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### **Original Article**

# The effect of parents' oral health behaviors on children and mutual communication

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#### ABSTRACT

*Objectives:* Interaction with a child influences that child's future oral health behavior. The influence garnered by a child's parents is especially important. This study measured the effect of parents' oral health behaviors on the child, and mutual communication among the family.

Methods: Primary appraisal (interpretation of stressors) and secondary appraisals (analysis of the available resources) of parents and children were investigated to compare the evaluation of stress concerning oral health (based on the transactional model of stress and coping). A total of 377 families enrolled in all elementary schools in 2 cities (6 schools) were selected. Parent and child matching data were collected for children in 5th and 6th grade (10–12 years old) using separate questionnaires. The  $\chi^2$  test, t-test, and structural equation modeling were used for data analysis.

Results: Data for 297 pairs of respondents were analyzed. There were no significant pathways for primary appraisal for the child. The final secondary appraisal model, and several global fit measures indicated good model fit. Child secondary appraisal was influenced only by mutual communication. The effect of communication on child secondary appraisal was significant, and the power of the effect (the square of the multiple correlation coefficient,  $R^2$ ) was 7.3% (0.073).

Conclusions: Results showed that increased communication between family members positively influenced children's understanding of oral health, and it was not influenced only by parental behavior toward the child's oral health. Dental professionals should approach parents about communication between family members to improve the selfmanagement ability of children.

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#### 1. Introduction

Maternal psychosocial factors are important predictors of cavities among adolescents [1]. Although it might be expected that family background and experiences of going to the dental office would act as mediating factors, no evidence has supported this notion. In Japan, the percentage of individuals who do not receive periodical examination as reported in 2011, is high at 51.6% in comparison to other developed nations [2], even with the understanding that proper oral hygiene requires professional dental care. Individuals living in Japan have universal access to hospitals and clinics regardless of place of residence, except for advanced treatment hospitals, but are not required to have periodical examination after high school graduation. Thus, it is important to investigate how interactions concerning oral health between the parent and child in childhood influences future oral health.

There is an interaction between dental anxiety and irregularity of dental visits. A previous study has shown that the dental fear score of a group that received regular periodical examinations was lower than that of a group that had never undergone periodical examination [3]. Although the effect of stress management on cancer, diabetes, and high blood pressure has been investigated [4–6], there are few studies about stress management of dental visits. Stress is thought to involve intercommunication phenomenon and to be influenced by what a stimulus means for an individual [7,8]. The transactional model of stress and coping is a framework for evaluating the processes of coping with stressful events [9-11]. When faced with a stressor, a person estimates the potential threat (primary appraisal), and simultaneously estimates his ability to change the situation and suppress a negative emotional reaction (secondary appraisal). Coping strategies influence individuals' behavior. Folkman and Lazarus [12] examined the extent to which eight different forms of coping mediated four types of emotions during stressful events of daily living. Various coping strategies are elicited by stressful situations based on primary appraisal and secondary appraisal.

One study investigated factors influencing attendance at regular periodical examinations among 1200 inhabitants of Hiroshima, Japan, selected randomly. The most influential factor found was "interest in dental health" [13]. At primary appraisal, health problems were generally estimated to be negative stressors, and the effort with which a stressor was handled was seen to relate to personal risk and level of threat. It might be said that a great interest is essential for oral health behaviors, because the danger of losing one's life is small for poor oral health.

Secondary appraisal is the evaluation of the controllability of the stressor and a person's coping resources. For example, thinking that one's health is under one's control is related positively to desirable healthy behaviors. Self-efficacy was defined by Bandura as the personal belief of having control over one's habits [14]. Oral hygiene-related self-efficacy is an influencing factor in oral hygiene behavior [15]. Knowledge of oral health is also important. Dental cavities are largely preventable through fluoride exposure, restriction of sugar intake, and frequency of tooth brushing.

Lerman and Glanz showed that primary and secondary appraisals were influenced by social support [16]. Especially for children, parental support and having dental office experiences may be important. Thus, one objective of this study was to observe a parent and child, and to analyze both individual's answers. The aim of the present study was to measure the effect of parents' oral health behaviors on children, as well as the effect of mutual communication among the family on primary and secondary appraisals of the child. We hypothesized two indirect effects at the primary appraisal model, parent's oral health behaviors on children (Parent behavior) and mutual communication among the family (Communication). The secondary appraisal model which has the same structure as the primary appraisal model.

#### 2. Materials and methods

#### 2.1. Design

A descriptive, cross-sectional survey was conducted in elementary schools in Nagasu city and Gyokutou city, in Kumamoto, Japan. Matched parent and child data were collected for children in 5th and 6th grade (10–12 years old) and parents using separate questionnaires.

#### 2.2. Sample selection

A total of 377 families enrolled in all elementary schools in 2 cities (all 6 schools) were selected. Parents gave consent for their children to participate in the study. Anonymous, self-administered questionnaires were distributed at school, completed at home, and collected during February and March 2015. A total of 339 pairs (89.9%) were collected and 297 (78.8%) returned completed questionnaires by the end of the data collection period.

#### 2.3. Measures

Demographic data collected for parents included age (decade) and sex. Children's demographic data collected included grade, sex, birth order, and number of family members. Measures and scale ranges for all variables of the model referred to below are indicated in Table 1.

For the measure of parent primary appraisal, the statements "A child's cavities are the parent's responsibility," "A child's growth and development are affected by having a lot of cavities," "A baby tooth can have a cavity because it falls out and is replaced," were rated on a scale from 1 = I do not think so at all to 4 = I think so very much. For the measure of child primary appraisal, the statements "Cavities are my responsibility," "Cavities influence my future," and "A baby tooth can have a cavity because it falls out and is replaced" were constructed and rated on the same scale (1 = I do not think so at all to <math>4 = I think so very much).

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