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## APPENDIX

### METHODS

#### Questionnaire Development

Questionnaires to be self-completed by parents of students in all grades and by students in grades 4-12 were developed for the study. The student questionnaires were devoted almost entirely to assessing self-reported oral health-related quality of life (OHRQoL) based on instruments previously tested for reliability and validity. In addition to OHRQoL, the parent questionnaire solicited information in a number of other domains, including sociodemographic characteristics (child age, parent educational attainment, race and ethnicity, income level, family size), dental knowledge and beliefs, access to dental care, and preventive exposures (sealants, community water fluoridation, fluoride mouth rinse, professionally applied topical fluoride, and fluoride dentifrice).

Parent questionnaires were distributed in English or Spanish based on knowledge of the teacher or research field staff about the primary language of the parent. Questions on the parent questionnaire were pilot-tested with 1,482 English-speaking parents of 1st-, 6th-, and 10th-grade students attending high- and low-income public schools in 17 counties in North Carolina (Kim *et al.*, 2006). The questionnaire was later revised and translated into Spanish and then pilot-tested with 6 native-Spanish-speaking adults.

#### Clinical Assessment Protocols and Examiner Reliability

All students received a clinical examination for enamel fluorosis and dental caries experience by 1 of 9 dentists trained and standardized in survey techniques. Assessments were conducted in the schools with portable dental equipment.

Fluorosis was measured *via* Dean's (1942) classification system. Teeth were wiped with gauze to remove debris and then viewed under an artificial light source without drying. Teeth

# Effects of Enamel Fluorosis and Dental Caries on Quality of Life

were not considered in the assignment of fluorosis scores if they were partially erupted or if one-half or more were affected by a carious lesion or restoration or were covered by an orthodontic appliance.

The diagnostic criteria for cavitated caries lesions and other conditions (*e.g.*, missing teeth) are with 1 or 2 exceptions—those adopted by the Caries Measurement Committee, Conference on Clinical Testing of Cariostatic Agents, sponsored by the American Dental Association (Radike, 1968). The modifications are consistent with those made by the National Institute of Dental and Craniofacial Research for carrying out clinical investigations of caries preventive agents and epidemiologic surveys (U.S. Department of Health and Human Services, 1989). These criteria also are generally comparable with those used in previous surveys in North Carolina (Rozier and King, 2005). The diagnostic criteria for noncavitated lesions are taken primarily from those developed by Iowa investigators for their longitudinal studies of children and fluoride exposures (Warren *et al.*, 2002). However, they generally are consistent with those suggested by an expert panel assembled by the National Institute of Dental and Craniofacial Research (Drury *et al.*, 1999) and investigators in England (Pitts, 1997).

#### Examiner Reliability

The unweighted Kappa statistic for duplicate assessments on 62 subjects for fluorosis categories (normal; questionable, very mild; mild, moderate, or severe) obtained at training was 0.70 (95% confidence interval [CI] = 0.54, 0.86). The unweighted Kappa statistic for duplicate assessments of caries status (normal, cavitated decayed, filled, missing because of caries [for permanent teeth only]) of each surface on 59 subjects was 0.79 (95% CI = 0.75, 0.83). The intraclass correlation coefficient for the child-level sum of  $D_{2-3}MFS$  and  $d_{2-3}fs$  was 0.88 (95% CI = 0.81, 0.93).

#### Data Collection and Processing

Fifty-six state and local public health dental hygienists who had ongoing school-based preventive dentistry programs in the

