

Parenting style and oral health status

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ABSTRACT

Objective: This study examined the correlation between parenting style and oral health status. **Methods:** Eighty-seven children aged 2 - 14 years old were examined and their oral health status was measured by the decayed, missing, filled teeth (DMFT/dmft) index, untreated caries and caries experience. Caries experience was defined as untreated and treated teeth, either restored or filled. The parenting style of parents was measured by the Parenting Style Dimension Questionnaire (PSDQ). Demographic information recorded included race/ethnicity, level of education and child's type of dental insurance. **Results:** The majority of the parents identified with the authoritative parenting style. There was no correlation between parenting styles and oral health status. Hispanic children and those whose parents had less education and low socioeconomic status (Medicaid) tended to show poorer oral health status. **Conclusion:** The expected relationship between parenting style and oral health status was not confirmed. Race/ethnicity, level of parents' education and socioeconomic status may have a greater impact on oral health than parenting approaches.

Keywords: Parenting Styles; DMFT/dmft; Untreated Caries; Hispanic; Oral Health

1. INTRODUCTION

Dental caries has declined significantly among school-aged children since the early 1970s, yet oral disease, including caries, remains a major public health challenge [1]. Childhood dental caries has been reported to be the most prevalent infectious disease in the United States, approximately 5 times as common as asthma and 7 times as common as hay fever [1]. Researchers have established associations between poor oral health status and

systemic disease, genetics, behavioral and environmental factors [1].

Recently, the increased use of operating rooms in the hospital to provide dental treatment has been noted. Children are treated under general anesthesia not only because of extensive dental needs, but also because it assures safety in managing the patient during treatment. Parents have been described as exhibiting shifts in parenting skills and strategies that may influence their choices in promoting routine oral health behaviors and among children and oral hygiene measures reinforced at home. At times, dental treatment is deferred because parents do not want their children to suffer the effects of possible procedural measures, and may even allow children to refuse the dental treatment. Alternatively, parents may request dental treatment be done under general anesthesia.

Parenting styles influence the physical and emotional development of children [2]. Parental responsiveness has been seen as parental warmth and supportiveness to children's needs or demands. Parental demands have been seen as behavioral control. It is thought that both must be well balanced in order to bring up a child who can respect authority but also can develop self-esteem. The combination of different levels of parental demands and responsiveness has been characterized in four parenting styles: authoritative, authoritarian, permissive and indulgent [2] (**Table 1**).

The role of psychosocial variables in relation to caries development in children remains an important item in dental research, particularly because it can help define the population at greatest risk and identify specific indications of vulnerability to developing disease. Most dental procedures require the cooperation of the patients. With the generalized decrease in parental demands, many children are unaccustomed to being directed, hence, they are not always able to cooperate with the dentists during dental treatment. Children are sometimes offered unlimited choices and allowed to play significant roles in

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Table 1. Definition of four parenting styles.

Authoritative	High parental responsiveness and high parental demand; Warmth and involvement, reasoning/induction, demographic participation
Authoritarian	Low parental responsiveness but high parental demand; Clear parental authority, unquestioning obedience and punitive strategies
Permissive	High parental responsiveness but low parental demand; Tolerance, general acceptance of child's decisions and tendencies to ignore child's misbehavior
Indulgent	Low parental responsiveness and low parental demand

Reference: Robinson, C.C., Mandleco, B., Olsen, S.F. and Hart, C.H. (2001) The Parenting Styles and Dimensions Questionnaire (PSDQ). *Handbook of Family Measurement Techniques*, 3, 319-321.

making important dental care decisions. Deferring treatment or children choosing their own alternatives by children has become a common practice [3]. Therefore, it can increase potential for caries risk. Moreover, children are dependent upon the parents to provide, teach, and monitor appropriate preventive oral health behaviors like brushing and flossing. Lower parental responsiveness may imply that oral hygiene measures are less likely to be reinforced. To date, no study has examined the relationship between parenting styles and children's oral health.

In this paper, we hypothesized that parenting styles may influence children's oral health status and needs.

2. EXPERIMENTAL SECTION

2.1. Sample Population and Participants

A convenience sample of patients were drawn from the University of Nevada, Las Vegas (UNLV) School of Dental Medicine (SDM) Pediatric Dental Clinic (Clinic), located in Clark County, Nevada between August 2012 and October 2012. Children (N = 87), aged 2 - 14 and their parents participated in the study. The children had oral health screenings while one parent completed a demographic survey and a Parenting Style and Dimensions Questionnaire (PSDQ).

