Original Article

The effect of qat chewing and other factors on breast-feeding and child survival in a Yemeni society

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ABSTRACT

In a survey conducted in Dammar, Republic of Yemen, 755 mothers were interviewed to investigate the patterns and factors affecting childhood feeding practices.

It was found that full breast-feeding rate (41.8%) and timely introduction of complementary feeding rate (57.4%) were low, bottle-feeding rate (25.1%) was high and timely first suckling rate was zero. It was also found that the more educated and older mothers tended to wean their children earlier than illiterate and younger mothers. A significant association between regular frequent qat chewing and history of child death was observed. The implications of these findings were discussed.

Key words: Breast feeding; Yemen; Bottle-feeding; Complementary feeding; Qat chewing; Childhood mortality.

INTRODUCTION

Exclusive breast feeding for at least six months, timely introduction of mixed feeding at 6 months, continuing breast feeding for two years or more and avoiding bottle feeding at any age are the basic constituents of sound infant feeding, which is essential for adequate growth and positive health of children [1-3]. With this in mind, Health Authorities and Health Workers in the Republic of Yemen (ROY) have been interested in the patterns, trends and factors that influence infant

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feeding practices in the Yemeni Society.

The earliest recorded study, conducted in 1971, reported that there was about three days delay in initiation of breast feeding, its duration was noted to be short and that artificial feeding was on the increase [4]. In a study conducted in Sana'a in 1977, it was found that the average age of weaning was seven months, and that only one quarter of the infants continued breast-feeding beyond 17 months [5]. In another study in 1979, it was found that 68% of mothers in an urban area had stopped breast feeding by the age of six months and only 7% continued beyond the first birthday [6].

Griener and Latham [7] described the breast-feeding situation in Udain in 1983 as "the typical feeding pattern that emerged from the baseline survey is one in which breast-feeding begins on the second day of life, bottle feeding is begun at two months in rural areas and three months in Urban samples: breast-feeding ends at nine months in Udain and three to five months in the cities."

In the late seventies it was reported that in ROY, higher maternal education, younger maternal age and availability of electricity were associated with a shorter duration of breast–feeding [8]. These are probably characteristics of women of a higher socio economic class most of whom were probably urban dwellers [4].

World Fertility Survey (1979) data showed that rural mothers breast fed their children for an average of 13.1 months compared to 10.3 and 9.5 months in urban residents and urban migrant mothers respectively, and that the more educated the mother, the shorter is the mean duration of breast feeding [8]. The national nutrition survey quoted by Musaiger [4] gave the mean duration of breast feeding as 12.7 months in rural areas compared to 5.6 months in urban areas with a similar urban rural differential but somewhat shorter mean duration compared to other studies.

MATERIAL AND METHODS

The survey was carried out during the month of September 1992 in Dammar City, which is about 100 km South West of Sana'a, the capital of ROY. The questionnaire was administered consecutively to mothers attending the Primary Health Care Centre in Dammar City and who had babies less than 2 years of age. The questionnaire had been designed, pilot tested and modified accordingly. It consisted of 85 questions covering socio economic and educational attainments, vital statistics, maternal biologic characteristics as well as information on child's breast-feeding and weaning. Questions about mother's attitudes and beliefs about infant feeding and health were also included. Information about breast-feeding and bottle-feeding practice were restricted to the 24 hours preceding the enquiry (24 hour recall).

The mothers were asked for consent to answer questions about breast-feeding and health of their children and all eligible mothers agreed to participate. The children were quota sampled to include 50 mother-child pairs in each completed month up to the age of 12 months and 50 mother-child pairs in each 3 months group in the second year of age. However, because of time constraints the full quota in some groups could not be attained.

RESULTS

Table 1 shows the key indicators for breastfeeding practices in this population sample, as defined in a WHO Report [2]. Thus exclusive breast-feeding requires that the infant receives breast milk and allows only for drops and syrups of vitamins, minerals and medicines. Predominant breast-feeding requires that the infant should receive breast milk as the predominant source of nourishment and allows for liquids like water and oral rehydration solutions, but other source of nourishment like non-human milk and food-based fluids are not allowed. Complementary

feeding requires that the infant receives breast milk and solid or semi solid food, while bottle-feeding refers to infants receiving liquid or semi solid food from a bottle with a nipple or teat. It should also be noted that if breast milk is given by bottle, it is described as bottle-feeding.

