RESEARCH ARTICLE

IMPACT OF SOCIOECONOMIC STATUS AND ORAL HEALTH ON QUALITY OF LIFE IN PRESCHOOL CHILDREN

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Abstract

Aim: the aim of this study was to correlate the caries experience of preschool children and parental perception using ecohis and correlate it with the socioeconomic status.

Method: The sample consisted of 100 preschool children between the ages of 3 and 5 years. Clinical examinations were performed by an examiner with children seated on chairs under natural light using mouth mirrors and CPI probes. Def index was used to assess the child’s caries experience. The socioeconomic profile of parents/guardians was calculated using the Kuppuswamy’s classification. A 13 item ecohis questionnaire was answered by the parents/guardians for assessing their perceptions on the influence of oral health on quality of life of these children. The data obtained was statistically analyzed using Pearson’s correlation test to correlate the parental perception to the caries experience of the child as well as their socioeconomic status.

Results: A def value of 3.27(±1.543) was found. With respect to socioeconomic classification, 68% of families were in the middle class. A statistically significant correlation was found between def and oral health-related quality of life for the overall score and domains of the questionnaire (p<0.001).

Conclusions: It was found that dental caries had a high influence on oral health on quality of life of the preschool children and the assessment of socioeconomic conditions of the children’s families may guide practices aiming to reducing inequalities in the distribution of dental caries in the population.

Introduction: The association between socioeconomic conditions and dental caries prevalence has been observed in several studies. Researchers have found that people living in precarious socioeconomic conditions are more favorable to be exposed to risk factors that influence oral health conditions, and this is directly related to quality of life, not only in functional domains, but also in social and psychological ones. Oral health problems have been increasingly recognized as important factors causing negative impact on daily performance and quality of life because they influence how people grow, enjoy life, speak, chew, taste food, and socialize.
Most studies on evaluation oral health status were carried out using only clinical measures, however, oral health-related quality of life (OHRQoL) instruments should be used in conjunction with them.\textsuperscript{5} Adult’s and children’s perception of health conditions takes place in a different way and in the case of children that accuracy varies with cognitive capacity for each group of children. This ability may vary according to the stage of emotional development, language or social environment of the child. Moreover, the socioeconomic and cultural conditions in which children were born and grew up may also influence their perception.\textsuperscript{6}

Tooth decay can exert a negative impact on activities of daily living and, consequently, quality of life.\textsuperscript{7} The main purpose of this study was to evaluate the parental perception and influence of oral health related quality of life of preschool children in Bangalore, Karnataka using Early Childhood Oral Health Impact Scale (ECOHIS) and associate it with socioeconomic profile of households.

**Material And Methods:-**

The research protocol was approved by the Department of pedodontics, A.E.C.S. Maaruti Dental College and Research Centre, Bangalore. To perform this cross-sectional observational research the target population consisted of 100 preschool children of Bangalore, Karnataka. Informed consent was obtained from the parents or guardians prior to the survey which included 57 boys and 43 girls.

Clinical examinations were performed by a calibrated examiner. The preschool children were examined seated on chairs under natural light and examined with mouth mirrors and CPI (Community Periodontal Index) probes. The clinical examinations used for observation of the mean number of decayed, extracted or filled teeth (deft index) were performed according to the criteria established by the World Health Organization (WHO). The Early Childhood Oral Health Impact Scale (ECOHIS) was used to assess oral health-related quality of life of the preschool children. ECOHIS consists of 13 item questionnaire which were considered to be the most relevant to evaluate the impact of oral health on quality of life of preschool children.\textsuperscript{8} The ECOHIS was answered by the parents or guardians of the children, assessing their perceptions about the influence of oral health on quality of life of the children in preschool age. The responses options are listed in codes ranging from 0 to 5, where code 0 = never, 1 = hardly ever, 2 = occasionally 3 = often,4 = very often 5 = dont know. The amount scores and domains were calculated from the sum of the reply codes. The responses “dont know” were counted, but were excluded from the sum to calculate the amount score and by domain of each patient. The minimum score obtained in the questionnaire was zero corresponding to no influence of oral health on quality of life and the maximum was 52 where there was strong influence of oral health on quality of life of children. The socioeconomic status of the family was assessed by Kuppuswamy(2012)\textsuperscript{9} scale. The Pearsons correlation test was used for comparison of deft according to age, with the oral health-related quality of life and socioeconomic classification as well as to relate the results of oral health-related quality of life with the socioeconomic.

