

Caries Experience in Siblings with Dental Rehabilitation Under General Anesthesia

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BACKGROUND

Early Childhood Caries (ECC) is the presence of one or more decayed, missing, or filled tooth (dmft) surface in any primary tooth in a child under the age of six.¹ Severe early childhood caries (S-ECC) is any signs of caries in a child under than three years old and from age three to five, one dmft more than the age of the child.¹ Risk factors for ECC include oral colonization with cariogenic bacteria, frequent consumption of sugar, lack of tooth brushing, and enamel and dental defect disorders. These factors are greatly affected by sociocultural and environmental factors.² Family plays a key role in determining children's oral health as dental health behavior and attitudes are shared amongst a family.³

In a study conducted in Sweden looking at caries increment from ages 3-7 years and birth order, it was found that the highest risk of caries increment occurred in fifth- or later-born children.⁴ This was thought to be a result of the resource dilution hypothesis, where family resources per child decreases with increase in number of children in a family. This means later-born children may receive less focus and spendings from parents, which can negatively affect health outcomes. However, in the Sweden study, only 6% of the subjects at 3 years old were diagnosed with caries,⁴ which is very different than the population seen at teaching institutions such as the Herman Ostrow School of Dentistry of USC.

There have not been any studies looking at caries experience between siblings in a family after an older sibling has received full mouth rehabilitation under general anesthesia (GA).

PURPOSE

The purpose of this study is to investigate how the caries experience differs between older siblings who received GA and their younger siblings. In addition, how caries experience differs by different age gaps and the likelihood of later-born children also receiving GA are explored.

METHODS

This retrospective cohort study was approved by the Institutional Review Board for the Protection of Human Subjects at The University of Southern California. Data was collected from electronic patient records at the USC Pediatric Dental Clinic. Inclusion criteria included having had GA between 2015 to 2021, having younger sibling(s) who also received care at the Pediatric Dental Clinic at USC, and ASA (American Society of Anesthesiology) Class I or II. Exclusion criteria included having enamel and dentin defect disorders and/or with congenitally missing primary teeth. Caries experience at the time of examination where all primary teeth were erupted were recorded as dmft scores as well as socioeconomic factors such as age, gender, preferred language, and dental insurance coverage. Descriptive statistics were used to analyze the data.

RESULTS

Of a total of 652 patients who received GA at the USC Pediatric Dental Clinic, 117 met the inclusion criteria.

- A large majority of families are on DentiCal (84%), California's state insurance program. (Table 1).
- The average age at first dental visit decreased with increased birth order from 4.83 to 1.83 years. (Table 2)
- Caries experience also decreased with increased birth order, from dmft scores of 9 to 2, when not including the one 5th-born child (Table 2).
- 2nd-born siblings experienced increasingly less caries than the 1st-born siblings as the age gap between the two siblings increased. (Figure 1)

Table 1 Demographics

	n	%
Gender		
Boy	143	56
Girl	111	44
Parents' Preferred Language		
English	79	68
Spanish	35	30
Korean	2	2
Arabic	1	1
Dental Insurance		
DentiCal	98	84
Private	9	8
Cash	10	9

Table 2 Age (years) of first dental visit and average caries experience by birth order

	n	average age of 1st visit	range of ages	average dmft
1st-born	117	4.83	0.91-10.31	9
2nd-born	117	3.32	0.58-9.57	6.24
3rd-born	15	2.70	1.08 - 8.26	6.07
4th-born	2	2.71	2.41-3.01	2
5th-born	1	1.83	1.83	8