**Appendix Table 1.** Characteristics of Clinical Conditions

Condition	Sample Size ( <i>n</i> = 4,584)	Population		
		Size ( <i>n</i> = 1,124,020)	Mean or Percentage	Standard Error of Mean or Percentage
Fluorosis, %				
Anterior teeth				
Normal	3,316	807,346	71.8%	0.917
Questionable or very mild	1,108	274,884	24.4%	0.827
Mild, moderate, or severe	160	41,790	3.7%	0.391
Posterior teeth				
Normal	3,156	773,097	69.4%	0.977
Questionable or very mild	1,233	301,938	27.1%	0.914
Mild, moderate, or severe	149	37,622	3.3%	0.347
Anterior and posterior teeth				
Normal	2,903	708,909	63.0%	0.995
Questionable or very mild	1,475	361,771	32.1%	0.944
Mild, moderate, or severe	206	53,340	4.7%	0.443
Caries experience				
Primary teeth <sup>a</sup>				
Percentage $d_{2,3}$ surfaces > 0	421	90,778	30.2%	1.362
Mean $d_{2,3}$ surfaces	1,371	300,592	1.40	0.107
Percentage $d_{2,3}f$ surfaces > 0	791	170,851	56.8%	1.522
Mean $d_{2,3}f$ surfaces	1,371	300,592	4.80	0.230
Permanent teeth				
Percentage $D_{2,3}$ surfaces > 0	669	171,563	15.2%	0.797
Mean $D_{2,3}$ surfaces	4,584	1,124,020	0.38	0.026
Percentage $D_{2,3}MF$ surfaces > 0	1,813	462,904	41.1%	1.039
Mean $D_{2,3}MF$ surfaces	4,584	1,124,020	1.89	0.078
Primary and permanent teeth				
Percentage $d_{2,3}f$ and $D_{2,3}MF$ surfaces > 0	2,612	639,244	56.8%	0.987
Mean sum $d_{2,3}f$ and $D_{2,3}MF$ surfaces	4,584	1,124,020	3.66	0.108

SAS SurveyFreq for percentages; SurveyMeans for continuous values.

<sup>a</sup>For purposes of display in this table, sample is limited to five- to nine-year-old subjects.

selected study counties recruited and enrolled schools, teachers, and study subjects and administered the student questionnaires in the classroom. A survey packet containing a consent form, a parent questionnaire, and a return envelope was distributed to every student in the selected classrooms. Students were instructed to give their parents the packets and return consent forms and completed parent questionnaires within a stipulated period. Incentives of \$2, \$3, and \$5 were provided for students in grades K-3, 4-8, and 9-12, respectively.

Results of the clinical assessments were entered directly into a laptop computer at the time of the examination per an Access database program and transmitted electronically to the research central office with Blackboard software technology.

### Calculation of Values for Minimal Important Difference

We defined minimal important difference (MID) for this study after Schünemann *et al.* (2005) as the smallest difference in OHRQoL scores that children or their parents would perceive as important, either beneficial or harmful, and that would lead

them to consider a change in the management of fluorosis or caries.

MID estimates for OHRQoL scales have not been established, and only a small number of studies have reported MID values (Masood *et al.*, 2012). These studies mostly evaluated treatment interventions in adults. Likewise, no gold standard exists for determining MIDs in cross-sectional studies. We followed recent recommendations and estimated MID values using multiple approaches (Revicki *et al.*, 2008; Tsakos *et al.*, 2011; Masood *et al.*, 2012). We relied most heavily on an anchor-based approach using parents' global ratings of their children's oral health and students' ratings of their own oral health as external anchors in our primary method for determining criteria for MIDs in OHRQoL scores. We chose as the MID the smallest difference between all possible pairwise comparisons in response categories in the global Likert rating scales that had a Hedges' *g* of at least 0.2 and that also exceeded the standard error of measurement (SEM). We required that the MID value exceed measurement error, believing that the criterion was necessary to identify real differences. We calculated the SEM for each

