DENTAL CARIES, FLUOROSIS AND PERIODONTAL DISEASE AMONG 12-15-YEAR-OLD CHILDREN FROM JUJA IN RURAL KENYA.

A Thesis submitted in partial fulfilment of a Masters Degree in Paediatric

Dentistry, Department of paediatric dentistry and orthodontics,

Faculty of Dental Sciences, University of Nairobi.

Dr LUCY W. WAWERU. BDS (NBI)2005

ABSTRACT

INTRODUCTION: Major oral diseases afflicting children and adolescents are dental caries and gingivitis. These diseases have been found to lead to a high morbidity of teeth in this age group. There are also man-hours and school hours lost while seeking treatment for these diseases, as children who are minors have to be accompanied by parents. Studies have established that there is a linear relationship between fluoride exposure and dental fluorosis. In Kenya over 30% of the population suffers from dental fluorosis and in isolated areas where the people depend on ground water for domestic use over 100% of the population manifests varying degrees of severity of dental fluorosis. Epidemiological studies have reported varied findings on the association between dental fluorosis and dental caries experience. There are few studies that have been conducted to associate periodontal disease and dental fluorosis.

MATERIALS AND METHODS: This was a descriptive cross-sectional study designed with the aim of determining the oral health status of children aged 12-15 years in a rural area in Kenya. A total of 225 primary school children from a rural school in Kalimoni sublocation, Juja location, Ruiru division, Thika District, Central Province of Kenya were included in the study. Juja area was purposively selected, as it is known to have ground water as a major source of domestic water supply. Simple random sampling technique was used to select the schools. Oral examination was conducted in a classroom under natural light. The child was seated near the window to improve visibility, dental probes and mirrors were used for examination. The Thylstrup and Fejerskov (1978)[1] Index(TFI) was used to score for dental fluorosis. Dental caries and periodontal status were assessed using the Decayed Missing Filled Teeth Index (DMFT) and Community Periodontal Index (CPI) respectively in accordance with the World Health Organization (WHO) criteria (1997).[2] The data was recorded in a data collection form.

Water from the borehole and surface water in the area was sampled for fluoride and the colorimetric method was used in the analysis of the fluoride levels.

RESULTS: A total of 225 children were included in the study of these 125 were males and 100 were females and the age range was 12-15 years with a mean of 13.28±1.11SD. The prevalence of caries was 39.1% and the mean DMFT of the sample population was 1.51 ±2.25SD. The mean decayed component was 1.48 and none of the children had any filled teeth. The mean DMFT of the children with fluorosis and those without fluorosis was 1.44 and 1.55 respectively. Dental fluorosis was present in 50.7% of the sample population, of all the teeth examined 51.9% scored TFI score 0, while 40.4% scored TFI score1-4 and 8.7% scored TFI score ≥5.The fluoride levels in surface water were 0.2ppm and 3.6ppm in the borehole water. There was no association between caries experience and dental fluorosis, the odds ratio was 1.080(95%CI 0.6-1.8). The distribution of the CPI scores among the children showed that CPI score 0(healthy), CPIscore1 (gingivitis) and CPI score2 (gingivitis and calculus) were present in 24.4%, 51.6% and 75.6% respectively. The children with fluorosis tended to have a higher prevalence of gingivitis and there was a statistical significant difference in the occurrence of gingivitis in all sextant except the upper right and lower anterior when the teeth with fluorosis and those without were compared. The more severe the level of fluorosis the higher was the risk of gingivitis.

DISCUSSION: The prevalence of dental caries was 39.1% with none of the children having any filling done .The lack of any dental restorative treatment on any of the children could be due to the low dental health awareness and inaccessibility to dental health facilities and unaffordability of restorative treatment due to the low income earned by the parents. The

x

lower prevalence of dental fluorosis could be explained by the fact that 67.1% of the respondents used surface water for domestic use, which had low fluoride concentration (0.2ppm.) The children in need of periodontal treatment were 76%, the high treatment need could be due to low dental health awareness and poor oral hygiene practice. The higher prevalence of gingivitis among the children with dental fluorosis could be hypothesized to be due to the pitting and rough surfaces, which are not easily cleansable.

CONCLUSION: The prevalence of dental caries was 39.1% while the DMFT was 1.51± 2.25SD with a mean decayed component of 1.48 and there were no filled teeth. The prevalence of dental fluorosis was 50.7% and the fluoride levels were 3.6ppm in the borehole water and 0.2ppm in the surface water. CPI score 1(gingivitis) and CPIscore2 (gingivitis and calculus) were respectively scored by 51.6% and 75.6% of the children examined. There was an association between dental fluorosis and periodontal disease and there was no association between dental fluorosis and dental caries.

RECOMMENDATION: Implementation of preventive oral health programs in the study area as well as provision of accessible dental health facilities. Provision of alternative source of water through initiation of community based water supply programs. Recommend future studies to establish the relationship between dental caries and fluorosis based on the surfaces of the teeth examined.