Section A-Research paper

Prevalence and factors related to dental caries among pre-school children: A cross-sectional study

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ABSTRACT

Background: When it comes to children's health, dental caries is one of the biggest issues worldwide. Few epidemiological studies have examined the prevalence of dental caries in preschoolers. This study's goal is to identify the prevalence of dental caries in pre-schoolers and the variables that contribute to its development.

M**ethods:** Children between the ages of three and six were included in a cross-sectional research of 400 preschoolers to determine the prevalence of dental caries in this age range.

Results: "Caries prevalence was 60% of which decayed teeth constituted 73.7%. A significant association was found between dental caries and following variables: age group of 4-years (p-value < 0.021, 95% Bias corrected CI 0.043-0.451) and 5-years (p-value < 0.007, 95% Bias corrected CI 0.049-0.765), presence of dental plaque (p-value < 0.001, 95% Bias corrected CI (−0.510)-(−0.250)), poor oral hygiene (p-value < 0.000, 95% Bias corrected CI (−0.456)-(−0.176), as well as consumption of non-sweetened milk (p-value < 0.044, 95% Bias corrected CI 0.059-0.359)."

Conclusion: Half of the preschoolers had dental caries, and many of them didn't get the care they needed. It was shown that there was a correlation between caries occurrence and kid age, drinking of non-sweetened milk, dental plaque, and lack of oral hygiene.

Keywords: Dental caries, Prevalence, Pre-school children

INTRODUCTION

When it comes to children's oral health, dental caries is one of the most pervasive and dangerous problems in the world [1]. Caries, as described by the World Health Organization (WHO), is "the localized, post-eruptive, pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity." The main maxillary anterior teeth and posterior teeth are hit most by this quickly spreading illness in preschoolers [2]. The mandibular anterior teeth fare better because their faster rate of saliva generation washes away the food and water that bacteria require to grow. Dental caries [3] is caused by a complex interaction between the host (tooth), the substrate (food with a high sugar content), the bacteria, and time. Most cases of tooth decay may be traced back to a diet high in sugary foods and the germs they attract [4]. The primary microorganisms that cause dental caries include Streptococcus mutans, Lactobacillus, and related bacteria such Veillonella spp, Actinomyces spp, and Bifidobacterium spp [5].

Low socioeconomic status, underweight children [5, 6], breastfeeding, a changing lifestyle, and poor parental eating patterns [4, 7] are also risk factors for dental caries in young children. Dental cavities are undeniably a major problem for people's teeth and gums nowadays. If left untreated, it may result in a damaged tooth, excruciating pain, and disruptions in the development of the permanent (secondary) set of teeth, which can cause undesirable shifts in bite alignment.

Preschoolers might benefit from early intervention via the use of control and preventative measures if we had a better idea of the incidence of dental caries among them. Their oral health would improve, they'd have their teeth for longer, and they'd be able to enjoy a better standard of living as a result. Therefore, the goals of this study are to (1) assess the prevalence of dental caries in a population that is rarely surveyed (children aged 3-6) and (2) determine the factors associated with caries burden in children of the same age.

METHOD

Children enrolling in a subset of preschools between the ages of three and six were eligible for the study if they had deciduous dentition. However, children older than six with permanent dentition, those with periodontal disease, and those with congenital malformations were not. Therefore, a diagnostic examination for dental caries was conducted using the universal dmft index [7] with a sample size of 400 children aged 3 to 6 years old who regularly attended kindergartens for interviews to assess their oral hygiene and eating habits. Caries were diagnosed using the World Health Organization's criteria [8], whereas dental plaque and cleanliness were evaluated visually rather than using a validated index since it was not the primary purpose of the research. The dmft index was used to classify caries severity as i. Very mild (one tooth), ii. Mild (two to three teeth), iii. Moderate (four to five teeth), and iv. Severe (six or more teeth) [23]. Depending on the kid's demeanor, dental exams were performed with the youngster sitting in a regular chair or on his or her knees. The inspection used a CPI probe and an autoclavable sterilized mouth mirror. Careful handling of the probe ensured that the healthy enamel surface was not compromised while confirming the presence of caries. The tooth was labeled "good" just in case. Absolutely no x-rays were taken.

Each child's diet and hygiene habits were assessed via an in-depth interview and physical examination conducted by a single dentist with at least two years of expertise. The head examiner was compared to a gold standard examiner before the research began. To verify the accuracy of the initial diagnosis, twenty children were re-examined two weeks later. Accordingly, results of 93% and 90% were achieved for intra- and inter-examiner percent agreement, respectively, utilizing the "Kappa" test as a way of assessing agreement.