**Appendix Table 2.** Characteristics of Scales for Oral Health–related Quality of Life

Instrument and Subscales (No. Items)	Any Impacts		Severe Impacts		Severity <sup>a</sup>
	Prevalence <sup>b</sup>	Extent <sup>c</sup>	Prevalence <sup>b</sup>	Extent <sup>c</sup>	
<b>CPQ<sub>8-10</sub></b>					
Overall scale (25)	97.0	7.75 (0.242)	45.9	3.24 (0.202)	13.09 (0.591)
Oral symptoms (5)	95.8	3.02 (0.043)	36.5	1.50 (0.054)	5.04 (0.136)
Functional limitations (5)	48.8	2.30 (0.077)	13.7	1.66 (0.073)	1.94 (0.158)
Emotional well-being (5)	65.8	2.71 (0.069)	18.8	2.15 (0.099)	3.25 (0.172)
Social well-being (10)	55.1	3.12 (0.125)	14.3	2.17 (0.132)	2.86 (0.222)
<b>CPQ<sub>11-14</sub></b>					
Overall scale (37)	99.7	12.70 (0.230)	63.7	3.15 (0.101)	21.34 (0.470)
Oral symptoms (6)	98.1	3.69 (0.036)	27.5	1.42 (0.038)	5.82 (0.080)
Functional limitations (9)	88.8	3.28 (0.050)	47.2	1.49 (0.029)	5.57 (0.115)
Emotional well-being (9)	76.9	4.47 (0.075)	20.8	2.48 (0.087)	5.62 (0.180)
Social well-being (13)	72.4	3.76 (0.095)	19.6	2.01 (0.085)	4.38 (0.170)
<b>ECOHIS</b>					
Overall scale (13)	69.6	4.13 (0.128)	16.7	2.10 (0.146)	4.88 (0.207)
Child symptoms (1)	50.9	1.00 (0.000)	3.6	1.00 (0.000)	0.79 (0.033)
Child function (4)	38.7	2.09 (0.046)	5.9	1.37 (0.101)	1.28 (0.072)
Child psychological (2)	24.8	1.44 (0.030)	0.9	1.14 (0.130)	0.51 (0.034)
Child self-image (2)	12.8	1.62 (0.043)	1.5	1.39 (0.115)	0.32 (0.032)
Child overall (9)	60.8	3.10 (0.102)	8.9	1.67 (0.165)	2.91 (0.144)
Parent distress (2)	27.0	1.66 (0.030)	7.2	1.45 (0.063)	0.92 (0.056)
Family function (2)	38.5	1.41 (0.026)	7.9	1.21 (0.044)	1.04 (0.052)
Family overall (4)	44.8	2.22 (0.052)	11.7	1.71 (0.089)	1.97 (0.096)
<b>FIS</b>					
Overall Scale (14)	41.8	3.36 (0.101)	12.1	2.21 (0.122)	2.50 (0.122)
Parental/family activity (5)	30.5	1.83 (0.044)	5.2	1.35 (0.057)	0.90 (0.044)
Parental emotions (4)	25.0	1.93 (0.043)	8.5	1.61 (0.058)	0.98 (0.052)
Family conflict (4)	14.3	1.93 (0.056)	2.6	1.68 (0.146)	0.47 (0.035)
Financial burden (1)	9.8	1.00 (0.000)	1.8	1.00 (0.000)	0.17 (0.013)

SAS SurveyFreq for percentages; SurveyMeans for continuous values.  
 CPQ<sub>8-10</sub>, Child Perceptions Questionnaire, grades 4-5; CPQ<sub>11-14</sub>, Child Perceptions Questionnaire, grades 6-12; ECOHIS, Early Childhood Oral Health Impact Scale; FIS, Family Impact Scale.  
<sup>a</sup>Mean sum of scores (SE).  
<sup>b</sup>Prevalence: > 0 impacts (in percentages).  
<sup>c</sup>Extent: mean no. (SE) among those with > 0.

OHRQoL scale using Cronbach’s alpha coefficient derived from our data set as the estimate of reliability in the SEM formula. We believe that our MID estimates are conservative because the SEM value is larger than the value determined by the anchor method for 3 of the 4 OHRQoL scales.

These MID values, determined by external anchors, were supplemented with effect sizes determined by internal data distribution methods (Hedges’ *g* for pairwise group comparisons and  $\eta^2$  for analysis of variance). We assumed an MID value to be any difference that met Cohen’s threshold for a small effect (Hedges’ *g* = .2,  $\eta^2$  = 0.01; Ellis, 2010: Table 2.1, p 40).