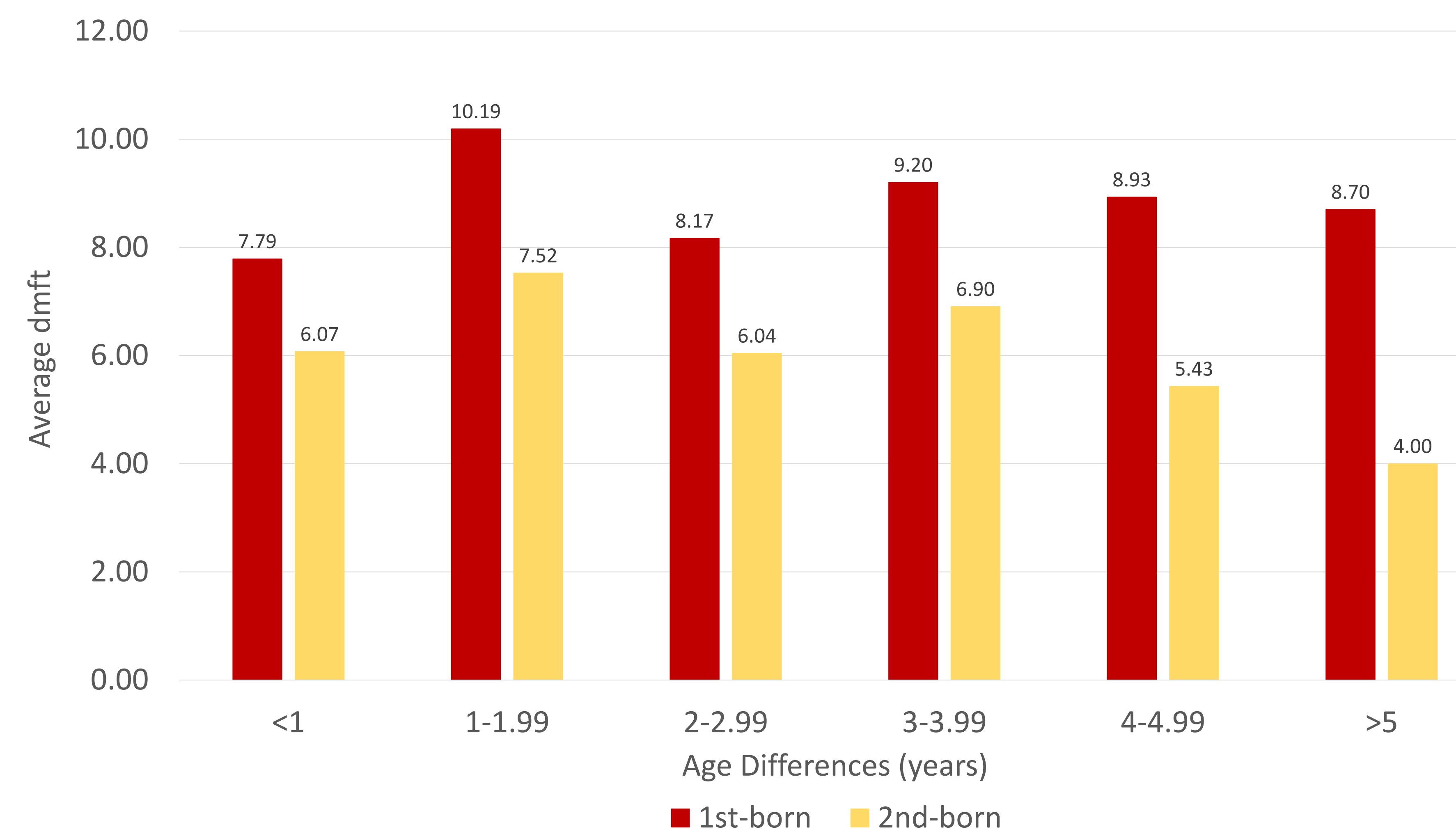


Figure 1 Average caries experience according to age gap between 1st- and 2nd-born children. Number of sibling pairs with age gap of <1 year = 13, 1-1.99 years = 21, 2-2.99 years = 24, 3-3.99 years = 21, 4-4.99 years = 14, >5 years = 10

- There is a 41% likelihood of a 2nd-born sibling also needing GA after an older sibling has undergone GA. (Table 3)
- After receiving GA, the risk of developing new caries is high for all siblings. (Figure 2)

Table 3 Likelihood of GA for younger siblings

	n	number of patients that had GA	%
1st-born	117	117	100
2nd-born	117	48	41
3rd-born	15	3	20
4th-born	2	0	0
5th-born	1	1	100

