Feeding Practices in the North of Jordan

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ABSTRACT

Objective: To describe infant feeding practices in the North of Jordan and their relationship with socio-demographic characteristics and to asses whether they meet with infant feeding recommendations.

Methods: A descriptive cross sectional study involving a questionnaire administered to 375 mothers of healthy children less than one and a half years of age, who attended Prince Rashid Military Hospital or primary care centers in the North of Jordan from September to December 2010, was conducted. It included information about family socio-demographic factors and patterns of infant feeding including breastfeeding status and the use of infant formula and transitions in infant feeding from breast milk and infant formula to complementary foods, table foods and other beverages. Premature infants, children with chronic illness and infants on special formula were excluded from the study. The Statistical Package for Social Sciences software (SPSS) version 11.5 was used for data processing and statistical analysis. Cross-tabulations were made and statistical significance was tested with the Chi-square test.

Results: Three hundred and seventy five mothers filled the questionnaire. Of these 88.1% have ever breast fed their babies. Of those who breast fed their babies, 40.7% have breast fed their babies for the first three months of life, 21% continued breast feeding for six months and 17.5% continued breast feeding for the first 12 months of life. The most common reason mentioned by mothers for not continuing breast feeding is that mothers thought that their breast milk is not enough for their babies (46.1%). Artificial infant formula was introduced in 78.7% and 91.2% in the first four and six months of age respectively, 46.8% of mothers thought that breast milk is not enough for their babies even in the first four months of life. Significant percentages of mothers gave their babies water, herbs, fruits and vegetables and cereals at early ages. Meat and eggs were also given earlier but to a much lesser extent. Mother education level and employment were significantly associated with most of feeding behaviors.

Conclusions: Exclusive breast feeding is uncommon in the north of Jordan. There is a high rate of artificial milk feeding early in infancy and there are wrong feeding practices and beliefs. Public health interventions and mother education should be implemented.

Key words: Breastfeeding, Formula, Infant, Practice.

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Introduction

Infancy is a time of rapid transition from a diet of virtually nothing but milk (either breast milk or infant formula) to a varied diet from nearly all food groups being consumed on a daily basis by most infants.[1] Breast feeding is known to be the best way to feed an infant by providing the psychological and health benefit to both the mother and child. It is therefore considered physiologically, biochemically, immunologically and psychologically suited for this purpose.[2]

Despite various recommendations about infant feeding, little is known about actual patterns of feeding among Jordanian infants. Although there are many studies about breastfeeding, there are few studies about what types of food are introduced to infants especially in our region. These studies all describe the wrong behaviors of mothers in feeding their infants especially the shift from exclusive breast feeding to formula feeding and their adverse effects on infant's health.[1-4]

This study was conducted to describe infant feeding practices in the North of Jordan and their relationship with socio-demographic characteristics and to asses whether they meet with infant feeding recommendations. This will help identify wrong feeding practices among mothers and their relationship to maternal demographic factors so that educational or interventional programs can be taken to correct these bad behaviors.

Methods

A descriptive cross sectional study was conducted on mothers of healthy children less than 18 months of age. A validated questionnaire was administered to 375 mothers of healthy children between nine and 18 months of age at the time of the survey (from September to December 2010) after obtaining their consent for the interview. The questionnaire was filled by mothers who attended Prince Rashid Military Hospital or three primary care centers in the North of Jordan. These centers were chosen because we knew doctors and nurses working there and they represent different geographical and social communities.

A questionnaire developed for the study was used by the authors. The questionnaire included demographic maternal factors such as age, number of children, mother education level, mother's occupation and family income. The 2nd part of the questionnaire included feeding practices such as information on initiation and timing of breastfeeding after birth, the reasons for not breastfeeding for those who were not breastfed or stopped breastfeeding, age at introduction of bottle milk formula feeding and the introduction of solid food and water. The questionnaire included structured and unstructured items where the mothers were asked answer in their own words. Mothers were classified into four groups according to their education: illiterate mothers who could not read and write, mothers with primary-school education (six years), mothers with secondary-school education (12 years) and mothers with a university or college education. Table I illustrates the entire demographic variables and the number of women under each variable. The study was limited to mothers of older infants and young toddlers (9-18 months) to give a better recall of plan of the events in the first year of life and to ensure that nearly all were past the age when these food items are typically introduced. Premature infants, children with chronic illness and infants on special formula were excluded from the study because they will need special diet or formula.

The convenience sample included mothers who attended the hospital or the primary care center and met the inclusion criteria in specific days when member of our team was there. Mothers were asked to fill the questionnaire with the help of that member. All invited mothers agreed to participate (response rate 100%). Data were then transferred to a specially designed SPSS form. SPSS version 11.5 was used to analyze the data. Cross-tabulations were made and statistical significance was tested with the Chi-square test. The following definitions were taken from the WHO guidelines: [5]

- Infant: A child not more than 12 months of age.
- Artificial feeding: Feeding an infant on a breast-milk substitute i.e. any other food than breastmilk.
- Complementary feeding: The process of giving an infant food in addition to breast milk or infant formula, when either becomes

Table I: Maternal demographic factors

Mother's age	**< 26 years**	**26-35 years**	**>35 years**	
	86	**233**	**56**	
No of children	1-4	5-8	>8	
	298	73	4	
Mother education level	Illiterate	Elementary	Secondary	Diploma & university
	11	35	140	189
Family income	<300 JD	300-500 JD	>500 JD	
	165	138	72	
Mother's employment	Yes	No		
	127	248		

insufficient to satisfy the infant's nutritional requirements.

