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الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة الرازي
الدراسات العليا
كلية العلوم الطبية

***Dental Caries: Prevalence and Associated Factors
Among Primary Schoolchildren in Sana'a City-Yemen***

*Thesis Submitted to the Department of Community Health and Nutrition,
College of Medical Sciences, Al-Razi University as A partial Fulfillment for
MSc. Epidemiology.*

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**تسوس الاسنان: الانتشار والعوامل المرتبطة بين اطفال المدارس
الابتدائية في مدينة صنعاء -اليمن**

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COMMITTEE DECISION

CERTIFICATE

This is to certify that the thesis entitled "*Dental Caries: Prevalence and Associated Factors Among Primary Schoolchildren in Sana'a city-Yemen*" which Submitted to the Community Health and Nutrition department, College of Medical Sciences, Al-Razi university for the award MSc. degree in Epidemiology. It is a recorded of the original and bona fide thesis work carried out by *Seham Ahmed Abdulwali Azazy* under our guidance. Such material as has been obtained from other sources has been duly acknowledged in the research. This thesis embodies the work of the candidate himself and no part thereof has been submitted for any other degree.

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DEDICATION

This thesis is dedicated to:

My Parents,

*I could never have done this without your faith,
Support, Sacrifices and constant encouragement.*

*Thank you for giving me the opportunity
to have the best education I could, and the strength to
believe in myself and in my dreams*

To my Brothers and Sister,

Essam ,Hesham ,Maram

*who always give me
endless encouragement and support*

To all My Friends

who have supported me throughout this journey

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LIST OF ABBREVIATIONS

Abbreviations	Definition
WHO	World Health Organization
NCD	Non-communicable disease
GBD	Global Burden of Disease Study
USDHHS	United State Department of Health and Human Services
NHANES	National Health and Nutrition Examination Survey
USA	United State of America
ADA	American Dental Association
ADACCS	American Dental Association Caries Classification System
CDC	Centers for Disease Control and Prevention
CHO	Chemical Abbreviation for an Aldhyde Group
CI	Calculus Index
DI	Debris Index
dmft	decayed, missing and filled teeth index
DMFT	Decayed, Missing due to caries and Filled primary teeth
dt	Decayed teeth in primary teeth
DT	Decayed teeth in permanent teeth
et	Decayed primary teeth indicated for extraction
ECC	Early Childhood Caries
Ft	Filled primary teeth
FT	Filled Permanent teeth
GTFs	Glucosyltransferase
ICDAS	International Caries Detection and Assessment System
mt	Missing primary teeth due to caries
MT	Missing Permanent teeth due to caries
MS	Mutans Streptococci
NCOHS	National Child Oral Health Survey
OHI-S	Oral Hygiene Index-Simplified
SES	Socioeconomic Status
SPSS	Statistical Package for the Social Science
USA	United State of America
UAE	United Arab Emirates

ABSTRACT

Background of the study

Dental caries is a major public health problem globally. It is the most common noncommunicable disease that influence the overall health of children.

Objective of the study

The objective of this study was to determine the prevalence of dental caries and the associated risk factors among primary schoolchildren aged from 7 to 12 years in Sana'a City.

Methods

A descriptive, cross-sectional study was conducted among primary schoolchildren in Sana'a city-Yemen, from September to November 2020. A sample size of 340 of primary schoolchildren (151 Males and 189 females) ages from 7 to 12 years old was included in this study selected by using multi-stage cluster random sampling method from ten public and private primary schools. Data was collected by using the WHO oral health survey questionnaire as face-to-face interview with children. Questions were included the demographic, oral hygiene practices and dietary habits. Dental examination was performed by using the WHO criteria and dental caries was assessed by using deft scores for detection of caries in primary dentition and DMFT for permanent dentition. The relationship between factors and the dental caries prevalence was measured by using χ^2 -tests as appropriate. Two-tailed, $p < 0.05$ was considered statistically significant.

Results

The study results showed that the caries prevalence of primary teeth, permanent teeth, and mixed dentition among primary schoolchildren was 86.2%, 78.8%, and 82.5%, respectively. Overall, mean/SD deft score of both males and females was (4.5 ±3.1) and (4.3±2.8) respectively. The overall mean/SD DMFT score of both males and females was (2.3±1.8) and (0.04±.3) respectively. No significant association between males and females was shown ($P > 0.05$). A significant association in the prevalence of dental caries by age groups in both primary and permanent teeth as well as among public and private schoolchildren was present ($P < 0.05$). Regarding parent's education and occupation there was no significant association neither in the primary teeth nor in the permanent teeth. Increased number of family members > 6 appeared to have a high prevalence of dental caries which was also significant association in the permanent teeth ($P < 0.05$). A significant association in the prevalence of dental caries, teeth brushing and using of fluoride toothpaste in both primary and permanent teeth was reported ($P < 0.05$). The caries prevalence of primary teeth respective to sleeping without teeth brushing showed a significant association in both primary and permanent teeth. There was no significant association ($P > 0.05$) in terms of using dental floss and visiting the dentist and prevalence of dental caries in both primary and permanent dentitions. A significant association regarding the caries prevalence of permanent teeth and frequency of drinking milk, tea, coffee with sugar was noticed ($P < 0.05$). A significant association ($P < 0.05$) was seen in caries prevalence of permanent teeth and oral hygiene index.