2.2. Selection Criteria

Healthy children who presented for screening or treatment at the Clinic who were: between the ages of 2 and 14, able to sit and cooperate during the screening, and who were accompanied by one or both parents who completed parental consent and child assent (if appropriate) were asked to participate in the study. When the patient and parent(s) agreed to participate, the child had an oral health screening to assess their current oral health status, and one parent was asked to complete the questionnaire. In the case where both parents presented with the children, the parent who spent the most time with the child and lived with the child was asked to complete the questionnaire. To help decrease bias in the case of fami-

lies where there were multiple children, only one child, chosen randomly without visual exposure by the dental examiner, was screened for this study. Patients were excluded if the child did not currently live with the parents who were accompanying them at the screening.

2.3. Measures

The PSDQ was used to determine parenting styles [4]. The instrument was designed to categorize parents' parenting style based on various behaviors displayed by parents towards their children. The parent rated him/herself as well as his/her spouse, if applicable. The questionnaire was at a fourth grade reading level and developed to categorize a parent as indicative of one of three styles: 1) authoritative, 2) authoritarian, and 3) permissive. The fourth style (Indulgent) was not included because the PSDQ did not measure this style. The 32 Likert-scale items (5-point scale) on the questionnaire focused on parenting behaviors relating to interactions with their child. Higher scores indicated a more frequent use of the described behavior. The choice of responses to each item included: never, once in awhile, about half of the time, very often, and always. The scoring guide developed for the instrument was used to determine the classification of each style. Internal consistency reliability for the scales was good to excellent per Robinson *et al.* [5] (Table 2).

2.4. Oral Health Screening

Charting of the results of the oral screening included decayed, missing and filled primary teeth (dmft) or DMFT for those children with a permanent dentition, untreated caries and caries experience. Only definite cavitations of tooth surfaces were recorded as dental caries. Missing mandibular anterior primary teeth were not used in the calculation of dmft because of the possibility of loss from physiological exfoliation, although their absence

Table 2. Dimensions and internal consistency reliabilities for Parenting Style (PS) and Dimension Questionnaire (PSDQ).

Sample size N = 1377	Alpha score	Number of questions answered
Authoritative PS (3 subfactors)		
1) Connection dimension	0.86	15
2) Regulation dimension		
3) Granting dimension		
Authoritarian PS (3 subfactors)		
1) Physical coercion	0.82	12
2) Verbal hostility dimension		
3) Punitive dimension		
Permissive PS (1 subfactor)		
1) Indulgent dimension	0.64	5

Reference: Robinson, C., Mandeleco, B., Olsen, F. and Hart, C. (1995) Authoritative, Authoritarian, and Permissive Parenting Practices: Development of a New Measure. *Psychological Reports*, 77, 819-830.

was noted on the screening form. Other missing primary teeth were considered if there had been extensive dental caries. For patients who possessed mixed dentition, both the condition of primary and permanent teeth were charted.

2.5. Procedure

During the months of August to October 2012, each child's caries experience was systematically evaluated by an examiner with the child seated in a dental chair. Clinical screenings were conducted using an illuminated mouth mirror and a blunt ball-ended probe with 0.5 mm diameter (Diagnostic Probe, Hu-Friedy Dental, Chicago, IL, USA). The probe was used to remove debris in the oral cavity and assist in identification of caries in occlusal pits and fissures. Necessary infection control steps and universal protocol, including the use of disposable examination gloves and plastic sleeves, were taken to prevent cross-contamination between children. Pediatric dental residents/dental assistants charted dmft, untreated caries and caries experience when a pediatric dental resident/pre-doctoral dental student screened the patients. Saliva was suctioned and teeth were dried as needed using air syringe or 2 × 2 gauze during the screening.

Parents were concurrently given the PSDQ and demographic information forms by an examiner blinded to the data from the clinical screening. Following the survey and child examination, parents and patients were informed of any dental needs. A cover letter and consent form accompanied the survey. The project was approved by the University of Nevada, Las Vegas (UNLV) Institutional Review Board (Protocol #1206-4186) before the start of data collection. Patients who were found to have untreated caries were referred to the UNLV SDM Pediatric Dental Clinic for dental treatment.

3. RESULT

This study sample included 87 children aged 2 to 14 years old, and the 87 paired primary caregivers/parents.

Using the PSDQ, scores on the three parenting dimensions were calculated. Results indicated that 93.1% of the parents (n = 81) endorsed behavior indicative of a primarily authoritative parenting style. The remaining 6.9% of the parents reported using a predominantly permissive style. None of the participants indicated an authoritarian style (Table 3). A correlation between parenting styles and oral health status could not be determined because the results did not discriminate styles in this sample. The uniformity of the responses could not be significantly correlated with any of the demographic variables. Thus, demographic factors associated with the child's oral health status within the authoritative parenting style data set were examined. See Table 4 for char-

Table 3. Distribution of parenting styles (n = 87).

