Association between parenting stress and early childhood caries in 4-5 years preschool children of Moradabad, India

Ipseeta Biswal; Ramesh Nagarajappa; Srivastava B.K

Abstract

Aims & Objectives: To determine the association between parenting stress and early childhood caries in preschool children of Moradabad City. Methods: A cross sectional study was conducted among 755 preschool children (63.8% males and 36.2% females) aged 4-5 years along with their parents. 20 preschools were randomly selected out of 75 registered preschools of Moradabad City. The parenting stress level was assessed based on the responses of parents to a standardized questionnaire on Parenting Stress Index - Short Form (PSI/SF). Children were clinically examined by the investigator for dental caries using Dentition Status and Treatment needs (Kappa = 0.8). Chi square test and Analysis of Variance were used for statistical analysis. Results: The level of parenting stress reported was low (37.1%), medium (27.7%), high (35.2%) and the incidence of caries observed among them was 60%, 66.9%, and 59.1% respectively. Medium and high stress level was positively associated with the presence of caries (p=0.164; $\chi^2 = 3.612$). In the parenting stress questionnaire mean score and item-total correlation coefficients ranged from 0.30 to 0.80. Conclusion: It is critical to examine the caries process while taking into account the parent child dyad in a developmentally oriented design as young children are dependent on their caregivers for desirable oral health preventive practices.

Key Words: parenting stress index; early childhood caries; preschool children.

Introduction

In the entire spectrum of human relationships, the bond between the parent and the child is unarguably the most precious and beautiful. The concern, care and anxiety of the parents in the formative years prior to schooling are indeed stressing, but fulfilling. When the child steps out for the formal education process into preschool, the transition can be overburdening both for parents and child as they have to cope up with dual stress at home and external environment.

Parents today are busier than mothers and fathers of past decades. In times diary it’s recorded that fathers spent 6.5 hours a week caring for their children in 2000, a 153% increase since 1965. Married mothers spent 12.9 hours a week, a 21% increase, and single mothers spent 11.8 hours a week, a 57% increase. The rise in child-care time documented after 1985 is consistent with an era in which the average number of children per family declined, women's employment rose sharply, and single parenting increased. Today's parents are expected to monitor their children carefully because fears of abuse and of crime have risen. They are expected to guide and nurture their children through every aspect of growing up, and to be involved in all of their activities. In order to compete with the demands, parents are employing varieties of strategies to maintain the hours they spend with their sons and daughters.

In this hi-tech world, though quality of life is improving dramatically, the basic values governing health and hygiene are regarded scantily. Societal urban pressures have increased the reliance on junk food. These stressful conditions and nutritional imbalance leads to disastrous consequences in the form of diseases and oral problems.

One of the most important diseases of the oral cavity that the child suffers at this age group is Dental Caries. But given the trend of parental disregard, an unfortunate pattern of delay in seeking treatment exists, which leads to a worsening of child’s condition and complicates the necessary treatment procedure. Further decay of primary teeth can affect children’s growth, lead to malocclusion by adversely affecting the correct guidance of the permanent dentition, and cause poor speech articulation and low self esteem.

Thus, this study was undertaken to assess the relationship of Parental Stress and...
Early Childhood Caries in preschool children of Moradabad City.

Material and methods
Eligible subjects included parents and their children aged 4-5 years attending the preschools in Moradabad city. The study protocol was reviewed and approved by Institutional Review Board. Permission to conduct the survey was obtained from all the 20 randomly selected schools. A pilot study was conducted on 30 preschool children aged 4-5 years and their parents of Moradabad, India. Based on the study findings the sample size estimated was 750.

A pretested standardized Parental Stress Index-Short Form (PSI/SF)(3) consisting of 36 items answered on a five-point Likert scale (from 1 = strongly agree to 5 = strongly disagree), generates a score evaluating total stress based contributions from parental distress (PD), parent-child dysfunctional interaction (PCDI), and difficult child (DC) sub scores. Forms (also designed in Hindi script - local language) along with the consent form were distributed to the parents of children aged 4-5 years visiting the school on the parent-teacher meeting day. The purpose and procedure of the study was explained and were instructed to fill the forms.

Informed consent and response was obtained from 755 parents whose children were then clinically examined on the following day for dental caries using Dentition Status and Treatment Needs(4). Type III examination was performed by the investigator who was calibrated in the Department of Public Health Dentistry in order to limit the intra examiner variability (Kappa = 0.8).

Chi-square test has been used to find the significance of study parameters on categorical scale between two groups. Analysis of Variance has been used to find the significance of dmft (decay, missing, filled teeth) score according to levels of parenting stress index and in three dimensions. Significance is assessed at 5% level of significance.

Results
A total of 755 children (482 boys and 273 girls) participated in the study conducted to determine the association between parenting stress and early childhood caries. The Total Parenting Stress Index was divided into three parameters as Parenting Distress, Parent-Child Dysfunction Interaction and Difficult Child. The level of parenting stress was categorized as low (<50%), medium 50-75% and high >75%. The range for dmft was from 0-17, and the total mean standard deviation was 2.16±2.74 with P=0.367 and F = 1.005 (Table 1). An increasing trend of dmft score with the increasing level of parenting distress was observed in (Fig 1).

