Feeding habits of children with Down syndrome living in Riyadh, Saudi Arabia

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Abstract

Aim: The aim of the study was to investigate the duration of breastfeeding and the timing of introduction of solid food among children with Down syndrome living in Riyadh, Saudi Arabia. Subjects and Method: Mothers of 225 children attending three institutes providing education for children with Down syndrome were asked to complete a questionnaire. Data were collected on knowledge of feeding procedures, pattern of feeding, and the introduction of solid food. Results: Although 66.7% of mothers breastfed initially, 30% of them discontinued breastfeeding at 3–6 months of the child’s age. Overall, mothers of children with Down syndrome introduced solid food to their children between 6–9 months of age and the most frequently used formula was Similac “yellow”. Just over 15% of the mothers gave their children sweet food every day as part of weaning. Most mothers believe that chocolate is bad for their children’s teeth. Conclusion: In Saudi Arabia, mothers with Down syndrome children are more likely to breastfeed. The introduction of solid food was relatively late.

Key words: Down syndrome, diet, breastfeeding, solid food

Introduction

Adequate nutrition during infancy can impact on many aspects of paediatric health. It determines growth, alters an infant’s susceptibility to disease and provides the opportunity for interaction between the child and their parent or family (Goldman, 1993; Kower et al., 1984). Breastfeeding is the most ancient, reliable and most natural way of nurturing infants. The importance of breastfeeding has been proved unequivocally, and the World Health Organisation (WHO) has issued guidelines to promote breastfeeding.

Saudi Arabia is a country where the legislation is derived from the Quran and Hadiths. The Holy Quran says that the mothers shall give suck to their offspring for two complete years. The majority of mothers start breastfeeding their infants but soon introduce bottle feeding. The single most common reason cited for the early introduction of bottle feeding is that the breast milk is insufficient. Because of this tendency, many mothers practice mixed feeding. The duration of breastfeeding varies but in general it is carried on beyond six months. Various factors affect the duration such as socioeconomic status of the family.

Down syndrome is characterised by intellectual and growth retardation associated with genetic anomalies. Feeding difficulties and inappropriate nutrition are common problems among children with Down syndrome (Pisacane et al., 2003). The feeding skills of these children often develop at a slow rate as result of slower neuromotor development and hypotonia (Cronk et al., 1981). Therefore, it might be difficult for some to achieve adequate dietary intakes.

Historically the prevalence of dental decay in persons with Down syndrome has been reported to be extremely low. Recent studies, however, have shown that while the prevalence is lower, it is not as rare as once thought and it certainly should not be taken for granted that “these patients won’t get decay” (Barnett, 1986). Older studies showed a reduced prevalence of dental caries among institutionalised Down syndrome populations for whom diets were controlled (Omer, 1975). However, these groups may not have had the exposure to cariogenic food in the same way as today’s children with Down syndrome, many of whom are growing up at home. Also, it is theorised that the reduced caries prevalence may be due to delayed eruption of the teeth, increased spacing between teeth or possible differences in the chemical content of the saliva (Morinushi et al., 1995).

The aim of the current study was to describe the current status of breastfeeding and the introduction of solid foods in children with Down syndrome living in Riyadh, Saudi Arabia.

Subjects and method

A sample of 250 families with children with Down syndrome were selected from three schools providing education for children with intellectual disabilities. The
research project questionnaire was given ethical approval. Parents of the children were asked to participate in the study by completing a questionnaire which was distributed by the schools principal. The study aim was explained to the parents and confidentiality of information was assured in an explanatory letter sent to each parent. This study was conducted as part of a survey on oral health practices of children with Down syndrome.

Questions were asked regarding the social and family background such as age, education and occupational status. Five questions on feeding were used: (a) pattern of feeding procedure and parenting practices, (b) knowledge on breastfeeding and average of duration, (c) most important reason for breastfeeding and (d) introduction of solid food. The question type of response was closed. An open-ended question was included soliciting their cited reasons for mothers being discouraged from breastfeeding their children.

Methods of social classification have most often related to occupation which is determined to a great extent by education and strongly influences income and material wealth. In general terms, the population of Saudi Arabia includes urban, rural and Bedouin groups with lifestyles that differ in relation to traditions, cultures and social patterns. Systems of social classifications used in previous Saudi studies have included level of education, parental income and parental occupation (Al-Shammary et al., 1991). Therefore, feeding pattern was compared to parent’s occupation and education as well to mother’s age (socioeconomic status).