- Exclusive breastfeeding: Breastfeeding while giving no other food or liquid, not even water, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.
- Solid foods or solids were defined as any food other than breast milk, formula, or other milks (whole cow's milk, 2% milk, etc.) but did not include juice or water.[6]

Results

Three hundred and seventy five mothers filled the questionnaire. Of these 88.1% have ever breast fed their babies, 59.3% of whom have breast fed their babies for the first three months of life, 38.6% continued breast feeding for six months and 17.5% continued breast feeding for the first 12 months of life. The most common reason mentioned by mothers for not continuing breast feeding is that mothers thought that their breast milk is not enough for their infants (46.1%). Other reported causes include: infant's refusal of mother's milk, mother's work, studying, pregnancy and illness and infant's hospital admission. Mother employment was the factor associated with early stopping of breast feeding ($p = 0.005$) i.e. employed mothers tend to stop breastfeeding earlier. Mother's education level and employment were associated with earlier introduction of artificial milk ($p = 0.001$). A significant percentage of mothers started giving their babies artificial milk at an early age. This occurred in 82.8% and 92.7% in the first four and six months of age respectively, 46.8% of mothers thought that breast milk is not enough for their babies even in the first four months of life. Other reported causes included mother's work, study, pregnancy and illness, the desire to let the infant gain more weight and calcium for the bones and mother's own wish. Artificial feeding was strongly associated with maternal education level and employment ($p = 0.001$) and to a lesser extent with income ($p = 0.050$). It was not associated with age and number of children. Mother's employment and education level were associated with early introduction of artificial milk, 73.3% of mothers gave their children water in the first four months of life and 97.7% gave it by six months of age. This was not related to mother's age, employment, education level, income and number of children. Mothers also tend to give their children cereals at an early age. This occurred in 48.6% and 88.8% in the first four and six months respectively. The most common reasons offered by mothers to give cereals: as complementary food, to get used to take it earlier, to help them grow more and milk is not enough. Number of siblings was the only significant factor associated with introduction of cereals ($p=0.017$). Age, education level, employment and income were not related. Anise, sage and camomile were the most common herbs used by mothers for their babies. They were used mostly for colic, abdominal distension and constipation and 89.0% of mothers gave herbs in the first four months of life and 96.7% in the first six months.

Giving herbs was not associated with maternal age, employment, education level, income and number of children, 6.4% mothers gave their babies meat before four months of age and 17.8% gave it before six months. Reasons for giving meat early on include: to get energy and proteins, to get used to it, to prevent illness and to gain more weight. Except for mother employment ($p= 0.029$), other factors were not related to early

Table II: Cumulative percentages of babies' age and types of foods

Food \ Age	1-4 months %	4-6 months %	6-12 months %
Stopping Breast milk	40.7	61.4	82.5
Artificial milk	82.8	92.7	100
Water	73.3	97.7	100
Herbs	89	96.7	100
Fruits and vegetables	11.4	73.4	100
Cereals	48.6	88.8	100
Meat	6.4	17.8	100
Eggs	10.7	42.6	100

introduction of meat. Mothers gave fruits and vegetables before four months and six months in 11.4 and 73.4% of cases respectively.

This was only related to maternal education level ($p = 0.003$) and employment ($p = 0.01$). Eggs were given in 10.7% of babies before four months of age and in 42.5% before six months of age. Mothers who gave it before six months thought that it is easy to swallow, necessary for brain and bone growth and help prepare them for eating solids. This was only related to maternal education level ($p = 0.020$) i.e. the higher the education level the earlier they give eggs to their babies. Table II summarizes the percentages of women according to the feeding behavior.

Discussion

With urbanization and change of life style over the recent years there was also a change in the infant feeding behavior, especially the shift to formula feeding rather than breastfeeding. Several studies all around the world have assessed mother's behavior in infant feeding and found this change. This has led the World Health Organization (WHO) and many health authorities all around the world to put guidelines to augment breast feeding and to educate parents about the optimal age and the type of foods for infants to allow healthy transition to adult food.