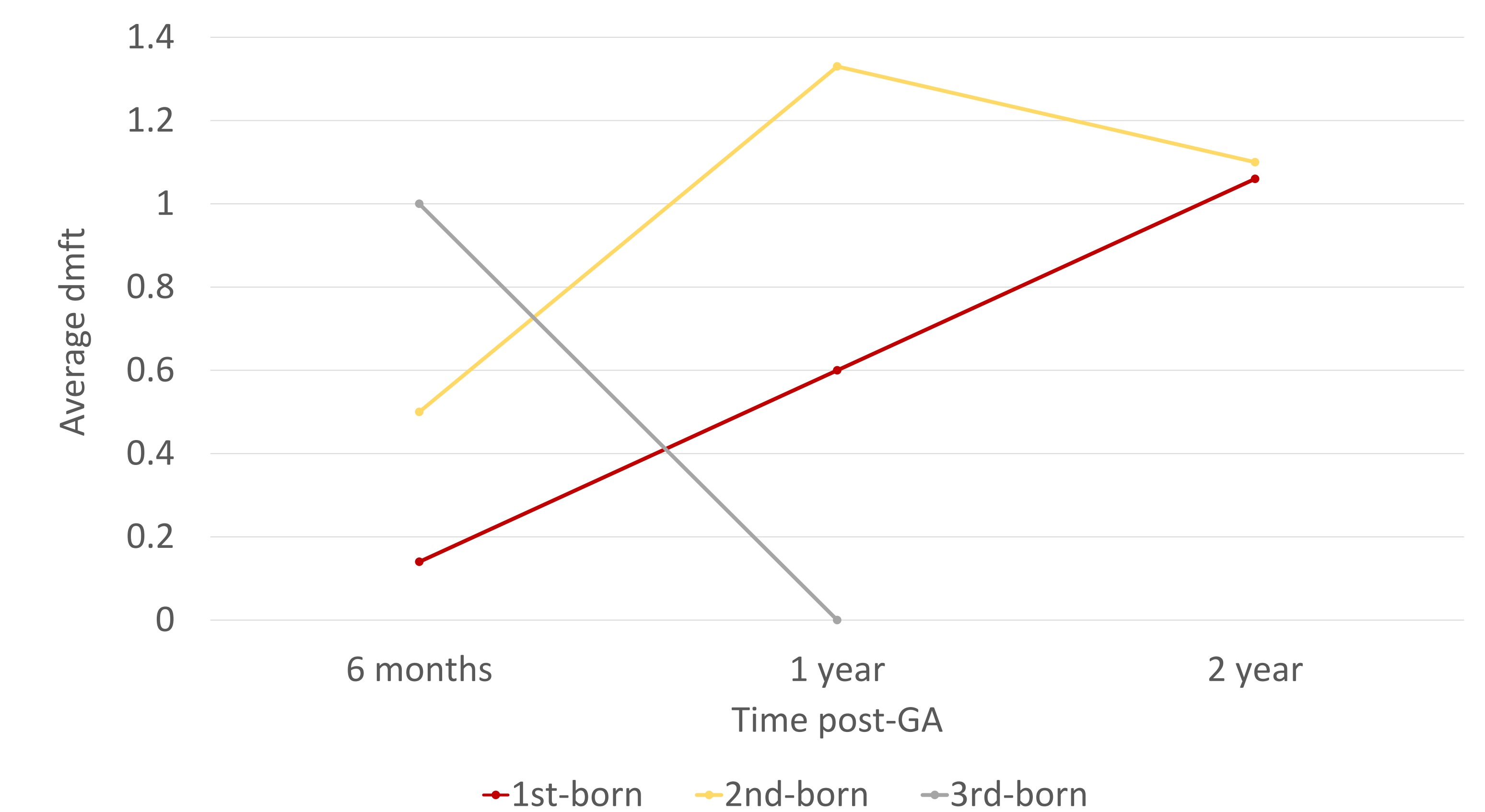


Figure 2 Average caries experience after GA according to birth order. There were no data to report for 4th- and 5th-born children as there were no 4th-born children that had GA and the one 5th-born child that had GA did not follow up.

CONCLUSIONS

Overall, there is a downward trend in caries experience in younger siblings after an older sibling received GA, and this may be due to younger siblings having their first dental visits at an earlier age as seen in the results. However, likelihood of a younger sibling needing GA is still high. More research will be needed in the future to determine the cause of the downward trend in caries experience and why a significant number of younger siblings still end up receiving GA.

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