**Results:-**

| Socioeconomic status | Frequency | Percent |
|----------------------|-----------|---------|
| Upper middle         | 26        | 26.0    |
| Middle/lower middle  | 68        | 68.0    |
| Lower/upper lower    | 6         | 6.0     |
| Total                | 100       | 100.0   |

**Table 2:** Intrigroup Comparison of deft of different age groups.

| Age | N  | Mean deft | Sd  | Median | Min. | Max. | ‘f’ value | ‘p’ value |
|-----|----|-----------|-----|--------|------|------|-----------|-----------|
| 3yr | 24 | 2.17      | .868| 2.00   | 1    | 4    | 18.131    | <0.001    |
| 4yr | 42 | 3.10      | 1.478| 3.00   | 1    | 10   |           |           |
| 5yr | 34 | 4.26      | 1.399| 4.00   | 2    | 8    |           |           |
| Total | 100 | 3.27      | 1.543| 3.00   | 1    | 10   |           |           |
Table 3: Evaluation of ECOHIS questionnaire scores.

| Age | Questionnaire score | Total | χ² value | 'p’ value |
|-----|---------------------|-------|----------|-----------|
|     | Strong impact | Medium Impact |       |           |
| 3yr | 24                  | 0      | 24       | 3.649     | 0.161     |
|     | 100.0%             | 0%     | 100.0%   |           |           |
| 4yr | 40                  | 2      | 42       |           |           |
|     | 95.2%              | 4.8%   | 100.0%   |           |           |
| 5yr | 30                  | 4      | 34       |           |           |
|     | 88.2%              | 11.8%  | 100.0%   |           |           |
| Total| 94                 | 6      | 100      |           |           |
|     | 94.0%              | 6.0%   | 100.0%   |           |           |

Table 4: Correlations of deft with the ECOHIS questionnaire scores.

| Age | N | Mean deft | Strong impact | Medium Impact | Corelations deft vs questionnaire Score | 'p’ value |
|-----|---|-----------|---------------|---------------|----------------------------------------|-----------|
|     |   |           | Strong impact | Medium Impact | Pearson correlation                   |           |
| 3yr | 24 | 2.17      | 24            | 0             | -0.212                                 | 0.0310    |
|     |   |           | 100.0%        | 0%            |                                        |           |
| 4yr | 42 | 3.10      | 40            | 2             |                                        |           |
|     |   |           | 95.2%         | 4.8%          |                                        |           |
| 5yr | 34 | 4.26      | 30            | 4             |                                        |           |
|     |   |           | 88.2%         | 11.8%         |                                        |           |
| Total| 100| 3.27      | 94            | 6             |                                        |           |
|     |   |           | 94.0%         | 6.0%          |                                        |           |

Table 1 summarizes the socioeconomic status of the children classified using Kuppuswamy scale, it was found that 26% belonged to the upper middle class family, 68% belonged to the middle/lower middle class families and only 6% belonged to the lower/upper lower class families. It was noted that none of the children in the study belonged to upper class or lower class families. Table 2 summarizes the deft scores of the children. They have been divided according to their age groups which interpreted that 3 year old children had a mean deft score of 2.17(+/- 0.68); 4 year old children had a deft value of 3.10(+/- 1.47). The prevalence of caries was highest in 5 year old children with a deft score of 4.26(+/- 1.39). No significant differences was seen between the groups. Table 3 shows that 94% of children had a strong impact of oral health on quality of life, 6% children had medium impact and no children had a weak impact on the oral health quality of life. Assessing the correlation deft and oral health quality of life, Table 4 shows that all 24 children who were 3 years old had a mean deft score of 2.17 had strong impact of oral health on quality of life. Among the 42 children who were 4 years old, and who had a mean deft of 3.10, 40 children had a strong impact and 2 children had a medium impact of oral health on quality of life. Among the 34 children who were 5 years old and who had a mean deft of 4.26, 30 children had a strong impact and 4 children had medium impact of oral health on quality of life. A Pearson co relation test was done to correlate the mean deft score among the children and their parental questionnaire score which provided a value of -0.212 indicating a negative correlation.

Discussion:
In order to evaluate the prevalence of dental caries deft caries index was used. It has been reported that when there is a large number of cases concentrated in a small group of individuals exist a phenomenon known as polarization. This phenomenon is expressed in the concentration of greater burden of disease and treatment needs in a small portion of the population (20-40%), whereas most the children presents caries-free (40-60%), may be reflecting the measures of prevention and control of dental caries, based on solid population strategy, in which moved from a situation of high prevalence of the disease for a large percentage of caries-free individuals. In this sense, the greater vulnerability to injury is associated with intense exposure to risk factors and social deprivation. In some
studies, it was emphasized that the prevalence of dental caries decreased as socioeconomic level increased, even in areas without the addition of fluoride to public water supply.  

