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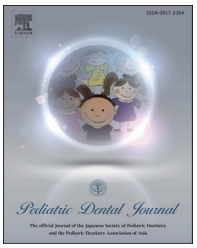

Original Article

Sociobehavioural risk factors of dental caries among selected adolescents in Ibadan, Nigeria

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ABSTRACT

Objective: The objective of this study was to determine the influence of sociodemographic and behavioural factors on the prevalence of dental caries among the adolescents in Ibadan.

Method: Multistage sampling method was used to select participants from six secondary schools. In each school, an arm was selected randomly from each class and 30 students also randomly chosen per arm, with equal distribution of males and females. A structured questionnaire was administered. It consisted two parts, the first part assessed information on the sociodemographic characteristics, oral health behaviours and snacking habits of respondents, while the second part consisted of intra-oral examination to determine the caries status and oral hygiene (OH) levels of respondents.

Result: The age range of the participants was 10–19 years with a mean of 13.73 ± 2.02 years. The father's level of education had a statistically significant association with dental caries; prevalence of dental caries was high in the 10–14-years age group, in children of parents from high socio-economic (SE) class, those who reported brushing twice daily, those with poor OH and those who ate snacks in between their meals.

Conclusion: This study reveals that high SE status, poor OH and daily consumption of biscuits were important factors in caries experience among the school children studied.

1. Introduction

Several biological, behavioural and sociodemographic factors need to be considered when assessing an individual's level of risk for dental caries development. Basically, dental caries occurs due to demineralization of enamel and dentine by organic acids formed by bacteria in dental plaque acting on cariogenic diets; it occurs through anaerobic metabolism of sugars derived from diet [1]. However, saliva, which is supersaturated with calcium and phosphate, favours remineralization, thus making the process reversible in its early stage.

Previous caries attack has been reported to be a risk factor in caries development; children who have caries in their primary teeth in infancy or as toddlers tend to develop additional decay in their primary teeth and are also more likely to develop dental caries in their permanent dentition [2]. The direct linkage of frequent exposure to sugar with dental caries

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has been firmly and irrefutably established by several evidences, especially the Vipeholm study [3]. The frequency and types of snacks consumed out of conventional meal times, and in particular the content of sugars and starch, are important factors in the demineralization process [4]. However, some studies found a low association between the frequency of intake of sugars and occurrence of dental caries [5–7]. Apart from sugar, other factors such as nutrition, the number of meals and snacks consumed each day, education and motivation, fluoride, socio-economic (SE) status, ethnicity, oral hygiene (OH) status and use of sweeteners other than sucrose, have all been studied [8]. Other authors have stressed the importance of psychosocial determinants in the occurrence of caries [9,10].

Studies [11,12] have also suggested that toothbrushing is an important determinant of caries prevalence. Konig [13] reported that the marked decrease in caries prevalence among the children in The Netherlands is attributed to the rapid spread of good OH habits and the use fluoride toothpaste.

Evidence from sub-Saharan Africa has shown a higher prevalence of dental caries in subjects from urban and upper SE background [14–17]. Enwonwu [18] and Mandel [19] observed that the prevalence of dental caries in developing countries increased with increasing socioeconomic status (SES), while in developed countries, it decreased with increasing SES.

Other factors reported to be associated with caries risk include the pattern of dental clinic attendance [20] and gender [21]. Children who visited the dentist for a routine check had significantly lower caries experience [20]. Females demonstrated statistically higher decayed/missing/filled (DMFT) levels than males [21].

In Ibadan, there had been no documented study investigating the likely risk factors of dental caries. This study therefore aimed at determining the influence of sociodemographic and behavioural factors on the prevalence of dental caries among the adolescents in Ibadan.

2. Materials and method

Using a multistage sampling method, participants were selected from six secondary schools in the local government areas (LGAs) of Ibadan, the capital city of Oyo State, South Western region of Nigeria. The number of schools for the study was determined by a proportionate method; a school was selected from each LGA, with an extra school taken from the LGA which had almost twice the number of schools found in the others.

However, the sampling frame and approval to carry out the study were obtained from the Ministry of Education with permission taken to administer questionnaires and carry out the non-invasive oral examinations on the students. From the selected schools, consent was given by the principals to give out questionnaires to the students who fell within the age range studied (10–19 years). In each school, an arm was selected randomly from each class and 30 students also randomly chosen per arm, with an equal distribution of males and females. Consequently, a total of 180 students were chosen from each school and given the questionnaire to take home for parental consent.

The questionnaire was pretested on 15 students from a nearby school, not among the schools used for the study. The structured questionnaire consisted of two parts. The first part assessed information on the sociodemographic characteristics of the respondents, their oral health behaviours and snacking habits. The students were asked to report the frequency of consumption of their most favourite snacks with options such as biscuits, sweets, cakes, etc. The second part consisted of an intra-oral examination to determine the caries status and OH levels of the students.

On the day of the examination, only students who gave their assent after their parents had consented were examined by the two authors (DMA, A-BIMF) who had earlier been familiarized with the use of World Health Organization (WHO) recommendations [22] for oral health surveys. The teeth surfaces were first wiped off with cotton wool in order to remove food debris. A tooth was said to be carious if there was a cavity in its pits, fissure or smooth surface and if there was undermined enamel or a detectable softened floor or wall on examination with a blunt probe. No periapical radiograph was taken. In addition, the OH status was determined using the OH index of Green and Vermillion [23] and OH levels were categorized into good, moderate and poor. The level was said to be good when the mean score of the debris and calculus indexes was between 0 and 1.9, moderate when the mean was 2.0–3.9 and poor when it was $\geq$4.0.The students were examined seated either in their classrooms facing bright natural daylight or outdoor under the light. Examination was done visually. Inter- and intra-examiner reliability was also done using 20 students from an arm not selected in one of the schools used for the study. The students were re-examined 2 weeks after the initial examination and the Kappa score obtained.

The participants' parental occupation was categorized into executives, civil servants, semi-skilled and unskilled (a modified categorization by Famuyiwa and Olorunshola [24]) based on the specific occupation written by the student. The social class of each participant was then calculated using the summation of the father's and mother's educational and occupational levels divided by four [25].

2.1. *Data management*

Data analysis was done using SPSS version 19.0. Frequency tables were generated for various categorical variables. Description statistics including chi-square and Student's *t*-test were employed and the level of statistical significance set at $\leq$0.05.

3. Results

A total of 1080 questionnaires were given to the students out of which 914 correctly filled questionnaires were returned by respondents whose parents consented to the study. The age range of the participants at the time of examination was 10–19 years with a mean of 13.73 $\pm$ 2.02 years standard deviation (SD). The male to female ratio was approximately 1:1. The majority of the children (61.1%) claimed to come from high SE class (Table 1).