



Feeding and socioeconomic characteristics of nursing caries children in a Saudi population

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Nursing caries is a frustrating condition that is difficult to treat in infants and very young children. It may retard the child's health, development, and speech. It can be painful, is infectious, and results in impairment of nutrition and esthetics with accompanying psychological problems.¹ The risk factors for nursing caries vary from population to population, and some additional factors may be present in a population due the sociocultural differences in different geographical locations. The aim of this investigation was to study characteristics of nursing caries children in central Saudi Arabia by obtaining information about their socioeconomic status, feeding practices, use of sweetened pacifiers, and other relevant information mentioned in the literature by various researchers,²⁻⁵ by using a self-administered questionnaire. Such a profile may help identify high-risk groups, which in turn may help target preventive measures to children at high risk for nursing caries.

Methods and materials

This cross-sectional study used a convenience sample of 96 children from those seeking treatment or referred to College of Dentistry, both in the Dariyah and Malaz campuses of King Saud University in Saudi Arabia. Any child aged 6 years or younger diagnosed as having nursing caries was included in the study. The criterion used for the diagnosis of nursing caries was caries on the labial surfaces of at least two maxillary primary incisors.

A dental examination was performed in the dental operatory setting and findings recorded. Information about feeding patterns, pacifier use, socioeconomic status, and first visit to a dentist was obtained from parents through a self-administered questionnaire. The questionnaire was produced in Arabic and assistance was provided to the parents if required.

Data were entered into a computer and Statistical Analyses System (SAS) was used to formulate one-way and two-way frequency distribution tables.

Results

Socioeconomic characteristics

Parents of 96 nursing caries children, 53 male and 43 female, completed the questionnaire. The mean age of the children was 55 months (± 17.0). The mean number of children per family was 4.36 (± 2.48). Forty-two (43.8%) children were the first or second born, while 23 (23.9%) were third or fourth and 31 (32.3%) were fifth or above. A great majority (94.8%) of the children were living with both parents. Only five (5.2%) children were living with the father only, mother only, or other relatives.

The percentage of nursing caries children (14.7%) with fathers of very high socioeconomic class was very low (Table 1). A great majority (75.6%) of mothers were full-time housewives. Many (41.7%) of the mothers had only primary or lower education, while the opposite was true for the fathers (Table 2).

Brushing practices

Fifty-nine (61.5%) children had commenced toothbrushing, but only 16 (16.7%) started brushing before age 24 months. The mean age when the brushing commenced with or without assistance was 34 months (± 16.7).

TABLE 1. SOCIOECONOMIC CLASS OF THE PARENTS OF NURSING CARIES CHILDREN

| Socioeconomic Class | Father* (%) | Mother† (%) |
|---------------------|-------------|-------------|
| Middle | 41 (43.2) | 6 (6.7) |
| High | 40 (42.1) | 13 (14.4) |
| Very High | 14 (14.7) | 3 (3.3) |

* Missing frequency = 1.

† Missing frequency = 6 (68 [75.6%] mothers were full-time housewives).

Feeding practices

Bottle feeding with cow's milk was much less common (19.8%) than breast feeding (70.8%) or bottle feeding with milk formula (70.8%). Mean age for stopping breast-feeding was half of the mean age for bottle feeding with milk formula, but breast feeding before sleep was practiced in much higher number of children than bottle feeding with formula (Table 3). A considerable number (69.6%) of children were breast-fed on demand during sleep.

Three-quarters (75%) of the children took fruit juices and soft drinks in the feeding bottle. About one-fifth (21.9%) of the children took a bottle containing fruit juices or soft drinks to bed.

Drinking from a cup and container

More than half (69.8%) of the children started drinking from a cup after age 12 months. The mean age for starting to drink from a cup was 19.4 months (± 9.0). A large number took sweetened milk (42.7%), fruit juices (78.1%), and carbonated beverages (44.8%) from a cup (Table 4).

Three-quarters (75.0%) of the children consumed fruit juices, fruit drinks, and soft drinks directly from a container. More than half (56.3%) started drinking from a container at or before age 24 months. The mean age the children started drinking from a container was 20.4 (± 9.2) months and the frequency per day was 2.0 (± 1.5).

Use of solid foods

High-carbohydrate solids were eaten by a large number of children starting from a young age and given about twice a day. The details about mean age when these children started using these foods and their respective frequencies are given in Table 5.