In order to quantify the extent which oral health problems interfere on daily life and well-being of people, researchers developed instruments of oral health-related quality of life to assess the impact of oral health in the physical and psychosocial development. Children, as well as young adults are also affected by several oral health problems, which have the potential to compromise the well-being and quality of life of them. The ECOHIS was developed for use in epidemiological studies aiming to evaluate the influence of oral diseases and treatment on preschool children’s quality of life. It considers the experience of oral diseases and dental treatment of the child’s lifetime with the answers provided by parents. There are few studies in the literature regarding the influence of oral health on quality of life of children in preschool age. This research found a greater influence of oral health on quality of life in the domains’ symptoms and anguish of parents and lower means on self-image and family function. 

The maximum score obtained in the questionnaire was 32 points. In this study the domains with the highest means were symptoms and functional limitations, which demonstrate that the influence of oral health on quality of life of children can be perceived by parents/guardians, when there are symptoms such as pain and limitations in daily activities such as speech and feeding. These results highlight the need to promote health education activities with parents or guardians of preschool children in order to raise awareness about the importance of maintaining a healthy primary dentition both for oral health and general health of children in this age group. Similarly, Pahel et al. found that the highest average of the influence of oral health on quality of life were registered in symptoms, followed by functional limitations and emotional well-being. Children who had higher caries experience reported greater influence on quality of life that children who had lower caries experience. In a research conducted by Abanto et al. with preschool children using the ECOHIS, parents reported greater impact related to the child’s subscale (69.30%) than with family’s subscale (30.70%). Parents reported no influence of oral health on quality of life in 40.10% and in 59.90% of children in child’s subscale and family’s subscale respectively. The maximum score of 30 was recorded at child’s session and 12 on family’s session. A recent study conducted in the city of Diamantina, MG, Brazil showed that in the child impact section, “pain, in the teeth, mouth or jaws” was the most frequently reported item by the parents (21.5%) and in the family impact section the most frequently reported item was “felt guilty” (14.2%). However, Li et al. revealed that the majority of parents reported a weak impact of oral health on quality of life of their children before they perform dental treatment, and according to the parents, the same children had dental problems that required treatment. According to Baldani et al., the assessment of socioeconomic conditions allows to consider possible etiologic factors of social inequalities such as income, educational attainment and housing conditions. Knowledge of these data allows a realignment of healthcare and public spending on prevention and care activities, enabling a fair distribution of available resources, providing more resources to those groups with the greatest needs. 

Epidemiological studies have been conducted to evaluate the relationship between oral health and socioeconomic conditions and have been observed that low socioeconomic status is related to higher prevalence of dental caries. Thereason for the association between oral health and socioeconomic status is reasoned on the fact that socioeconomic status determines access to resources that determine the distribution of oral health, as well as, behavioral factors and consumption of sugar among them: tooth brushing, preventive activities and regular dental visits. Meneghim et al. showed that income, education level, housing conditions and socioeconomic status have a significant relationship with higher prevalence of dental caries. The present study found inverse relation between oral health-related quality of life and socioeconomic conditions where children from middle socioeconomic conditions also demonstrated higher influence of oral health conditions on quality of life. These results indicate that people living in low socioeconomic conditions have worst oral health conditions due to exposure to risk factors interfering with their quality of life. Similarly, a study conducted with Brazilian schoolchildren found that higher impacts on COHRQoL were observed for children presenting with untreated dental caries. Socioeconomic factors were also associated with COHRQoL, as poorer scores were reported by children whose mothers had not completed primary education (RR 1.31; 95% CI 1.17-1.46) and those with lower household income (RR 1.17; 95% CI 1.05-1.31). A study developed in Canada with schoolchildren demonstrated that in children from higher income backgrounds, mean CPQ scores were low, close to the minimum score of 10, irrespective of the presence or severity of oral diseases and disorders. For children from lower income backgrounds, those free of oral diseases and disorders also had relatively low scores. However, scores increased significantly in the presence of oral disease.
This suggests that oral health problems have less perceived impact on high income children, but a more marked impact on children from low income environments. 

The questionnaires to evaluate oral health-related quality of life of preschool children can be a valuable instrument to demonstrate the perception of parents about the oral health of their children and to guide the oral health attention of this population group. The present study identified a strong impact, statistically significant relationship of oral health on quality of life of preschool children examined from the perspective of parents and verified socioeconomic inequalities associated with oral health related quality of life of the children.

Conclusion:-
The present study showed that increase in dental decay led to poor quality of life in children and the need of planning educational activities with parents about the importance of taking care of the primary teeth as well as the low capacity of the health system to treat people of this age group. The assessment of perceived needs by the use of quality of life questionnaires as well as socioeconomic parameters can assist the planning of oral health programs aiming the reduction of unnecessary and unavoidable inequalities in the distribution of dental caries in populations of different socioeconomic conditions.

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