Parenting styles	Frequency	Percent
Authoritative	81	93.1
Authoritarian	0	0
Permissive	6	6.9

Table 4. Demographic characteristics of the authoritative parenting style sample (n = 81).

	Frequency	Percent
Gender		
Male	24	29.6
Female	57	70.4
Race/ethnicity		
Hispanic	41	50.6
African American	3	3.7
Caucasian	23	28.4
Asian	7	8.6
Others	5	6.1
Level of education		
Below high school	8	9.9
High school/GED	37	45.6
College credit	18	22.2
College degree	14	17.3
Unknown	4	4.9
Child's type of insurance		
No insurance	29	35.8
Medicaid	41	50.6
Private insurance	11	13.6

acteristics of the 81 parents in the authoritative parenting style sample. When the oral health status of children in this group was assessed by race/ethnicity, (*i.e.* untreated caries, caries experience and DMFT/dmft) Hispanic children tended to show higher prevalence of untreated caries and caries experience (Table 5). Children's oral health status was associated with lower levels of parents' education *i.e.* high school or below (Table 5). Lastly, children with no insurance or Medicaid program insurance, reflective of lower socioeconomic status, also demonstrated poorer oral health status (Table 5).

4. DISCUSSION

According to a recent survey by pediatric dentist Dr Paul Casamassimo, 43 percent of the diplomats of the American Academy of Pediatric Dentistry (AAPD) indicated that their satisfaction in practicing had decreased as a result of changes in parenting style [6]. The majority of the participants in a survey characterized parenting changes as either "probably bad" (54%) or "bad" (38%).

Table 5. Distribution of children's caries and DMFT/dmft described by parents' race/ethnicity; level of education and type of dental insurance.

Race/Ethnicity	Total DMFT/dmft	Untreated Caries		Caries Experience	
		Yes	No	Yes	No
Hispanic	41	19 (0.46)	22 (0.55)	37 (0.54)	4 (0.31)
African-American	3	2 (0.05)	1 (0.03)	3 (0.04)	0 (0.00)
Caucasian	23	12 (0.29)	11 (0.28)	17 (0.25)	6 (0.46)
Asian	7	3 (0.07)	4 (0.1)	4 (0.06)	3 (0.23)
Others	5	4 (0.1)	1 (0.03)	5 (0.07)	3 (0.23)
Level of Education					
Below High School	8	4 (0.09)	4 (0.1)	7 (0.1)	1 (0.08)
High School/GED	37	22 (0.53)	15 (0.38)	34 (0.5)	3 (0.23)
College Credit	18	10 (0.24)	8 (0.2)	14 (0.21)	4 (0.31)
College Degree	14	3 (0.07)	11 (0.28)	10 (0.15)	4 (0.31)
Unknown	3	2 (0.05)	1 (0.03)	2 (0.03)	1 (0.08)
Child's Type of Insurance					
No Insurance	29	19 (0.46)	10 (0.25)	26 (0.38)	3 (0.23)
Medicaid	41	19 (0.46)	22 (0.55)	34 (0.5)	7 (0.54)
Private Insurance	11	3 (0.07)	6 (0.15)	8 (0.12)	3 (0.23)

^aThe presence of tooth decay that has been diagnosed but not yet treated; ^bThe presence of untreated and treated teeth (restored or filled); ^cNumber of decay, missed and filled teeth.

A majority (88%) of respondents believed parenting styles had changed during their lifetime. Compared to previous times, parents were much less likely to use physical discipline and set limits on their children's behavior, were more apt to bribe their children, and more accepting of the children's disrespect [6]. Parents focused more on being friends with their children and with a decrease in the sense of responsibility to establish boundaries [6]. Therefore, we hypothesized that due to the possible downhill trend of parenting style, children might present with poorer oral health status because they might not be able to comply with their parents and dentists in establishing good oral hygiene habits, and hence, likely experience poor oral health status. This study did not identify a correlation between parenting styles and oral health status in the sample recruited. The majority of the parents in this study were categorized as identifying with an authoritative style. None of parents reported an authoritarian style and only a few were indicative of a permissive style. When data within the authoritative parenting style sample was examined, there were various levels of dmft, untreated caries and caries experience among the children that differed by the demographic variables. When the University of Kentucky correlated parenting style measured by the same PSDQ instrument, all of their subjects were reported as authoritative parents. The University of Kentucky study indicated no signifi-

cant relationships were observed between parenting styles and number of filled teeth, nor with the oral hygiene practices of interest [7]. One possible explanation could be that authoritative parents tend to utilize the oral health care system more, hence, the majority of the parent participants were more responsive to their children's well being.