**RESULTS**

Appendix Table 1 provides detailed estimates of the clinical conditions. Appendix Table 2 provides detailed information about each of the 4 OHRQoL scales; it provides estimates of prevalence, extent, and severity for overall and subdomain

scores according to recommended guidelines (Tsakos *et al.*, 2011). Appendix Tables 3 and 4 supplement Tables 1 and 2, respectively, presented in the paper by providing an analysis of the bivariate associations of mean scores for each OHRQoL subdomain by clinical condition categories. Appendix Tables 5-8 provide results of the analysis to determine the MID for each OHRQoL scale. Differences are displayed for all possible pairwise comparisons of the mean OHRQoL score by response categories in the parent and child global rating scales. Each table also provides estimates for Hedges’ *g* for each comparison. The results in these tables were used to determine the MID value for each OHRQoL by applying the following criteria: the smallest difference in OHRQoL means by global rating response category, a Hedges’ *g* of at least 0.2; and a value that exceeded the SEM. The MID values selected for our study based on application of the specified criteria are displayed in Appendix Table 9 along with a summary of some characteristics of each OHRQoL scale.

**Appendix Table 3.** Mean Overall and Subdomain Quality-of-Life Scores by Enamel Fluorosis Category

Variable	Overall <sup>a</sup>	Enamel Fluorosis in Anterior Teeth <sup>b</sup>			p Value
		Unaffected	Questionable, Very Mild	Mild, Moderate, Severe	
<b>CPQ<sub>8-10</sub></b>					
Sample size <sup>c</sup>	965	692 (71.3%)	246 (25.7%)	27 (2.8%)	—
Overall scale	13.09 (0.591)	13.21 (0.689)	12.93 (0.871)	11.59 (1.319)	.566
Oral symptoms	5.04 (0.136)	5.07 (0.152)	4.97 (0.213)	5.01 (0.648)	.920
Functional limitations	1.94 (0.158)	2.04 (0.168)	1.74 (0.241)	1.15 (0.297)	.024
Emotional well-being	3.25 (0.172)	3.16 (0.208)	3.49 (0.258)	3.48 (0.639)	.477
Social well-being	2.86 (0.222)	2.96 (0.257)	2.72 (0.340)	1.79 (0.433)	.054
<b>CPQ<sub>11-14</sub></b>					
Sample size <sup>c</sup>	2,409	1,721 (71.2%)	592 (24.5%)	96 (4.2%)	—
Overall scale	21.34 (0.470)	21.23 (0.523)	21.54 (0.890)	22.14 (1.922)	.867
Oral symptoms	5.82 (0.080)	5.86 (0.095)	5.73 (0.145)	5.79 (0.400)	.761
Functional limitations	5.57 (0.116)	5.67 (0.144)	5.38 (0.187)	4.95 (0.494)	.216
Emotional well-being	5.62 (0.181)	5.50 (0.198)	5.74 (0.355)	6.78 (0.750)	.227
Social well-being	4.38 (0.170)	4.27 (0.179)	4.64 (0.359)	4.82 (0.750)	.541
<b>ECOHIS</b>					
Sample size <sup>c</sup>	1,130	836 (73.2%)	261 (23.9%)	33 (2.9%)	—
Overall scale	4.88 (0.207)	4.72 (0.247)	5.23 (0.422)	5.79 (1.199)	.502
Child symptoms	0.79 (0.034)	0.75 (0.037)	0.89 (0.069)	0.98 (0.187)	.109
Child function	1.28 (0.072)	1.22 (0.089)	1.44 (0.135)	1.60 (0.369)	.293
Child psychological	0.51 (0.034)	0.50 (0.044)	0.57 (0.065)	0.37 (0.122)	.340
Child self-image/social	0.32 (0.033)	0.29 (0.039)	0.41 (0.075)	0.32 (0.144)	.394
Child overall	2.91 (0.145)	2.76 (0.172)	3.31 (0.286)	3.27 (0.656)	.220
Parent distress	0.92 (0.056)	0.95 (0.067)	0.82 (0.112)	1.24 (0.400)	.348
Family function	1.04 (0.052)	1.01 (0.060)	1.10 (0.112)	1.27 (0.321)	.640
Family overall	1.97 (0.096)	1.96 (0.112)	1.92 (0.196)	2.52 (0.629)	.590
<b>FIS</b>					
Sample size <sup>c</sup>	3,105	2,223 (71.1%)	765 (24.8%)	117 (4.1%)	—
Overall scale	2.50 (0.122)	2.43 (0.132)	2.58 (0.216)	3.25 (0.779)	.554
Parental/family activity	0.90 (0.045)	0.90 (0.051)	0.89 (0.078)	1.07 (0.239)	.754
Parental emotions	0.98 (0.053)	0.93 (0.059)	1.06 (0.098)	1.23 (0.292)	.394
Family conflict	0.47 (0.035)	0.46 (0.038)	0.47 (0.070)	0.75 (0.255)	.527
Financial burden	0.17 (0.013)	0.16 (0.014)	0.20 (0.027)	0.19 (0.067)	.415