The age limit for exclusive and predominant breastfeeding in this table were made on the basis of 4 months of age, as this was the recommended age at the time the study was conducted.

Table 1 – Key breast-feeding indicators (at 4 months of age)

Rate	Percentage
Exclusive breast-feeding	39.8%
Predominant breast-feeding	2.0%
Timely complementary feeding	57.4%
Continued breast-feeding (1yr)	60.9%
Continued breast-feeding (2yrs)	36.4%
Bottle feeding	25.1%
Timely first suckling	00.0%

Table 2 shows the proportion of mothers in three groups; those who breastfed for less than four months, for 4-6 months and more than six months, by maternal education, paternal education as well as maternal age. Applying the chi-square test to the data in Table 2 showed that there is no significant association between either maternal or paternal education with the age at which breast feeding was stopped. However, there was a significant association between maternal age and age at which breast feeding was stopped ($p<0.005$). Mothers who were 30 years or younger breastfed for longer periods when compared with mothers who were more than 30 years old.

Table 2 – Age at stopping breastfeeding by socio-cultural factors

Characteristic	N	Percent stopping breast-feeding		
		Less than 4 mo	4-6 mo	More than 6 mo
Mother's Education				
No education	563	51.7	17.6	30.7
Some form of education	189	59.3	16.4	24.3
Father's Education				
No education	242	55.8	16.1	28.1
Some form of education	512	52.5	17.6	29.9
Maternal Age				
30 years or less	530	44.5	20.2	35.3
More than 30 years	205	72.7	11.2	16.1

N – number, mo – months.

Table 3 shows the proportion of mothers who gave past history of child death among mothers who chewed qat compared to those who never practiced that habit. Applying chi-square test, data in Table 3 did not reveal any significant association between qat chewing and history of child death.

Table 3 – Qat chewing and history of child death

Mothers who were:	Number	Percent with no death	Percent with one or more death
Not chewing qat	554	52.5	47.5
Chewing qat	190	46.3	53.7

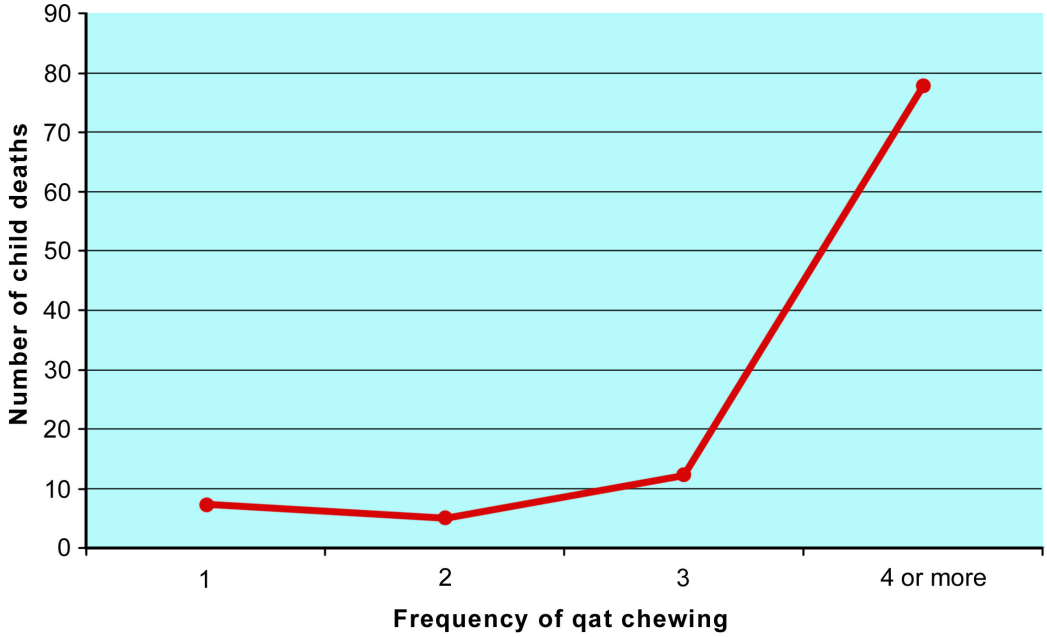
Table 4 shows a breakdown of the qat-chewing subgroup by the weekly frequency of qat chewing. Within this subgroup, the Table shows that 6.8% of the mothers who chewed qat once a week had a history of at least one child death compared to 76.5% among mothers who chewed qat four times a week or more. This association between the reporting of child deaths and the frequency of maternal qat chewing was highly significant ($p< 0.005$).

