**Caries Risk Prediction models in medical healthcare setting**

Table 1. Potential determinants for all caries lesions

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| **Potential Risk Predictors**  **(categorical variables)** | **All lesions [N (%)] (ICDAS codes 2-6)** | | | | | | | |
| **Year 2** | | | | **Year 3** | | | |
| **Caries-affected**  **(dmfs>0)** | | **Caries-free**  **(dmfs=0)** | | **Caries-affected**  **(dmfs>0)** | | **Caries-free**  **(dmfs=0)** | |
| ***Ethnicity*** | *p=0.12* | | | | *p=0.02* | | | |
| Chinese | 55 (18.8%) | | 238 (81.2%) | | 176 (43.1%) | | 232 (56.9%) | |
| Malay | 31 (20.1%) | | 123 (79.9%) | | 94 (48.7%) | | 99 (51.3%) | |
| Indian | 9 (10.2%) | | 79 (89.8%) | | 39 (32.5%) | | 81 (67.5%) | |
| ***Mother’s education*** | *p=0.49* | | | | *p=0.15* | | | |
| Primary and below | 4 (16.7%) | | 20 (83.3%) | | 13 (46.4%) | | 15 (53.6%) | |
| Secondary | 41 (20.6%) | | 158 (79.4%) | | 124 (47.5%) | | 137 (52.5%) | |
| Polytechnic | 20 (14.2%) | | 121 (85.8%) | | 77 (43.0%) | | 102 (57.0%) | |
| Bachelor’s degree and above | 28 (17.0%) | | 137 (83.0%) | | 93 (37.7%) | | 154 (62.3%) | |
| ***Father’s education*** | *p=0.64* | | | | *p=0.07* | | | |
| Primary and below | 5 (22.7%) | | 17 (77.3%) | | 19 (63.3%) | | 11 (36.7%) | |
| Secondary | 15 (16.9%) | | 74 (83.1%) | | 44 (41.9%) | | 61 (58.1%) | |
| Polytechnic | 32 (20.0%) | | 128 (80.0%) | | 94 (48.2%) | | 101 (51.8%) | |
| Bachelor’s degree and above | 29 (18.1%) | | 131 (81.9%) | | 82 (40.0%) | | 123 (60.0%) | |
| ***Mother’s occupation*** | *p=0.03* | | | | *p=0.005* | | | |
| Unemployed | 21 (12.7%) | | 145 (87.3%) | | 75 (35.7%) | | 135 (64.3%) | |
| Non-professional | 40 (23.5%) | | 130 (76.5%) | | 114 (50.9%) | | 110 (49.1%) | |
| Professional | 32 (17.5%) | | 151 (82.5%) | | 111 (41.0%) | | 160 (59.0%) | |
| ***Monthly household income*** | *p=0.7* | | | | *p=0.15* | | | |
| 0-1999 SGD | 16 (20.0%) | | 64 (80.0%) | | 57 (52.8%) | | 51 (47.2%) | |
| 2000-3999 SGD | 25 (15.7%) | | 134 (84.3%) | | 86 (42.8%) | | 115 (57.2%) | |
| 4000-5999 SGD | 26 (19.1%) | | 110 (80.9%) | | 74 (43.8%) | | 95 (56.2%) | |
| >6000 SGD | 25 (20.8%) | | 95 (79.2%) | | 76 (39.2%) | | 118 (60.8%) | |
| ***Prenatal tobacco smoke exposure*** | *p=0.35* | | | | *p=0.03* | | | |
| Yes | 39 (19.9%) | | 157 (80.1%) | | 124 (47.5%) | | 137 (52.5%) | |
| No | 50 (16.6%) | | 251 (83.4%) | | 166 (39.2%) | | 257 (60.8%) | |
| ***History of chronic maternal illness*** | *p=0.001* | | | | *p=0.004* | | | |
| Yes | 22 (10.9%) | | 180 (89.1%) | | 113 (36.7%) | | 195 (63.3%) | |
| No | 59 (22.2%) | | 207 (77.8%) | | 189 (47.6%) | | 208 (52.4%) | |