CPQ<sub>8-10</sub>, Child Perceptions Questionnaire, grades 4-5; CPQ<sub>11-14</sub>, Child Perceptions Questionnaire, grades 6-12; ECOHIS, Early Childhood Oral Health Impact Scale; FIS, Family Impact Scale.

Unweighted sample sizes. All other estimates are calculated considering the complex sample design. Numbers in parentheses for quality-of-life estimates are standard errors of the mean. Missing values are not imputed.

<sup>a</sup>*n* = 4,584.

<sup>b</sup>Unaffected: *n* = 3,316; questionable, very mild: *n* = 1,108; mild, moderate, severe: *n* = 160.

<sup>c</sup>Row percentage distribution in parentheses.

**Appendix Table 4.** Mean Overall and Subdomain Quality-of-Life Scores by Caries Experience Category

Variable	Overall <sup>a</sup>	Caries Experience in Primary and Permanent Teeth <sup>b</sup>			p Value
		None	Low	Moderate-High	
<b>CPQ<sub>8-10</sub></b>					
Sample size <sup>c</sup>	965	394 (41.7%)	262 (27.2%)	309 (31.1%)	—
Overall scale	13.09 (0.591)	12.92 (0.812)	13.35 (1.067)	13.10 (0.799)	.928
Oral symptoms	5.04 (0.136)	4.82 (0.190)	5.10 (0.245)	5.30 (0.229)	.257
Functional limitations	1.94 (0.158)	1.91 (0.196)	2.08 (0.262)	1.85 (0.190)	.712
Emotional well-being	3.25 (0.172)	3.22 (0.266)	3.26 (0.342)	3.28 (0.227)	.987
Social well-being	2.86 (0.222)	2.92 (0.298)	2.90 (0.382)	2.75 (0.311)	.899
<b>CPQ<sub>11-14</sub></b>					
Sample size <sup>c</sup>	2,401	1,115 (45.4%)	753 (31.4%)	533 (23.2%)	—
Overall scale	21.34 (0.470)	20.37 (0.647)	21.74 (0.674)	22.69 (0.858)	.043
Oral symptoms	5.82 (0.080)	5.70 (0.124)	5.77 (0.128)	6.13 (0.167)	.116
Functional limitations	5.57 (0.116)	5.28 (0.165)	5.59 (0.182)	6.11 (0.266)	.021
Emotional well-being	5.62 (0.181)	5.35 (0.259)	5.85 (0.280)	5.82 (0.289)	.270
Social well-being	4.38 (0.170)	4.08 (0.212)	4.60 (0.251)	4.68 (0.299)	.106
<b>ECOHIS</b>					
Sample size <sup>c</sup>	1,130	427 (38.7%)	245 (22.7%)	458 (38.6%)	—
Overall scale	4.88 (0.207)	2.41 (0.209)	4.10 (0.345)	7.80 (0.380)	<.001
Child symptoms	0.79 (0.034)	0.42 (0.033)	0.71 (0.053)	1.21 (0.057)	<.001
Child function	1.28 (0.072)	0.63 (0.073)	1.07 (0.118)	2.06 (0.13)	<.001
Child psychological	0.51 (0.034)	0.31 (0.043)	0.40 (0.059)	0.78 (0.065)	<.001
Child self-image/social	0.32 (0.033)	0.18 (0.038)	0.22 (0.047)	0.52 (0.63)	<.001
Child overall scale	2.91 (0.145)	1.54 (0.141)	2.40 (0.204)	4.58 (0.262)	<.001
Parent distress	0.92 (0.056)	0.38 (0.058)	0.70 (0.105)	1.60 (0.105)	<.001
Family function	1.04 (0.052)	0.49 (0.056)	1.00 (0.110)	1.62 (0.093)	<.001
Family overall scale	1.97 (0.096)	0.87 (0.096)	1.70 (0.194)	3.22 (0.171)	<.001
<b>FIS</b>					
Sample size <sup>c</sup>	3,105	1,389 (44.3%)	933 (30.3%)	783 (25.4%)	—
Overall scale	2.50 (0.122)	1.87 (0.145)	2.73 (0.204)	3.32 (0.279)	<.001
Parental/family activity	0.90 (0.045)	0.69 (0.057)	0.94 (0.079)	1.23 (0.099)	<.001
Parental emotions	0.98 (0.053)	0.71 (0.064)	1.05 (0.084)	1.36 (0.128)	<.001
Family conflict	0.47 (0.035)	0.36 (0.039)	0.56 (0.064)	0.56 (0.072)	.010
Financial burden	0.17 (0.013)	0.14 (0.016)	0.20 (0.028)	0.20 (0.025)	.044