Table 4 – Association between numbers of child deaths and frequency of maternal qat chewing

Frequency of qat chewing per week	Mothers with history of child deaths	
	N	%
1	7	6.8
2	5	4.9
3	12	11.8
4 or more	78	76.5
Total	102	100

Figure 1 shows that the proportion of mothers reporting child deaths increased exponentially after the frequency exceeded 2 times per week.

Figure 1: Number of child deaths versus frequency of qat chewing.



DISCUSSION

As shown in Table 1, the exclusive and predominant breast-feeding rates are very low. The timely complementary feeding rate (57.4%) is low and is comparable to that in the urban group but much higher than that in the rural group in an Indian study [10]. The bottle-feeding rate (25.1%) in our study is very high, but lower than the rate reported in the study from India [10]. It is interesting to note that the timely first suckling rate was zero in this study as none of the mothers gave the breast within the first hour due to the popular belief in Yemen that breast-feeding should not be started before the second or third day of life. Regular reporting of these standardized breast-feeding indicators is useful for comparison of breast-feeding practices locally, regionally and internationally. They are also useful for monitoring trends and for measuring the impact of intervention.

The finding that educated mothers wean their babies at a younger age is similar to earlier studies from Sanaa [5] and Khartoum [11]. The more educated mothers usually have easier access to international literature and mass media and are thus more likely to be influenced by the western style of living. The educated mothers are also more likely to go to work, and if the work place is not "baby friendly" then this may force them to adopt practices that suit working conditions. However, this draws the attention to the need for stronger educational inputs through school curricula by including more information about the benefits of breastfeeding and the dangers of artificial feeding. Also there is urgent need to intensify appropriate health education efforts targeting expectant mothers in antenatal clinics and maternity hospitals. Extra effort is also required to monitor violations of the code of marketing of breast-milk substitutes, as radio listening was shown to be related to shorter durations of breast-feeding [5].

Education of fathers does not seem to have any influence on the duration of breast-feeding. In this study there is a definite trend for younger mothers to have significantly longer duration of breast-feeding. This is somewhat similar to the study reported from Khartoum [11] where the Urban Elite Group who tended to wean earlier were generally older in age. While a study from Sanaa, on the contrary, indicated a slight trend towards earlier weaning in young mothers [5].

Tables 3 shows that mothers who chew qat regularly have a higher childhood mortality, but the difference was not significant. Table 4 and Figure 1, show that, among the mothers who chewed qat regularly, the proportion of mothers reporting at least one child death increased progressively as the frequency of qat chewing increased. This association was highly significant ($p< 0.005$).

Qat Chewing is a social habit widely practiced in Yemen and some countries of the Horne of Africa. Fresh green leaves of the plant Catha edulis are chewed over a period of time for their pleasurable stimulant properties [12]. The active ingredient, cathinone, is an amphetamine-like sympathomimetic amine with central stimulant effects [13]. It is also of interest to note that amphetamines are known to be concentrated in breast-milk [14]. A wide range of local and systemic side effects associated with this habit has been reported [15-16]. These include the development of white keratotic lesions at the site of chewing, insomnia, anorexia, constipation, headache and jaundice. A group of volunteers who were closely observed while chewing qat over a period of three hours showed a significant and progressive rise in blood pressure and heart rate, [12] while other studies reported increased incidence of myocardial infarctions [13].

To the best of our knowledge this is the first report linking maternal qat chewing with increased childhood mortality. Although this was a chance finding in a study primarily designed to investigate child-feeding practices, it is very difficult to ignore this highly

significant association. We are not in a position to define the causes for this association. However, as discussed earlier, it has been shown that qat chewing is associated with bouts of high blood pressure probably caused by the amphetamine-like active ingredient in qat. [12] Noting that amphetamine is known to be concentrated in breast-milk [14] and that the active ingredient in qat is an amphetamine like substance, [12.14.16] it may have serious consequenes on the child through that rout. It is also possible those mothers who are so much pre-occupied with qat chewing may neglect their children in pursuit of this time-consuming habit. Further studies are needed to confirm these findings and to identify the underlying aetiology.

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