Parents who participated in our study were recruited from new patients, patients attending treatment visits, and recall patient visits in a Dental School Pediatric Dental Clinic. Children who were combative and were in need of having dental treatment done using advanced behavioral techniques (sedation or general anesthesia) were excluded. In dental research, the authoritative parenting style had been related to a child's compliant behavior, while other parenting styles showed substantially less compliance to dental treatment [8]. In addition, parents with an authoritative rearing style were more convinced that the behavior of their child could be managed by the dentist using basic behavioral management approaches [9]. Children who perceived their parents as warm and less controlling (*i.e.* authoritative style) have been shown to report better active coping skills [10]. The parents in our study were possibly more skilled with managing their children's behavior and therefore the patients recruited were more compliant.

Recent studies on chronic diseases in children, such as

Type I diabetes (T1DM), [11] showed that there were much higher authoritative parenting styles among parents reported in these studies. Authoritative parenting behavior was associated with child behavioral adherence, reinforcing the importance of parental involvement in developmentally-appropriate chronic illness. This finding pertained to parents who utilized the healthcare system. It suggests that parents who had parenting styles other than authoritative might not be utilizing the healthcare system. Screening to identify parenting styles may lead to development of tailored parent education of permissive and authoritarian parents in the future. Future studies should explore the best ways to deliver parenting skills and education in a medical setting, as barriers to providing parenting advice in the context of medical care has been noted [11].

Children in this study presented with a spectrum of dmft index, untreated caries and caries experience. Although authoritative parents tend to bring their children for regular dental visits and examinations, oral health status might be dependent on other demographic factors. One recent study on assessing oral hygiene in adolescents and parenting styles did not confirm such relationships after controlling for demographic factors. That study found that only socioeconomic status and tooth brushing frequency explained the variation in dental plaque levels [12]. However, in younger children, demographics may have greater influence.

Socioeconomic status, reflected in this study by reported type of dental insurance (Medicaid), might have influenced oral health status. In our study, untreated caries, higher caries experience and higher dmft scores were unevenly distributed amongst the patients who had government funding insurance (Medicaid). Children tended to have much higher rates of untreated caries, higher caries experience and higher dmft scores when parents had education levels below high school.

The majority of the participants in this study were Hispanic. According to the National Survey of Children's Health (NSCH), Hispanic families were by far the most economically disadvantaged group with a greater proportion reporting incomes below the federal poverty level, less than a high school education and a primary language other than English [13]. National studies have shown that while the rates of dental caries were declining, Hispanic children had the highest percentage of untreated caries compared with other ethnic/racial groups [14]. They were also less likely to access dental care and other preventive measures [15]. Limited access to dental services amongst Hispanic group had been associated with lack of dental insurance, poverty and low levels of education [15].

Various studies had used concepts of parenting style to explain a variety of child outcomes including lifestyle

factors such as healthy eating [16-19], physical activity [20,21] and television watching [22,23]. In general, authoritative parenting was thought of as a more positive parenting style but findings with lifestyle behaviors were mixed. Studies had reported positive associations between permissive parenting and physical activity [20,21, 24] but negative associations with television viewing habits [23]. Blissett and Haycraft [25] found no correlation between parenting style and child Body Mass Indices. Zeller *et al.* [26] demonstrated that permissive parenting and child's temperament increased the odds of the child being overweight. In contrast, authoritative parenting had been shown to potentially decrease risk [24]. The somewhat equivocal findings in this line of research led some investigators to conclude that association between parenting style and child weight status may interact with child or parent characteristics in more complex ways [27,28]. The same phenomenon might be implied when assessing oral health status and behaviors.

The convenience sample in this study was a limitation. Parents who had authoritative parenting style could be perceived as selection bias associated with being "interviewed" and attempting to appear to be a "good" parent. Therefore, use of different assessment tools or examining parenting style from the child's perspective might reveal additional relationships between parenting style and health outcomes because children might perceive different parenting behaviors than their parents [29]. If a larger sample had been studied in different settings, such as private dental offices and public health clinics, more diverse parenting styles may have been identified. Those parents who did not volunteer to complete the survey and who may have represented a variety of styles might have lower emotional intelligence and felt annoyed when asked to fill out a 15 - 20 minute survey. Finally, research on parenting style was complicated by a number of factors. One primary challenge was that it was difficult to distinguish among the different parenting styles since parents could exhibit elements of each parenting dimension. Researchers have supported this notion that parents typically could not be characterized into a single parenting style [30]. In this study, there were parents whose PSDQ scores were categorized as authoritative parenting style, but the scores were very close to permissive or authoritarian parenting style.

5. CONCLUSION

The expected relationship between parenting styles and oral health status, which was measured by dmft, untreated caries and caries experience, was not confirmed. Other variables such as race/ethnicity, parents' level of education and socioeconomic status might have a greater impact on determining the children's oral health condition. Further studies should explore parenting styles

with intent to tailor parent education and to assure positive patient experiences in interactions with pediatric dentists.

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