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Dental caries and treatment characteristics in human twins reared apart

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Abstract

The "reared apart"™ model, eliminating the effect of common environmental factors, is used extensively in twins research. In this study, teeth present (TP), teeth present excluding third molars (TPX3), teeth restored (TR), teeth restored index (TRI), surfaces restored (SR), surfaces restored index (SRI) and surfaces restored or carious (SRCI), were compared in 46 monozygotic (MZ) twin pairs and 22 dizygotic (DZ) twin pairs separated during infancy and raised apart. The dental examination included charting, panoramic and bitewing radiographs, study models and a questionnaire. Data were analysed using intraclass correlations (ICC) and analysis of variance (corrected for age and sex). For all characteristics, the MZ pairs showed greater within-pair similarity than DZ pairs. For MZ pairs, the ICC values for the dental characteristics were all statistically significant ($p < 0.005$): TP, 0.45; TPX3, 0.49; TR, 0.57; TRI, 0.61; SR, 0.46; SRI, 0.67; SRCI, 0.58. For DZ pairs, none of the ICC values reached statistical significance: TP, 0.04; TPX3, 0.11;

TR, 0.30; TRI, 0.31; SR, 0.20; SRI, 0.17; SRCI, 0.26. Despite subjects being reared in different environments, receiving different diets and different dental professional care, the MZ findings demonstrated significant genetic variance (45–67%) for the number of teeth present, number of teeth and surfaces restored, and caries present; the DZ data supported this conclusion. These findings provide new evidence for a genetic contribution to dental caries.



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Keywords

twins; dental caries; monozygous; dizygous; treatment characteristics; reared apart

Abbreviations

ANOVA, analysis of variance; DMF, decayed, missing and filled (permanent teeth); DZ, dizygotic; MZ, monozygotic

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