RADIOGRAPHIC DENTAL AGE ESTIMATION IN SRI LANKAN CHILDREN

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Introduction

Dental age aids in orthognathic treatment planning, forensic and legal dentistry where other parts of the body are missing. Different methods were developed over the years to assess the dental age according to the degree of calcification observed in radiographic examinations for permanent teeth (Demirjian, et al., 1973). Amongst the various methods used in assessing the dental age, the method devised by Demirjian, et al., is used frequently. The aim of our study was to determine the accuracy of dental age estimation among healthy Sri Lankan children using the maturity standards of Demirjian, et al.(1973).

Materials and Methods

This study was performed on a sample of 230 dental panoramic tomographs (DPT) taken from children (100 boys and 130 girls) aged between 06 and 16 years, in a simple random sample using a method used before (Demirjian, et al 1973). The routinely taken DPTs for the purpose of diagnosis and treatment planning were used for the study. The DPTs were scored by both investigators. The DPTs were scored according to the criteria used by Demirjian et al.(1973) The chronological age for each subject was calculated. The dental age was estimated using the total of the dental maturity score using the 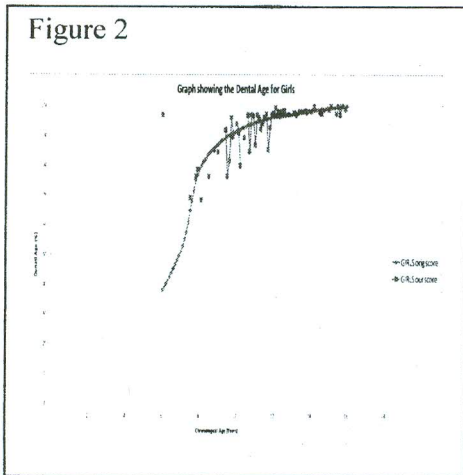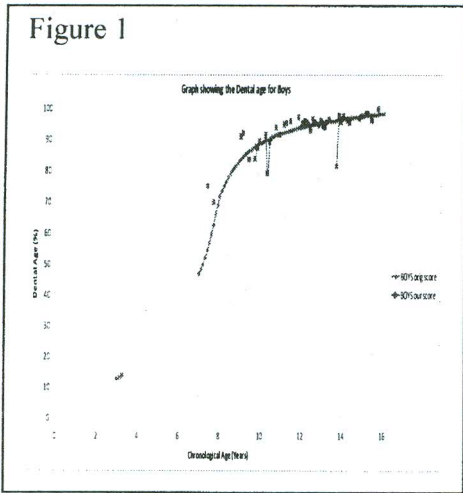sex specific tables of Demirjian et al (1973). The graphs were plotted for boys and girls separately, using the Demirjian et al. (1973) values and were taken as the standard values to compare with values obtained in this study.

Results

The average age of males was 12.2 years and that of females was 11.9 years. The majority was boys (57%) and the most of the both girls and boys alike belonged to the age group of 12-13.9 years. The maturity scores of male and female patients were converted to the estimated dental age using the Demirjian et al's conversion table and the mean values of various ages were compiled. The standard values given by Demirjian et al., (1973) was plotted initially against which the values obtained among Sri Lankan children were plotted (Figures 1 & 2). The graphs revealed that the values of dental age obtained for the chronological age of 11.5 years and above were comparable with the results obtained by Demirjian et al. (1973) but not below 11.4 years.

Discussion

Ways of determination of a child's growth and development are of great value from both medical and odontologic points of view (Gulti et al., 1990). A universal system is yet to be achieved for the age estimation which could be due to the varying differences amongst different ethnic

Figure 1

Graph showing the Dental age for Boys

Figure 2

Graph showing the Dental Age for Girls

But the values for girls showed an average of underestimation when compared with the standard values. The probable causes of differences in values are the cultural, ethnic and environmental factors such as socio-economic status, nutrition and dietary habits that differ in various population groups. The results cannot be affirmed here since the sample size considered for the age groups below 11.4 years is comparatively smaller. Although comparable values were obtained for certain higher age groups of children in this study, further studies are needed with extensive and large numbers of sample in order to compile a table of the dental maturity age conversion for the Sri Lankan population.

Conclusion

From this study, it can be inferred that the Demirjian conversion of the maturity score to the dental age could be applicable to the age group of Sri Lankan children above 11.5 years. However, further study with a larger sample may lead to a better comparison and results.

population groups (Koshy and Tandon., 1998; Maber, et al., 2006). The present study requires more data in the 6 – 7.9 and 8 – 9.9 years age groups for boys and 6 – 7.9 years age group in girls (Figure 2). In the present study, the dental age estimation was comparable with that of Demirjian et al. (1973), especially for the age groups of 11.5 years to 16 years for both boys and girls. The dental age values of children 11.4 years and below showed an average of overestimated values in Sri Lankan boys compared to the standard values.

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