CPQ<sub>8-10</sub>, Child Perceptions Questionnaire, grades 4-5; CPQ<sub>11-14</sub>, Child Perceptions Questionnaire, grades 6-12; ECOHIS, Early Childhood Oral Health Impact Scale; FIS, Family Impact Scale.

Unweighted sample sizes. All other estimates are calculated considering the complex sample design. Numbers in parentheses for quality-of-life estimates are standard errors of the mean. Missing values are not imputed.

<sup>a</sup>n = 4,584.

<sup>b</sup>None: n = 1,972 (43.1%); low: n = 1,284 (28.6%); moderate-high: n = 1,328 (28.2%).

<sup>c</sup>Row percentage distribution in parentheses.

**Appendix Table 5.** Absolute Difference in Pairwise Comparisons of Mean CPQ<sub>8-10</sub> Scores by Student Global Rating of Oral Health

Level Comparison	Level 1, Level 2		Difference in Means	Hedges' <i>g</i> (95% CI)
	Sample Size	Mean ± SD		
Very good vs. good	161, 421	9.70 ± 12.40, 10.29 ± 10.27	0.59	0.05 (0.14-0.03)
Very good vs. OK	161, 341	9.70 ± 12.40, 16.29 ± 13.59	6.59	0.50 (0.54-0.46)
Very good vs. poor	161, 41	9.70 ± 12.40, 29.27 ± 21.36	19.57	1.34 (1.01-1.67)
Good vs. OK	421, 341	10.29 ± 10.27, 16.29 ± 13.59	6.00	0.51 (0.47-0.54)
Good vs. poor	421, 41	10.29 ± 10.27, 29.27 ± 21.36	18.98	1.63 (1.13-2.12)
OK vs. poor	341, 41	16.29 ± 13.59, 29.27 ± 21.36	12.98	0.89 (0.53-1.25)

Student global rating of oral health: "When you think about your teeth or mouth, would you say that they are: very good, good, OK, poor?"

Average difference between means for adjacent Likert scale response levels = 6.52.

Overall mean for 4-level response scale = 13.11 ± 13.26; analysis of variance, *p* value ≤ .001;  $\eta^2 = 0.114$ .