| ***In-between meal sweet snacks frequency*** | *p=0.27* | | | | *p=0.008* | | | |
| Twice or more per day | 38 (19.2%) | | 160 (80.8%) | | 123 (51.0%) | | 118 (49.0%) | |
| Once per day | 36 (17.9%) | | 165 (82.1%) | | 100 (42.2%) | | 137 (57.8%) | |
| None | 9 (11.3%) | | 71 (88.7%) | | 36 (33.6%) | | 71 (66.4%) | |
| ***Parental reported cause for tooth decay*** | *p=0.51* | | | | *p=0.08* | | | |
| Sugar and bacteria | 44 (15.4%) | | 241 (84.6%) | | 141 (41.0%) | | 203 (59.0%) | |
| Sugar or bacteria | 2 (13.3%) | | 13 (86.7%) | | 8 (50.0%) | | 8 (50.0%) | |
| Ineffective toothbrushing | 13 (21.0%) | | 49 (79.0%) | | 35 (41.2%) | | 50 (58.8%) | |
| Tooth worms/heatiness | 24 (20.5%) | | 93 (79.5%) | | 74 (53.2%) | | 65 (46.8%) | |
| ***Night-time bottle feeding****¶* | *p=0.69* | | | | *p=0.07* | | | |
| Yes | 20 (14.5%) | | 118 (85.5%) | | 202 (46.2%) | | 235 (53.8%) | |
| No | 23 (16.20%) | | 119 (83.8%) | | 96 (39.2%) | | 149 (60.8%) | |
| ***Sharing feeding/drinking utensils*** | *p=0.16* | | | | *p=0.18* | | | |
| Frequently | 12 (11.5%) | | 92 (88.5%) | | 47 (39.2%) | | 73 (60.8%) | |
| Seldom | 43 (20.1%) | | 171 (79.9%) | | 123 (48.2%) | | 132 (51.8%) | |
| Never | 28 (17.3%) | | 134 (82.7%) | | 89 (42.0%) | | 123 (58.0%) | |
| ***History of allergies before 12 months (runny nose: 9-12 months; itchy rashes: 6-12 months)*** | *p=0.04* | | | | *p=0.44* | | | |
| Yes | 12 (28.6%) | | 30 (71.4%) | | 29 (47.5%) | | 32 (52.5%) | |
| No | 65 (16.2%) | | 337 (83.8%) | | 254 (42.5%) | | 344 (57.5%) | |
| ***History of allergies before first tooth eruption (runny nose, itchy rashes)*** | *p=0.009* | | | | *p=0.37* | | | |
| Yes | 40 (23.4%) | | 131 (76.6%) | | 111 (45.1%) | | 135 (54.9%) | |
| No | 43 (13.9%) | | 266 (86.1%) | | 198 (41.7%) | | 277 (58.3%) | |
| ***Intake of medications (oral medicines: 6-12 months; nebulizers: 9-12 months; antibiotics: 9-12 months; medications for runny nose: 0-12 months)*** | *p=0.006* | | | | *p=0.10* | | | |
| Yes | 32 (26.2%) | | 90 (73.8%) | | 85 (47.8%) | | 93 (52.2%) | |
| No | 47 (14.9%) | | 268 (85.1%) | | 197 (40.6%) | | 288 (59.4%) | |
| ***History of infection (ear infection/vomiting/diarrhoea) before first tooth eruption*** | *p=0.12* | | | | *p=0.09* | | | |
| Yes | 28 (21.7%) | | 101 (78.3%) | | 94 (48.0%) | | 102 (52.0%) | |
| No | 55 (15.7%) | | 296 (84.3%) | | 215 (41.0%) | | 309 (59.0%) | |
| ***Mother’s brushing frequency*** | *p=0.33* | | | | *p=0.003* | | | |
| ≥3 times/day | 13 (22.4%) | | 45 (77.6%) | | 39 (51.3%) | | 37 (48.7%) | |
| 2 times/day | 62 (17.4%) | | 295 (82.6%) | | 201 (45.9%) | | 237 (54.1%) | |
| ≤1 times/day | 8 (12.3%) | | 57 (87.7%) | | 19 (26.0%) | | 54 (74.0%) | |
