from Oman.

Only 1.9% of the infants were breastfed for a few days but less than 1 month (Figure 1). Significant differences between different age groups, educated and non-educated, working and non-working ($P < 0.05$) were seen. Again, significant differences in nationalities were seen in those who breastfed for a few days; most of the mothers were Egyptian ($P < 0.01$). About 6.7% of infants were breastfed for 2 months only; about 52% of the mothers in this group were uneducated and 95% were housewives and did not work outside the home. Their ages ranged from 16 years to 45 years and they were of different nationalities.

Termination of breastfeeding

The lactation period among mothers who used breastfeeding as the sole form of feeding varied. The results indicated that 24.1% of the infants were weaned from the breast because of their mother's desire to do so, compared with the same percentage of the mothers (24%) who terminated breastfeeding because of external factors. Of all the mothers, 13.1% stopped breastfeeding because they wanted to. Medical advice had been taken by 2.7% of the mothers to stop breastfeeding for reasons such as a medical operation or unsuitability of milk. A higher percentage ($P < 0.05$) of educated mothers

stopped breastfeeding their infants earlier than those who were uneducated.

Artificial and mixed infant-feeding (supplementation)

The following were the common foods used for supplementary feeding for infants involved in this study.

- Follow-up (raw milk): camel, cow and goat milk.
- Supplementary formulas: two brands of baby-milk formula figured prominently.
- Cereal-based baby formulas: wheat-based formula, wheat-based formula mixed with fruits, baby food composed of three cereals, baby food composed of five cereals, teething rusks, teething rusks and rice mixed with milk.
- Cereal grains: short-grain rice (from Egypt) and long-grain rice (from Pakistan).

Results showed that 76.1% of the infants were given supplementary milk before the end of their first month: 29.7% received baby milk formula, 26.7% received fresh milk (mostly cow or goat), while 14.2% received skimmed milk and 5.3% were given condensed milk. The frequency of milk supplementation was 5–6 times per day. Some mothers started to give supplementary milk from the first day of birth.

Results also showed that 13% of infants were given supplements of fresh milk at the age of 1–3 months compared to 20% who were given baby milk formula and 2.9% who were given powdered milk (Figure 2). Supplementary fresh milk was used by only 25% of the mothers, and the decision to use fresh milk was influenced by ($P < 0.01$) the mother's nationality and by her educational status. Mothers from Egypt, Oman and UAE were the ones who preferred to use fresh milk. A greater number of educated

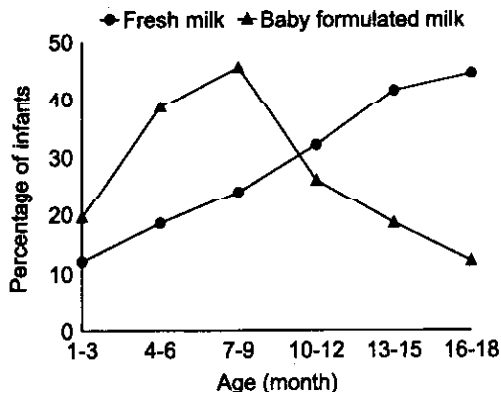


Figure 2 Percentage of infants who were supplemented with fresh milk and baby formula milk.

mothers (67.5%) preferred fresh milk than non-educated mothers (32.5%). Pasteurized and condensed milk were not used at this age. However, 4.8% of the infants were given pasteurized cow's milk, in addition to breast milk at 4–6 months. Statistical analysis showed no significant influence of any of the mothers' characteristics on whether or not to use pasteurized cow's milk.

Supplementation with fresh milk and with baby formulated milk as the infant age advanced to 18 months is shown in Figure 2. The use of fresh milk and baby formula showed a steady increase with age until 7–9 months, after which use of fresh milk continued to increase while that of baby formula decreased.

As the infants got older, semi-solid foods were introduced, which were mainly cereals in powdered or semi-powdered form that are mixed with milk or water before being served to the baby. For this category, mothers listed foods and brands which were composed of one cereal with or without other additives. These were: wheat plus four fruits, rice with milk, three-cereal formula and those composed of five cere-

als. The results showed that 90% of the supplemented infants depended on these foods, which in some cases were introduced at a very early age. Some mothers preferred to supplement with baby food instead of using baby milk formula by diluting the food to a level so that it could be easily taken by bottle. In most cases, mothers did not follow the manufacturer's instructions for use.

Discussion

Until recently, infant-feeding depended entirely on the use of breast milk from the mother. This trend has declined as a result of the development of other nutritional means, such as infant formula products, which resemble human milk in composition and physiological functions. Our study reports on the different feeding practices of mothers of healthy infants in Al-Ain, UAE. These infants are living in a society where family income is high, baby food is abundant, and it is quite likely that a mother may easily change her baby's food under the influence of a friend or a neighbour.

The results of this general survey showed that only 31.9% of the mothers breastfed for a maximum period of 4–6 months. Exclusive breastfeeding was found to decline from the age of 2 months, and less than 50% of infants were exclusively breastfed for 6 months. This decline may be attributed to the media-advertised infant formulas, the direct role of the mother in deciding infant-feeding without referring to medical advice and/or to the use of ready-to-use infant formulas in hospitals immediately after delivery. Thus, it appears that infant-feeding practices are influenced more by marketing techniques than by scientific advice, and the use of baby formula milk and foods is encouraged.