Pacifier use

About one-quarter (28.1%) of the children ever used a pacifier. Twenty-one children (21.9%) used pacifier day and night, but only 6.3% of parents coated the pacifier with a sweetener.

Medical history

None of the study children had a history of any serious or prolonged illness. Similarly, only six (6.3%) mothers had a history of serious medical problems during pregnancy, labor, or delivery.

First dental visit

Very few (13.5%) children had made their first visit to the dentist for a routine checkup. Even fewer (12.5%) made their first visit at age 12 months or younger. A majority (64.6%) of the children made their first dental visit after age 36 months. The mean age of first dental visit was 42.4 months (± 17.6).

Combined profile

Only six (6.25%) of the children had none of the established risk factors like birth order of the child,

TABLE 2. EDUCATION LEVELS OF THE PARENTS OF NURSING CARIES CHILDREN

| Education Level | Father (%) | Mother (%) |
|-------------------------|------------|------------|
| Primary or below | 20 (20.8) | 40 (41.7) |
| Middle school | 13 (13.5) | 17 (17.7) |
| High school/technical | 19 (19.8) | 23 (23.9) |
| University/professional | 44 (45.8) | 16 (16.7) |

TABLE 3. FEEDING PRACTICES AMONG THE SAMPLE

| Feeding Type | Yes (%) | Practiced before sleep/ taken to bed (%) | Mean age stopped |
|----------------------------------|-----------|---|---------------------|
| Breast feeding | 68 (70.8) | 56 (58.3) | 17.6 \pm 09.5 |
| Bottle feeding (cow's milk) | 19 (19.8) | 11 (11.5) | 27.4 \pm 11.1 |
| Bottle feeding (formula) | 68 (70.8) | 38 (39.6) | 34.9 \pm 14.1 |
| Bottle feeding (other fluids) | 72 (75.0) | 21 (21.9) | NA |

breast feeding before sleep, on-demand nocturnal breast feeding, taking a bottle with milk to sleep, and use of sweetened pacifier. Three of the six remaining children had a history of frequent consumption of soft drinks and fruit drinks directly from a container.

Discussion

Socioeconomic characteristics

The average number of 4.36 children per family in the sample appears high as compared with current trends in Western countries but it is in accordance with the local cultural traditions. The majority of the children were first or second born. Birth order has been related to nursing caries, with the first-born children presenting a higher experience of nursing caries.⁵ This can be attributed to the relative lack of experience on the part of new parents in managing a child's behavior, and lack of dental health education and dietary counseling.

A majority of the children had middle socioeconomic class fathers and less educated mothers, which agrees with findings that nursing caries tends to be associated with low educational level of mothers^{6,7} and lower socioeconomic status.⁶ A study by Johnsen⁸ showed that parents of nursing caries children were less likely to have attended college. Higher prevalence of nursing caries in lower socioeconomic groups also has been reported by many studies^{3,6} and attributed to lack of information and education about child dental care. A large number of mothers were full-time housewives. This again indicated a cultural trend, where most women of child-bearing age concentrate on child-rearing.

Brushing practices

It is usually recommended to parents that tooth cleaning should start as soon as first teeth erupt. The mean age of 34 months (± 16.7) in our study when the

tooth cleaning started with or without assistance was not only very late compared with present-day recommendations, but also much later than reported in a similar sample by Dilley et al.⁶

Feeding practices

The controversial issue of cariogenicity of human breast milk is still unresolved. Some reports show that nocturnal and at-will/on-demand breast feeding are associated with nursing caries,^{9,10} other studies report that breast-fed children are actually less likely to develop caries than are bottle-fed children.^{11,12} The mean age when the breast feeding stopped of 17.6 months (± 9.5) was not very high, as expected, but more than half of the children were breast-fed at bed-time, a previously established nursing caries risk factor.