| ***Child has pre-existing medical condition*** | *p=0.89* | | | | *p=0.05* | | | |
| Yes | 17 (18.1%) | | 77 (81.9%) | | 68 (50.4%) | | 67 (49.6%) | |
| No | 71 (17.5%) | | 334 (82.5%) | | 215 (41.0%) | | 310 (59.0%) | |
| ***Maternal regular dental check-up*** | *p=0.78* | | | | *p=0.27* | | | |
| Yes | 34 (16.7%) | | 169 (83.25%) | | 106 (41.6%) | | 149 (58.4%) | |
| No | 49 (17.7%) | | 228 (82.31%) | | 153 (46.1%) | | 179 (53.9%) | |
| ***Presence of dry mouth at 18 months*** | *p=0.77* | | | | *p=0.53* | | | |
| Yes | 3 (20.0%) | | 12 (80.0%) | | 6 (35.3%) | | 11 (64.7%) | |
| No | 75 (17.1%) | | 363 (82.9%) | | 276 (42.9%) | | 368 (57.1%) | |
| ***Previous dental visit*** | *p=0.03* | | | | *p=0.12* | | | |
| Yes | 4 (44.4%) | | 5 (55.56%) | | 11 (61.1%) | | 7 (38.9%) | |
| No | 79 (16.8%) | | 392 (83.2%) | | 296 (42.7%) | | 397 (57.3%) | |
|  |  | | | | | | | |
|  | **ECC at Year 2** | | | | **ECC at Year 3** | | | |
| **Potential Risk Predictors**  **(continuous variables)** | **All lesions**  (ICDAS codes 2-6) | | **Moderate-extensive lesions**  (ICDAS codes 3-6) | | **All lesions**  (ICDAS codes 2-6) | | **Moderate-extensive lesions**  (ICDAS codes 3-6) | |
| *Mean (S.D.)* | | *Mean (S.D.)* | | *Mean (S.D.)* | | *Mean (S.D.)* | |
| dmfs>0 | dmfs=0 | dmfs>0 | dmfs=0 | dmfs>0 | dmfs=0 | dmfs>0 | dmfs=0 |
| ***Maternal childbearing age (in years)*** | 31.78 (5.40) | 30.88 (5.18) | 33.27 (5.16) | 30.95 (5.21) | 30.92 (5.39) | 31.13 (5.09) | 31.45 (5.26) | 30.91 (5.21) |
| ***Parity status*** | 1.17 (1.31) | 0.86 (0.97) | 1.06 (1.12) | 0.91 (1.04) | 1.05 (1.19) | 0.80 (0.89) | 1.23 (1.35) | 0.82 (0.91) |
| ***Child’s BMI at 12 months*** | 16.66 (1.45) | 16.31 (1.44) | 16.42 (1.47) | 16.36 (1.45) | 16.49 (1.41) | 16.27 (1.48) | 16.46 (1.42) | 16.34 (1.46) |
| ***Child’s age for first tooth eruption (in months)*** | 8.34 (2.42) | 8.65 (2.64) | 8.07 (2.94) | 8.62 (2.60) | 8.49 (2.50) | 8.70 (2.70) | 8.47 (2.57) | 8.64 (2.62) |
| ***Number of teeth at 12 months*** | 5.91 (2.21) | 5.46 (2.55) | 6.47 (2.18) | 5.50 (2.51) | 5.75 (2.44) | 5.37 (2.54) | 5.69 (2.50) | 5.49 (2.50) |
| ***Age of introduction of solid food*** | 5.60 (1.10) | 5.55 (1.21) | 5.42 (1.24) | 5.57 (1.19) | 5.59 (1.16) | 5.54 (1.21) | 5.62 (1.21) | 5.54 (1.19) |
| ***Duration of pacifier use (in months)*** *¶* | 4.73 (5.51) | 5.17 (5.68) | 3.00 (5.08) | 5.18 (5.66) | 7.18 (9.78) | 9.66 (10.55) | 5.99 (9.30) | 9.31 (10.44) |
| ***Duration of breastfeeding (in months)*** *¶* | 4.69 (4.86) | 4.22 (4.53) | 6.60 (5.62) | 4.23 (4.53) | 6.09 (7.69) | 5.07 (6.60) | 7.34 (8.43) | 4.98 (6.60) |

*¶up to 12 months for ECC at 2 years outcome and up to 24 months for ECC at 3 years outcome*