The results showed that 70% of infants were initially breastfed and 11.1% were still breastfed at 12 months of age. Different nationalities seemed to have different attitudes towards the practice of exclusive breastfeeding in early infancy. Some Egyptian mothers decided not to breastfeed and this decision was made even before delivery. Even for those Egyptian infants who were initially breastfed, the duration was for a maximum of 3 months. For other nationalities, the duration varied between 6 months and 12 months. Some mothers were obliged to stop breastfeeding for various reasons, the most common being travel and pregnancy. Most mothers of UAE nationality preferred to breastfeed exclusively for 12 months. This practice could be responsible for the nutritional deficiency reported in Al-Ain City [1]. In developing countries, some research has reported a strong association between prolonged breastfeeding and malnutrition [2]. Prolonged exclusive breastfeeding is not recommended because it can produce anaemia if it continues for more than 6 months, and in this case it should be supplemented with iron starting from the fourth month [3]. In some countries, breastfeeding is not used for a long lactation period [4-6]. However, poverty necessitated mothers to prolong breastfeeding in Iraq [7] and to extend the lactation period to delay the next pregnancy [8].

The supplementary foods for infants used by the mothers of the UAE and of other nationalities were mainly baby milk formulas, powdered milk, pasteurized fresh milk, raw goat's and cow's milk, dairy products, cereals, of which rice was the most common, and several kinds of nuts. This variety of supplements is similar to that reported in Benghazi, Libyan Arab Jamahiriya [9].

The first supplement introduced to breastfed infants was baby milk formula.

However, about 3.5% of infants were not breastfed and were introduced to baby formula at birth. Fresh milk was also introduced at an early age. Supplementation of infants with either fresh milk or with baby formula increased up until 9 months of age, after which the use of fresh milk continued to increase while the use of baby formula decreased. As the infants got older, semi-solid foods were introduced, which were mainly cereals in powered or semi-powdered forms that are mixed with milk or water before being served to the baby. In some cases, these foods were introduced at a very early age.

Breast milk has many advantages, in addition to its nutritional value. Colostrum contains immunoglobulins which give the infant a substantial immunity to infections [10]. Mother's milk provides protection against several infant illnesses and thus helps reduce infant morbidity and mortality, especially in poor areas of the developing world. Breastfeeding allows for physical contact and helps bonding between mother and infant, which is essential for future interactions [7,8,10-12]. However, how long should breastfeeding be continued? Human milk has been found to be entirely sufficient for 3 months [13] and can be adequate up to the ninth month [14]. The volume and composition of human milk is greatly affected by maternal nutritional status, physical overwork, environmental, psychological and social stress and other factors, such as maternal parasitic disease and genetic disorders [15]. Such factors can affect the quantity and quality of mother's milk and, consequently, its suitability for infant nutrition. Other factors include milk intolerance, concentration of drugs and toxins, inadequate supply and unsuitable nipples [16]. Furthermore, socioeconomic factors such as ethnic background, occupation and education could be

expected to influence such a practice. Decline in breastfeeding has been attributed to sociodemographic factors, such as the involvement of mothers in social life and in work outside the home. Additionally, the decline may be due to the many pressures exerted to use infant formula products.

Conclusion

Our results showed that exclusive breastfeeding of infants in Al-Ain was practised by less than a third of all mothers involved in the survey and was for a varying duration, up to 12 months. A wide variety of supplementary food items were available and these were introduced to the infant as early as his/her first day of life, whether breastfeeding was practised for a short or a long time. Fresh milk rather than baby formula seemed to be the preferred supple-

ment for infants up to 18 months of age. The mother's nationality, age, educational status and working status affected different parameters under study. Other factors, such as media advertising and the advice of health care personnel may also have influenced many of the mothers' decisions. Our findings seem to fit into the overall international trend of infant-feeding and showed that the background of mothers can be influential in this regard. Overall, it seems that breastfeeding with appropriate supplementation is the best combination for infant-feeding.

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WHO's tips for feeding your child

- Breastfeed your child. Give only breastmilk up to at least the age of 4 months and if possible, up to 6 months. Giving only breastmilk (no other foods or fluids, even water) helps to protect your child against sickness. Most mothers have enough breastmilk. By feeding your child frequently and for longer periods, you can increase the amount of breastmilk.
- When your child is 6 months old, begin to offer other foods. Thick cereal, meat, fish, eggs, beans, fruits and vegetables will give your child energy and will help your child to grow.
- Continue to breastfeed up to the age of two years—as often as your child wants. Even when you give other foods, breastfeeding will help to protect your child against sickness.
- Feed your child actively. Sit with and encourage your child to eat. Put your child's serving in a separate plate or bowl to ensure that he or she has an adequate share of the family food.
- If your child is sick:
 - Breastfeed more often
 - If your child has started eating other foods, offer food more often, in small amounts, and give plenty to drink.

Source: WHO Fact sheet No. 178, revised September 1998.