CI, confidence interval; CPQ<sub>8-10</sub>, Child Perceptions Questionnaire, grades 4-5.

**Appendix Table 6.** Absolute Difference in Pairwise Comparisons of Mean CPQ<sub>11-14</sub> Scores by Student Global Rating of Oral Health

Level Comparison	Level 1, Level 2		Difference in Means	Hedges' <i>g</i> (95% CI)
	Sample Size	Mean ± SD		
Excellent vs. very good	308, 850	15.48 ± 12.66, 18.66 ± 14.47	3.18	0.23 (0.26-0.20)
Excellent vs. good	308, 910	15.48 ± 12.66, 22.75 ± 15.50	7.27	0.49 (0.52-0.46)
Excellent vs. fair	308, 287	15.48 ± 12.66, 29.26 ± 18.90	13.78	0.86 (0.81-0.91)
Excellent vs. poor	308, 29	15.48 ± 12.66, 41.66 ± 19.81	26.17	1.95 (1.50-2.41)
Very good vs. good	850, 910	18.66 ± 14.47, 22.75 ± 15.50	4.09	0.27 (0.27-0.28)
Very good vs. fair	850, 287	18.66 ± 14.47, 29.26 ± 18.90	10.60	0.68 (0.60-0.75)
Very good vs. poor	850, 29	18.66 ± 14.47, 41.66 ± 19.81	22.99	1.57 (1.12-2.02)
Good vs. fair	910, 287	22.75 ± 15.50, 29.26 ± 18.90	6.51	0.40 (0.32-0.47)
Good vs. poor	910, 29	22.75 ± 15.50, 41.66 ± 19.81	18.90	1.21 (0.79-1.62)
Fair vs. poor	287, 29	29.26 ± 18.90, 41.66 ± 19.81	12.39	0.65 (0.37-0.93)

Student global rating of oral health: "Would you say the health of your teeth, lips, jaws, and mouth is: excellent, very good, good, fair, poor?"

Average difference between means for adjacent Likert scale response levels = 6.54.

Overall mean for 5-level response scale = 21.40 ± 16.01; analysis of variance, *p* value ≤ .001;  $\eta^2 = 0.080$ .

CI, confidence interval; CPQ<sub>11-14</sub>, Child Perceptions Questionnaire, grades 6-12.

**Appendix Table 7.** Absolute Difference in Pairwise Comparisons of Mean ECOHIS Scores by Parent Global Rating of Oral Health

Level Comparison	Level 1, Level 2		Difference in Means	Hedges' <i>g</i> (95% CI)
	Sample Size	Mean ± SD		
Excellent vs. very good	208, 362	1.62 ± 2.96, 3.54 ± 5.37	1.92	0.42 (0.38-0.45)
Excellent vs. good	208, 353	1.62 ± 2.96, 6.13 ± 6.42	4.51	0.83 (0.79-0.88)
Excellent vs. fair	208, 162	1.62 ± 2.96, 8.14 ± 7.50	6.52	1.20 (1.06-1.34)
Excellent vs. poor	208, 37	1.62 ± 2.96, 11.00 ± 9.00	9.38	2.13 (1.54-2.72)
Very good vs. good	362, 353	3.54 ± 5.37, 6.13 ± 6.42	2.59	0.44 (0.42-0.46)
Very good vs. fair	362, 162	3.54 ± 5.37, 8.14 ± 7.50	4.59	0.75 (0.65-0.85)
Very good vs. poor	362, 37	3.54 ± 5.37, 11.00 ± 9.00	7.46	1.29 (0.86-1.71)
Good vs. fair	353, 162	6.13 ± 6.42, 8.14 ± 7.50	2.01	0.30 (0.22-0.37)
Good vs. poor	353, 37	6.13 ± 6.42, 11.00 ± 9.00	4.87	0.73 (0.38-1.07)
Fair vs. poor	162, 37	8.14 ± 7.50, 11.00 ± 9.00	2.86	0.37 (0.13-0.60)

Parent global rating of oral health: "How would you rate your child's dental health: excellent, very good, good, fair, poor?"