Statistical Procedures for the Social Sciences, Version 20 was used for data entry and analysis. Descriptive statistics, including means and frequency distributions, were gathered for the study's variables. To further investigate the covariates with a significant p-value and rule out probable con-founders, multivariate logistic regression was performed.

RESULT

Out of 400 pre-school children examined, 295 were girls and 105 boys with a mean age of 4.01 (±0.55). Males averaged 5.1 years of age and females 4.0 years, although the difference was not statistically significant. Caries was found to be prevalent amongst 60% of the sample population, with 73.7% of decaying teeth, 8.2% of missing teeth, and just 3% of filled teeth.

"Table 1 Distribution of variables regarding cumulative dmft

Variable	Frequency	Percent
dmft (cumulative):	240	60%
Decayed	295	73.7%
Missing	33	8.2%
Filled	12	3.0%

Those consuming non-sweetened milk had less chances [p-value <0.044, 95% Bias corrected CI 0.059-0.359) of tooth decay than those who consume milk with added sugars. (Table 2)

Table 2 Conditional multivariate logistic regression with random effects logistic regression

Variables	Conditional univariate logistic regression		Random effects logistic regression	
	p-value	95% Confidence interval	p-value	95% Confidence interval
Age category				
3 years	Ref	-	-	-
4 years	0.104	0.756-1.441	0.021	0.043-0.451
5 years	0.156	0.726-2.756	0.007	0.049-0.765
Poor oral hygiene				
Yes	Ref	-	-	-
No	0.000	0.567-0.725	0.001	(−0.510)-(−0.250)
Presence of Dental Plaque				
Yes	Ref	-	-	-
No	0.001	0.590-0.915	0.001	(−0.456)-(−0.176)
Non-sweetened Milk				
Yes	Ref	-	-	-
No	0.044	1.001-1.579	0.006	0.059-0.359"

DISCUSSION

To this day, dental caries is still regarded as the most common kind of permanent tooth decay in children [9]. Preschool children may avoid dental cavities with the help of little extra care and attention. Preschool dental caries have been linked to four distinct factors: less time spent

brushing teeth under parental supervision, longer duration of breastfeeding, older age of the child, and more children in the family.

Half of the children in the study population (those aged 3 to 6) had dental caries in their primary dentition, which is in line with WHO/FDI objectives for 2000 that specified that half of children aged 5 to 9 should be caries free[10]. However, when the biological consequences and cost of treating the condition are taken into account in light of our current low-budget healthcare system, the proportion becomes much more worrying.

Total dmft score was based primarily on the number of decayed teeth, then the number of missing teeth, and finally the number of filled teeth. Most studies show proportions similar to one another[1,11]. High treatment costs, a lack of affordable dental services, and parents' misunderstandings about the importance of keeping baby teeth could all be to blame for the fact that most kids don't get their teeth fixed, while the kids who do get dental work usually opt for extractions rather than fillings.

Recent studies reported likewise [6,12]; Perhaps this is because, at such a young age, kids need their parents more than anybody else to take care of their teeth and gums. Children's dmft scores improve as they go up the age range from three to six years old[10,12]. This rise in caries may have multiple causes, such as children spending more time in their oral environment as they get older, a shift from home-prepared, nutritious food to the unhealthy snacks and junk food readily available in school canteens, and less parental involvement in tooth-brushing practices. Dental plaque and a lack of good oral hygiene have been linked in several studies to an increased risk of cavities. [13].

Even though adding sugars to milk can reduce its protective properties, studies have found no statistically significant difference in caries experience between children who drank flavored sweetened milk and those who drank plain milk [14]. The correlation between tooth brushing, sugary beverage consumption, and sugary food consumption was minimal. Drinking milk without sugar additives was demonstrated to have a favorable (protective) affect on the caries experience of preschool children, which is likely owing to the protective substances included in milk, such as calcium, phosphates, casein, lactoferrins, and so on. [15].

The study's shortcomings include the potential for inaccurate findings owing to reporting bias among the study's youngest participants and the researchers' inability to interview the participants' parents about their kids' oral practices.

CONCLUSION

Non-sweetened milk has been shown to protect against tooth decay, and we know that age, dental plaque, and poor oral hygiene all play a part in caries development.

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