<table>
<thead>
<tr>
<th>Parenting Stress total</th>
<th>Dmft Score Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1.95±2.56</td>
</tr>
<tr>
<td>Medium</td>
<td>2.21±2.58</td>
</tr>
<tr>
<td>High</td>
<td>2.33±3.03</td>
</tr>
<tr>
<td>Total</td>
<td>2.16±2.74</td>
</tr>
</tbody>
</table>

Table 1 Distribution of Association of Parenting Stress With Total dmft Score

![Figure 1 Distribution of total dmft score according to Parenting stress](image)

The medium parenting stress – difficult child group in with absence of caries were 34.2% (91 of 266) and presence of caries were 65.8% (175 of 266) and high parenting stress group with absence of caries were 40.1% (116 of 289) and presence of caries were 59.9% (173 of 289). Medium-high Level of parenting stress-difficult child was positively associated with presence of caries with P=0.206 and χ² = 3.155 (Table 2).

<table>
<thead>
<tr>
<th>Level of parenting stress-difficult child</th>
<th>Total Numb...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caries: Absence</td>
<td>Caries: Present</td>
</tr>
<tr>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Low</td>
<td>200</td>
</tr>
<tr>
<td>Medium</td>
<td>266</td>
</tr>
<tr>
<td>High</td>
<td>289</td>
</tr>
<tr>
<td>Total</td>
<td>755</td>
</tr>
</tbody>
</table>

Table 2 Levels of parenting stress index –difficult child and incidence of caries

χ²=3.155; P=0.206
The dmft score in male and female was also positively associated. Parenting Stress Index is observed to be statistically similar between male and female while the dmft score is significantly high in male subjects with \( P = 0.001 \) (Table 3).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenting stress Index-Total</td>
<td>37.61±12.99</td>
<td>37.71±13.07</td>
<td>37.65±13.02</td>
<td>0.912</td>
</tr>
<tr>
<td>Parenting stress Index-Difficult child</td>
<td>34.40±13.98</td>
<td>33.95±14.79</td>
<td>34.24±14.27</td>
<td>0.678</td>
</tr>
<tr>
<td>Parenting stress Index-Dysfunctional interaction</td>
<td>38.79±12.35</td>
<td>39.41±13.41</td>
<td>39.02±12.74</td>
<td>0.526</td>
</tr>
<tr>
<td>dmft score</td>
<td>2.40±2.94</td>
<td>1.73±2.28</td>
<td>2.16±2.74</td>
<td>0.001 **</td>
</tr>
</tbody>
</table>

** Highly significant

Table 3: parenting stress index and dmft score in male and female children using student t-test (two tailed independent)

Discussion

Early childhood caries can affect quality of life, disrupting speech production, communication, self-image and social functioning. An increasing trend of dmft scores with the increase in the levels of two dimensions of Parental Distress (PD) and Difficult Child (DC) was observed. However Parental Child Dysfunction Interaction (PCDI) when associated with dmft scores showed no statistically significance suggesting the referral of most of the parents for closer diagnostic study and professional counseling in stress management. The higher total stress scores for parents may have resulted from urbanization.

On the bivariate level, findings of previous studies have suggested and confirmed that parenting stress plays a definite role in the natural history of a children’s disease like ECC, but this association did not persist in the two-part modeling analysis: neither in the measurement of caries presence, not in its extent(5).

The findings of Quinonez et al(6) were similar to our study where there is a positive association between total parenting stress and early childhood caries. However, in their study lower stress group was shifted in a positive direction (\( p<0.05 \)) while in our study the medium and high stress groups were positively associated with early childhood caries (\( p=0.357 \)). The observations of Finlayson et al(7) differed where higher level of parenting stress were significantly associated with better dental outcomes. All of the individual items of the parenting stress scale were inversely related to ECC (\( p<0.05 \)) where as in our study there was an increasing trend of caries with increasing level of parenting stress (\( p=0.261 \)).

Parents complained that their children have problems with eating and sleeping, they did not smile and had stopped playing with other children which are similar to other studies(8-10). This may be attributed to the habits that are often related to child’s behavior and temperament which in turn is related to oral hygiene. When a child is difficult or demanding, becomes violent or obstructive the parent may feel uncomfortable and avoid the situation completely, thus negatively reinforcing the child’s behavior and preventing even minimal oral hygiene exposure. A parent may also be tempted to give the child a bottle at night when there is sleeping problems.

In our study the parenting stress index was found to be similar between males and females. The findings that difficult children were found to have more caries were similar to our results where difficult child was positively correlated with caries. This is in contrast to Spitz et al(11) study where they found males more likely to be “difficult” than females.

Caring for small children is tiring and majority of the parents felt trapped by the constant responsibility. Few of our subjects have agreed that having a child has caused more problems than they expected in their relationship with spouse.

A relatively higher sample size has been taken which can aid in generalizibility of the study results. Consideration of other variables like the socio economic status, education of parents and eating habits of the children would have been more beneficial. The issue of ECC assessment may also be raised. Although clinical assessment showed high intra reliability in our study, it is not sufficient to detect early inter-proximal caries. Radiographic ECC assessment in conjunction with clinical
assessment is a more sensitive measure. However given the age of our sample, radiographic methods could not have been applied consistently.

Conclusion
Worrying about the well being of the children is a major source, but there is also stress of trying to be perfect and juggling the demands of a job, a spouse, and the management of a household. While we chose to study only the relationship between Parenting Stress and Early Childhood Caries, a multi-factorial and comprehensive model that incorporates other psychological and biological aspects of stress may be more instructive in understanding the etiology of Early Childhood Caries. Parents should be made to realize that they are role models for their children and therefore do things which turn benefiting for their off springs.

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References

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