In our study breast feeding was initiated in a high percentage of women (88.1%) but this dropped to 59% at six months and even more dramatically at 12 months so that only 18% continued breast feeding their babies at this age. These are still higher than the goals of Healthy People 2000 which is to increase to at least 75% the proportion of mothers who initiate breastfeeding and to increase to at least 50% the proportion who continue breast-feeding until their infants are five to six months old.[7]

Although a significant percentage of mothers initiated breast feeding, a significant percentage gave also artificial milk (82.8% in the first four months and 92.7% in the first six months). Mother education level and employment were significantly associated with early introduction of artificial milk. It seems that mother employment and education force mothers to introduce artificial milk earlier because the work and education environment do not allow mothers to breastfeed their babies. Also employed mothers have only three months vacation after delivery. In a study done in 1997, Halalsheh found that the mean duration of breast feeding was 12.8 months and that mixed feeding was present in 58% of cases. He also found that the duration of breastfeeding was associated with all maternal demographic factors.[8] A survey done by the Jordanian Department of Statistics across Jordan in 2007 found that by the age of four to five months, only 10 percent of children are exclusively breastfed. After the age of five months almost no children receive exclusive breastfeeding.[9]

The same survey found that the practice of bottle-feeding with a nipple is prevalent in 35% of infants under two months of age and more than half of infants aged two to eight months are bottle-fed. So exclusive breast feeding is becoming an uncommon practice in Jordan even at early ages and mixed feeding is becoming part of our culture. This does not follow WHO guidelines nor the American Academy of Pediatrics (AAP) recommendations of giving exclusive breast milk in the first six months of age.[10,11]

There was significant association between giving artificial milk and breast feeding on one side and the mother's demographic factors on the other side. Several factors have been responsible for the shift to bottle-feeding, such as culture borrowing, the introduction of new products, urbanization, commercial advertising and elevated income.[12] This trend of stopping breastfeeding early on also might be due to other

factors like wrong beliefs of mothers that their milk is insufficient in amount or in its content, onset of a new pregnancy, the use of contraceptive pills and the strong effect of pharmaceutical companies by offering free samples in hospitals and promoting doctors and pharmacists to prescribe their formulas. Formula supplementation in hospital was especially associated with early cessation of breastfeeding.[13] Studies throughout the world have identified that concern about milk supply is the most common reason women give for stopping breastfeeding.[14,15] This was also the case in our study. This is a dangerous issue which should be addressed seriously by health authorities in our country to re-educate the community about the advantages of breast feeding and the need to apply the WHO guidelines.

A significant number of mothers in our study gave water early on. Infants below four months were given water in 73.5% of cases and in 97.7% in cases before six months. This was not associated with maternal demographic factors. Mothers seem to think that their babies will be thirsty if not given water besides milk. WHO guidelines do not recommend giving water before six months of age and babies can be fed breast milk exclusively for the first six months of life.[5] Herbs have been also used on a wide range among infants in our study. It seems that there are strong beliefs in herbs and their usefulness for the management of some infant problems like colic, distension and constipation. Also giving herbs was not related to maternal factors. Worldwide research has found that breast milk completely satisfies an infant's nutritional and fluid needs for the first six months. Infants do not need water or other liquids such as herbal teas to maintain good hydration, even in hot climates. The potential dangers of water supplementation include the introduction of contaminants and reduction of nutrient intake[1] Mothers in our study also seem to give other foods before six and even before four months of age. They gave fruit and vegetables, eggs, cereals and even meat at early ages. The reasons offered by mothers to give these foods is that they are complementary foods, they want their babies to grow more, they think that their babies are hungry if they cry and milk is not enough for nutrition. We know from WHO and other guidelines that complementary foods should not be offered before four months of age and it is best to give them after six months of age.

The Canadian guidelines recommend that solid food introduction should correspond with the infant's physiological and neuromuscular maturation which usually occurs around four months.[6] World Health Organization has set guidelines for the age of introduction of solids to infants to allow healthy transition to adult food.[16] Number of siblings was the only related maternal factor to age of cereals introduction. Smaller families tend to give cereals early on to their babies. It seems that mothers of smaller families have less experience in feeding their infants and they introduce cereals earlier to help their babies grow better. Although few mothers gave their babies fruits and vegetables before four months of age, this has risen dramatically after the fourt month to reach a 73.5% by six months of age. This was associated with mother's education level and employment. Very few women gave their kids meat and eggs before four months of age, but still some women gave them early based on false beliefs. This was related to mother's education level and employment. Similar behaviors were noted in developed and developing countries.[17,18,19] this emphasizes the effect of modernization on infant feeding and the need to take serious steps to educate parents and apply measures to insure proper feeding behaviors.

This study shows that exclusive breast milk is uncommon in the North of Jordan and there is a high rate of artificial milk intake early in infancy. It also shows many wrong practices and beliefs concerning complementary feeding for their infants. Significant work need to be done by health authorities and media to educate mothers about the best practices of infant feeding for their infants in order to allow them to get the advantages of mother's breast milk and allow a gradual and healthy progress to adult food.

Limitations of the study

The sample size was small and limited to hospital and primary care centers. Home visits or phone interviews could add more sample size and randomization could be done for the study. Parents who filled the questionnaire more than

once were not known but no parent reported having filled it before. There was also the recall bias.

Generalizing the study to include all parts of Jordan would add much more to the study but it is hoped that further studies would be done to cover this.

Conclusion

Exclusive breast feeding is uncommon in the North of Jordan. There is a high rate of artificial milk feeding early in infancy and there are wrong feeding practices and beliefs. Public health interventions and mother education should be implemented.

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