Data were collected by the author over a 3-month period. The Statistical Package for the Social Sciences (SPSS, version 10.0) was used to obtain descriptive statistics. The association between feeding pattern and socioeconomic status was determined by the Chi-Square test.

Results
Of the 250 questionnaires distributed, the response rate was 90% with 225 parents enrolled in the study. Among the children, there were 138 (61.3%) boys and 87 (38.7%) girls, with 34% of the children less than 5 years of age. For parents, the mean age of the mothers was 37.92 ± 7.89 and for fathers was 45.38 ± 11.29 years. Forty two (18.7%) mothers were illiterate, 20 (8.9%) had elementary education, 93 (41.3%) to high school level and 70 (31.1%) had a university degree. Mother’s occupation was; 37 (16.4%) teachers, 16 (7.2%) highly professional, 172 (76.4%) housewives. However for father’s occupation, 55 (24.4%) were highly professional, 39 (17.3%) businessmen, 105 (46.7%) employees and 26 (11.6%) retired.

Source of knowledge on feeding
One hundred and eighty six (82.7%) mothers received their advice on feeding from their paediatrician, 19 (8.4%) from nurses and 4 (1.8%) from their own families.

Feeding pattern
Although, exclusively 66.7% of mothers initiated breastfeeding, the remaining parents gave their babies’ formula feeds from the start. Initiation of breast feeding was not associated with socioeconomic status (father’s occupation, mother’s age, education and occupation) \(p > 0.05\) as shown in Table 1. Seventy six per cent of all mothers were housewives. Sixty seven per cent of them breastfed their children exclusively compared with 66% of working mothers who breastfed their children exclusively.

Duration of breastfeeding is presented in Table 2. The highest percentage of breastfeeding mothers was for those children less than 6 months of age (60.9%) which gradually declined with increasing age. Duration of breastfeeding

| Table 1. Feeding pattern by age, educational attainment and socioeconomic status |
|---------------------------------|-------------------------------|-----------------|----------------|-----------------|-----------------|-----------------|
| Variables                       | Feeding pattern: Number (%) of mothers who breastfed | No              | p-value        |
|---------------------------------|---------------------------------|----------------|----------------|-----------------|-----------------|
| Mother’s age                    |                                 |                 |                |                 |
| 20–29                           | 21 (60.0)                       | 14(40.0)        | 0.321          |
| 30–39                           | 65 (72.2)                       | 25(27.8)        |                |
| ≥40                             | 64 (64.0)                       | 36(36.0)        |                |
| Mother’s education              |                                 |                 |                |                 |
| Illiterate                      | 29(69.0)                        | 13(31.0)        | 0.811          |
| Elementary                      | 15(75.0)                        | 5(25.0)         |                |
| High school                     | 61(65.6)                        | 32(34.4)        |                |
| University                      | 45(64.3)                        | 25(35.73)       |                |
| Mother’s occupation             |                                 |                 |                |                 |
| House wife                      | 115(66.9)                       | 57(33.1)        | 0.912          |
| Working                         | 35(66.0)                        | 18(34.0)        |                |
| Father’s occupation             |                                 |                 |                |                 |
| Employees                       | 68(64.8)                        | 37(35.2)        | 0.219          |
| Businessman                     | 22(56.4)                        | 17(43.6)        |                |
| High profession                 | 42(76.4)                        | 13(23.6)        |                |
| Retired                         | 18(69.2)                        | 8(30.8)         |                |
...that chocolate and ice cream were bad for their children's teeth (Table 4). Mothers of Down syndrome children believed that apples are a good food for their children's teeth. Mothers' perception toward different food intake and oral health was not statistically related to different socioeconomic status ($p > 0.05$).

**Discussion**

In this study, we investigated feeding knowledge, pattern of feeding and age at the introduction of solid food in Down syndrome children. There is strong evidence in this study that mothers had knowledge of child feeding from their paediatrician. This may reflect early dividends for the Ministry of Health in that their drive towards health education through antenatal clinics during pregnancy may have, in part, been successful as judged by some of the outcomes of this study. It has been reported that 64% of mothers living in Riyadh had attended the antenatal clinic at least once during pregnancy (Haque, 1983).

The WHO Technical Advisory Board strongly endorsed exclusively breastfeeding for the first 4–6 months of age, and that was true for this study population (WHO, 1990). In the literature, Saudi mothers (82.4%) have some of the highest rates of breastfeeding when compared to other countries such as 52% in the USA and 51% in Ireland (Al-Mazrou et al., 1994; Twomey et al., 2000). In infants with Down syndrome, the early period of breastfeeding is often difficult (Patterson and Walberg, 1993), but nevertheless, the data in this study show that a high number of the mothers had breastfed their children (66.7%). The prevalence of breastfeeding in this study is comparable (67%) to that reported by Hopmam et al. (1998). By contrast, Aumonier et al. (1983) reported data to show that only 48% of 59 English mothers of children with Down syndrome breastfed their children.