Average difference between means for adjacent Likert scale response levels = 2.34.

Overall mean for 5-level response scale = 4.94 ± 6.36; analysis of variance, *p* value ≤ .001;  $\eta^2 = 0.144$ .

CI, confidence interval; ECOHIS, Early Childhood Oral Health Impact Scale.

**Appendix Table 8.** Absolute Difference in Pairwise Comparisons of Mean FIS Scores by Parent Global Rating of Oral Health

Level Comparison	Level 1, Level 2		Difference in Means	Hedges' <i>g</i> (95% CI)
	Sample Size	Mean ± SD		
Excellent vs. very good	678, 1,066	0.73 ± 2.10, 1.63 ± 3.84	0.90	0.27 (0.25-0.30)
Excellent vs. good	678, 930	0.73 ± 2.10, 2.71 ± 4.97	1.97	0.49 (0.45-0.53)
Excellent vs. fair	678, 363	0.73 ± 2.10, 5.78 ± 7.10	5.05	1.12 (0.99-1.24)
Excellent vs. poor	678, 58	0.73 ± 2.10, 12.00 ± 11.14	11.27	3.04 (2.29-3.79)
Very good vs. good	1,066, 930	1.63 ± 3.84, 2.71 ± 4.97	1.07	0.24 (0.22-0.26)
Very good vs. fair	1,066, 363	1.63 ± 3.84, 5.78 ± 7.10	4.15	0.85 (0.75-0.95)
Very good vs. poor	1,066, 58	1.63 ± 3.84, 12.00 ± 11.14	10.37	2.30 (1.70-2.90)
Good vs. fair	930, 363	2.71 ± 4.97, 5.78 ± 7.10	3.08	0.55 (0.47-0.62)
Good vs. poor	930, 58	2.71 ± 4.97, 12.00 ± 11.14	9.29	1.69 (1.21-2.16)
Fair vs. poor	363, 58	5.78 ± 7.10, 12.00 ± 11.14	6.22	0.80 (0.52-1.08)

Parent global rating of oral health: "How would you rate your child's dental health: excellent, very good, good, fair, poor?"  
 Average difference between means for adjacent Likert scale response levels = 2.82.  
 Overall mean for 5-level response scale = 2.45 ± 6.06; analysis of variance, *p* value ≤ .001;  $\eta^2 = 0.153$ .  
 CI, confidence interval; FIS, Family Impact Scale.

**Appendix Table 9.** Characteristics for OHRQoL Scales and Analysis to Determine Potential MIDs for Each Scale

Scale	Scores				Anchor Analysis of Global Ratings		
	Values	Mean ± SD	One-Half SD	SEM ± SD	Levels <sup>a</sup>	Average Difference <sup>b</sup>	Minimum Difference <sup>c</sup>
CPQ <sub>8-10</sub>	0-100	13.1 ± 13.2	6.6	4.4 ± 13.2	Very good, good, OK, poor	6.5	6.0 <sup>d</sup>
CPQ <sub>11-14</sub>	0-148	21.4 ± 16.0	8.0	4.6 ± 16.0 <sup>d</sup>	Excellent, very good, good, fair, poor	6.5	3.1
ECOHIS	0-52	4.9 ± 6.3	3.1	2.7 ± 6.3 <sup>d</sup>	Excellent, very good, good, fair, poor	2.3	1.9
FIS	0-56	2.4 ± 6.0	3.0	1.2 ± 5.0 <sup>d</sup>	Excellent, very good, good, fair, poor	2.8	0.9

MID, minimal important difference; OHRQoL, oral health-related quality of life.  
<sup>a</sup>Global oral health scale levels.  
<sup>b</sup>Average difference between levels (SD).  
<sup>c</sup>Minimum difference between levels with Hedges' *g* > 0.2.  
<sup>d</sup>Meets MID selection criteria for OHRQoL scale.

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