

## Susceptibility of nursing-carries children to future approximal molar decay

David C. Johnsen, DDS, MS John H. Gerstenmaier, DDS  
Theodore A. DiSantis, DDS, Robert J. Berkowitz, DDS

### Abstract

*Children with nursing caries and those initially caries free were compared on recall for occurrence of lesions in approximal molar surfaces. Mean follow-up time was 36 and 45 months, respectively, for the 2 groups. Fifty-three per cent of the nursing caries children had 1 or more molar lesions on follow up compared to 15% for children initially caries free. Routine prescription of supplemental fluoride is explored for children with nursing caries.*

**W**hile nursing caries has been established as a distinct entity,<sup>1-10</sup> the susceptibility of afflicted children to posttreatment smooth-surface caries has not been determined. Theoretical arguments can be made both for and against the anticipated occurrence of new carious lesions in treated children.

The major reason to suspect a lack of new lesions is discontinuation of the bottle by the time of second molar eruption between ages 2 and 3. By the time molar surfaces approximate, the offending nursing habit will have been discontinued for most children. A secondary consideration is the restoration of carious teeth, removing major foci of infection.

Evidence would lead to the anticipation of new lesions on smooth surfaces of teeth not susceptible at the time nursing caries occurred. From cross-sectional data of untreated children, it has been found that as the proportion of children with multiple incisor lesions (without molar lesions) decreased in older age groups, the percentage of children with multiple incisor lesions plus molar lesions increased.<sup>11</sup> Nursing caries is thought to be a problem of overindulgence; if overindulgence continues in another form after bottle discontinuation, new lesions would be anticipated.<sup>10</sup>

Microbiologically, the long-term effects of early infection are unknown. The majority of infants do not have measurable levels of *Streptococcus mutans* in plaque by age 8 months, whereas essentially all children have *S. mutans* in plaque by age 6.<sup>12,13</sup> *S. mutans* has been identified as an important pathogen in the occurrence of nursing caries. While the importance of infection timing is unresolved, susceptibility to infection has been shown to be greater in infant monkeys than in adolescent monkeys.<sup>14</sup>

Use of the nursing caries model may contribute to the overall understanding of early caries with implications for the late primary dentition. A caries experience defined to include children with nursing caries has been suggested as the only severe caries experience in children younger than 2½ years of age.<sup>11</sup> The significance of nursing caries prevention thus may extend beyond the morbidity of this problem; depending on the susceptibility of nursing caries children to further decay, the importance of preventing nursing caries may determine the occurrence of significant disease into the late primary dentition. One must consider the practical implications as well as theoretical importance in developing part of the model for caries advancement in the primary dentition.

The purpose of this study was to assess the susceptibility of children with nursing caries to new lesions of approximal surfaces of primary molars.

### Methods and Materials

Children aged 40 months or younger and presenting for a dental examination were selected. Inclusion was based on dental caries pattern rather than nursing history. Initial radiographs were not a criterion since they were not available in all cases.

**TABLE 1.** Follow-up Data for Children with Nursing Caries and for Children Caries Free at Initial Dental Examination.

	Site #1		Site #2	
	Nursing Caries	Caries Free	Nursing Caries	Caries Free
Male	25	16	15	22
Female	32	14	11	20
Initial age (months)				
Mean	27	32	30	31
Range	17-37	21-40	14-40	18-40
Interval Between exam and 1st lesion (mean in months)	30	23	23	26
Age at last recall (mean in months)	66	76	67	60
Interval Between Initial age and age at last recall (mean in months)	39	45	36	28
Number of children with new lesion(s)	30	4	14	9
Percentage of children with new lesion(s)	53%	15%	54%	21%
Age at 1st new lesion (mean in months)	56	56	54	60
Number of new lesions (mean)	3	3	4	2
Available molar surfaces after initial treatment—maximum possible: 8 (mean)	7	8	8	8
Number of recalls (mean)	6	7	5	3

Children were included in the incisor-caries group if 3 incisors had carious lesions which exhibited cavitation. Children with hypoplastic enamel defects but no carious component of the lesion were excluded as were children with cleft lip. The criteria for follow up were a set of bite-wing radiographs at least 18 months after the initial exam and completion of initial restorative care. Consecutive children returning for recall examinations and fulfilling the above criteria were used for the study. Two dentists examined the bite-wing radiographs for new lesions. The search for new lesions was limited to the surfaces where 1 primary molar approximated another primary molar (mesial surfaces of second primary molars and distal surfaces of first primary molars). A total of 83 children with carious incisors and 72 caries-free children made up the study sample.

Pediatric dentists in 2 private practices performed dental examinations. Both practices were located in suburban fluoridated communities. The study thus was biased toward children who had elected to have restorative care and who had returned for recall care. Both dentists routinely applied topical fluoride and provided oral hygiene instruction on recall, but did not prescribe fluoride supplements routinely for children with nursing caries at the time of the study. Payment mechanism was determined as either self-pay (including insurance) or as public assistance (welfare).

## Results

Follow-up data are presented in Table 1. For both study sites, children in the caries-free group were slightly older on average than those in the incisor-caries group. In both sites, more children in the nursing-caries group had 1 or more molar lesions on follow up (53 and 54% for the 2 sites) than in the caries-free groups (15 and 21%, respectively) and the difference was statistically significant ( $X = 17.1$ ;  $p < 0.01$ ). There was no significant difference in the percentage of nursing-caries children developing molar lesions for the 2 sites (53 and 54%); in addition, there were no significant differences in the percentage of children initially caries free developing molar lesions for the two sites (15 and 21%). Caries-free children were followed longer on average than children with incisor lesions. There were no significant differences between the 2 groups for either site regarding available surfaces after initial treatment and the number of recalls. Fourteen of the children at the first site (all in the nursing caries group) were on public assistance; 10 were caries free on follow up and 4 had molar caries. One child at the second site was on public assistance; the rest were self-pay.

## Discussion

In this study of children with nursing caries presenting for follow-up care, the susceptibility of these

children to lesions of approximal surfaces of molars is of potential clinical importance. The sample is biased toward children with nearly ideal care, being routed to specialists, having restorative care, and regular recalls with topical fluoride. It is presumed that children with less than ideal care would fare no better and possibly worse.

There are both practical and theoretical considerations to be derived from the study. The most straightforward recommendation could be to routinely prescribe supplemental fluoride for children with nursing caries. The protocol for frequency and duration would have to be resolved.

Susceptibility of nursing-caries children to further lesions is consistent with a model which was developed using cross-sectional data.<sup>11</sup> Children with early and extensive caries are at risk to further smooth surface decay. These data coupled with the previous suggestion that nursing caries is the only severe caries experience in children younger than 2½ years, raises the question of the effect of initial prevention on later caries for a population. It is hypothesized that the occurrence of early caries is associated with the occurrence of later smooth surface lesions.

## Conclusion

Children with nursing caries and receiving ongoing comprehensive dental care are more susceptible to lesions of approximal surfaces of primary molars than are children initially caries free.

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Dr. Johnsen is a professor and chairman, Drs. Gerstenmaier and DiSantis are assistant clinical professors, and Dr. Berkowitz is an associate professor, pediatric dentistry, Case Western Reserve Uni-

versity School of Dentistry, Cleveland, Ohio. Reprint requests should be sent to: Dr. David C. Johnsen, Dept. of Pediatric Dentistry, School of Dentistry, Case Western Reserve University, 2123 Abington Rd., Cleveland, OH 44106.

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