Advice to mothers with Down syndrome children to breastfed them can be due to health promotion efforts in relation to the child's vulnerability to respiratory illnesses, poor growth and cardiac abnormalities (Epstein, 2001). The protective benefits of breastfeeding against illness and complications are so significant as to interpret breastfeeding as medicine for such infants (Epstein, 2001; Williams, 1994).

It is well known that breastfeeding is related to a number of socio-demographic factors including paternal employment status, socioeconomic status of the family and maternal education (Twomey et al., 2000). In this study, there were no differences detected in the socioeconomic profile of the families or the mother’s educational attainment nor their age. Data from an earlier study in Saudi Arabia, carried out on rural and three socioeconomic classes, concur with the data from the present study, which showed that the breastfeeding pattern in mothers of various age groups did not vary (Al-Mazrou et al., 1994).

Although a high number of mothers commence breastfeeding, half of them discontinue to breastfeed. This
could be due to several reasons including frustration, their beliefs on the benefit of formula or the certainty that their children have better intake from the bottle. In previous reports, children with Down syndrome were less likely to be breastfed for a long time due to admission to hospital, mother-infant separation and medical interventions that can interfere with breast feeding (Spender et al., 1996). Furthermore, poorer motor function of the mouth and generalised muscular hypotonia can contribute to less breast feeding.

An earlier study in Saudi Arabia showed that breastfeeding duration was not very different between various mothers’ age groups (Al-Mazrou et al., 1994). However, the present study showed breastfeeding duration was considerably lower in younger mothers compared to older mothers.

Bottle feeding was a less popular choice among the mothers in the first few months of their child’s life. In the present study, a third of the children were bottle fed exclusively by the first month of life. This result was much lower than a previous study on a Saudi population where two thirds of infants started by bottle feeding in their first months of life (Al-Ayed and Qureshi, 1998).

There was a decline of breastfeeding duration (3–6 months) among younger and working mothers compared to older and non-working mothers. Similarly, a number of literate mothers breastfed their children for 3–6 months, longer than in illiterate mothers. These findings would help to identify target groups with whom efforts should be undertaken to prolong the duration of breastfeeding.

Bottle fed infants were generally commenced on Similac formula and S26, a formula with iron, which could reduce the likelihood of childhood anaemia. Infant feeding formula, with high iron such as Similac and S26, was found to be low in cariogenic potential and advocated by a paedodontist, to reduce the chance of early childhood caries (Bown et al., 1997).

Learning to eat food, from the first mouthfuls of baby cereal to regular table food, is a long process. For children with Down syndrome, learning to coordinate tongue and mouth movements takes longer and can cause parental concern (Lange and Niman, 1984). There are times when despite a mother’s best efforts, or because of medical complications, a child with Down syndrome may not be introduced to solid food in the usual way. The mothers in this study introduced solid food to their children at an older age than average (6–9 months). Pipe and Holm (1980) have postulated that such parents are told to expect that their child’s development will be delayed and so they are more likely to treat their child as an infant for longer. In addition, the delayed oral-motor development of the children with Down syndrome may contribute to the delay in assuming normal infant weaning practices (Calvert et al., 1976).

Early Intervention Team members are available for questions about a child’s feeding. Each team usually has a speech pathologist, an occupational therapist, and some will have dieticians who are all familiar with feeding concerns. In some cases, it may be necessary to consult a group of professionals who specialise in feeding problems. A paedodontist as part of the team could improve the group’s knowledge of oral and dental health, especially since mothers in this study used to add sugar to the formula feed. A further matter of concern is that 15% of the mothers give chocolate to their children every day. This aspect of their knowledge may be an important springboard for developing increased awareness of the need for comprehensive oral health education.

Conclusions

Nowadays, most mothers of children with Down syndrome are encouraged to breastfeed their children to ensure their adequate nutrition. Special attention should be given to the age at which solid food is introduced, by a multidisciplinary health team to include paediatrician, midwives and a paedodontist, as the late introduction of solid food can be deleterious to oral motor development. Mothers should be advised to avoid adding sugar to feeds made up of infant formula, especially at bed time. Dental health education by child health teams should be part of their general health.

References


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