In this study, few (19.8%) children were bottle-fed with cow's milk. This may be because fresh cow's milk isn't available and milk formula is considered a better substitute for human breast milk. About three-quarters (70.8%) of nursing caries children were bottle-fed with infant formula milk, and the mean age of 34.9 months (± 14.1) for stopping it was considerably higher than normally recommended (about 12 months). The mean age also was higher than that reported by other re-

searchers in similar samples.^{6,13} Furthermore, more than one-third (39.6%) of the nursing caries children took a bottle to bed. This is not as high as expected or as reported by other research in similar studies in different populations.^{6,13}

TABLE 4. VARIOUS FLUIDS CONSUMED FROM A CUP

| Fluid Type | Yes (%) | Mean Frequency/Day |
|----------------|-----------|--------------------|
| Sweetened milk | 41 (42.7) | 2.1 \pm 1.2 |
| Fruit juices | 75 (78.1) | 1.5 \pm 0.7 |
| Soft drinks | 43 (44.8) | 1.4 \pm 0.7 |

TABLE 5. CONSUMPTION OF CARIOGENIC SOLID FOODS

| Type of Food | Yes (%) | Mean Age Started | Mean Frequency/Day |
|--------------|-----------|------------------|--------------------|
| Bakery | 70 (72.9) | 16.9 \pm 9.3 | 1.9 \pm 0.9 |
| Ice cream | 39 (40.6) | 18.8 \pm 9.9 | 1.3 \pm 0.6 |
| Sweets | 44 (45.9) | 17.4 \pm 9.2 | 1.6 \pm 0.8 |
| Dates | 56 (58.3) | 17.6 \pm 10.3 | 1.6 \pm 0.8 |

In our study three-fourths (75%) of children took fruit juices and carbonated beverages in the feeding bottle, and more than one-fifth (21.9%) took the bottle to bed. Consumption of carbonated beverages was reported in children diagnosed with nursing caries.⁶

Solid foods

The discussion of caries etiology centers on the role of sugar in the form of sucrose, which is reported to be

Pacifier use

The use of sweetened pacifiers has also been associated with nursing caries.^{2,5} In this study very few parents (6.3%) gave sweetened pacifiers to their children. Pacifier use in general also was low (28.1%). It is a common observation that the pacifier use in the study area is very low. It could be due to the fact that weaning from the bottle is very late and sucking requirements of the child are fulfilled by bottle use. Moreover, use of domestic child care assistance in Saudi Arabia is very common so children get the required attention, which often eliminates the use of pacifiers for soothing.

First dental visit

The mean age of first dental visit (42.4 months \pm 17.6) was much higher than the recommended age for first dental visit. The present recommendations for first dental visit range from as soon as the first teeth erupt to 1 year of age. It can be expected that an earlier routine visit to a dentist might prevent this condition because it affords the dentist an opportunity to provide parents with information about healthy feeding habits and oral hygiene. This is particularly true of new parents.

The aim of this study was to determine the characteristics of nursing caries children in a Saudi population. Therefore, no comparison group was used. It would be interesting in the future to compare these characteristics with a group of matched, non-nursing caries children.

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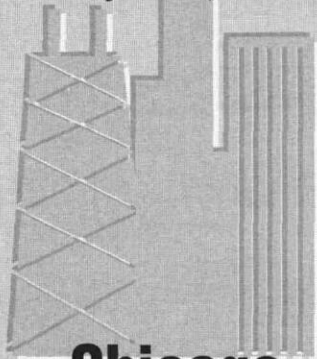
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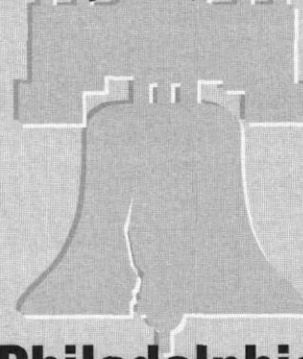


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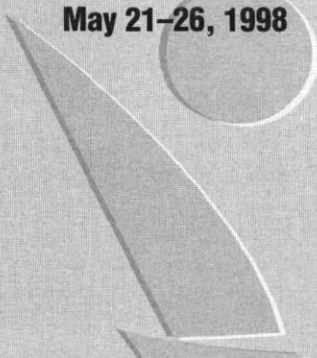


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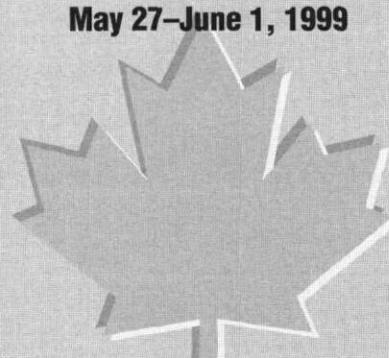


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