Conclusions and Recommendations

The present study showed that the prevalence of dental caries was found to be high among primary schoolchildren in Sana'a city. This data is important for planning of future oral health prevention and treatment programs targeting young children in primary schools.

Oral health education in primary schools is recommended to increase general oral health awareness among school children.

الخلاصة

خلفيه الدراسة

يمثل تسوس الأسنان مشكلة صحية عامة رئيسية على مستوى العالم، ويعتبر أكثر الأمراض غير السارية شيوعاً التي تؤثر على الصحة العامة للأطفال.

الهدف من الدراسة

هدف هذه الدراسة هو تحديد مدى انتشار تسوس الأسنان وعوامل الاختطار المرتبطة بين اطفال المدارس الابتدائية من عمر 7-12 سنة في مدينة صنعاء.

منهجية الدراسة

أجريت دراسة وصفية مقطعية-عرضية بين أطفال المدارس الابتدائية في مدينة صنعاء-اليمن، من سبتمبر إلى نوفمبر 2020. شمل حجم عينة على 340 طفل (151 ذكور و189 إناث) تتراوح أعمارهم من 7 إلى 12 عاماً. تم اختيار العينة باستخدام العينة العشوائية العنقودية متعددة المراحل من عشر مدارس ابتدائية حكومية وخاصة. تم جمع البيانات باستخدام استبيان مسح صحة الفم لمنظمة الصحة العالمية كمقابلة وجهاً لوجه مع الأطفال. حيث شمل الاستبيان على البيانات الديموغرافية والنظافة الفموية والعادات التغذوية، كما تم إجراء فحص الأسنان باستخدام معايير منظمة الصحة العالمية. تم تقييم تسوس الاسنان باستخدام deft للكشف عن التسوس في الاسنان الاولية و DMFT للكشف عن الاسنان الدائمة. تم قياس العلاقة بين العوامل ونتائج تسوس الأسنان باستخدام اختبارات مربع كاي حسب الاقتضاء، واعتبرت قيمة P ثنائية الذيل >0.05 ذات دلالة إحصائية.

النتائج

أظهرت نتائج الدراسة أن نسبة انتشار تسوس الأسنان الأولية والأسنان الدائمة والأسنان المختلطة بين أطفال المدارس الابتدائية كانت 86.2% و78.8% و82.5% على التوالي. بشكل عام، كان المتوسط / deft لكل من الذكور والإناث على التوالي (3.1 ± 4.5) و (2.8 ± 4.3) . في حين كان المتوسط العام / SD DMFT لكل من الذكور والإناث (1.8 ± 2.3) و (3.0 ± 0.04) على التوالي. لم تظهر فروق ذات دلالة إحصائية بين الذكور والإناث في هذه الدراسة ($P < 0.05$). يوجد علاقة بين معدل انتشار تسوس الأسنان في الفئات العمرية في كل من الأسنان الأولية والدائمة وكذلك بين اطفال المدارس العامة والخاصة. فيما يتعلق بتعليم الوالدين والمهنة، لم يكن هناك ارتباط لا في الأسنان اللبنية ولا في الأسنان الدائمة. بينت الدراسة الحالية أن زيادة عدد أفراد الأسرة >6 لديهم انتشار مرتفع لتسوس الأسنان والذي كان أيضاً ذا دلالة إحصائية في الأسنان الدائمة ($P < 0.05$). يوجد ارتباط في انتشار تسوس الأسنان وتنظيف الأسنان واستخدام معجون الأسنان بالفلورايد في كل من الأسنان اللبنية والدائمة. أظهر انتشار تسوس الأسنان اللبنية المرتبطة بالنوم دون تفريش الأسنان ارتباطاً كبيراً في كل من الأسنان اللبنية والدائمة. لم يكن هناك ارتباط معنوي ($P > 0.05$) من حيث استخدام خيط تنظيف الأسنان وزيارة طبيب الأسنان وانتشار تسوس الأسنان في كل من الأسنان اللبنية والدائمة. في حين لوحظ وجود ارتباط فيما يتعلق بانتشار تسوس الأسنان الدائمة وتكرار شرب الحليب والشاي والقهوة مع السكر. تم تسجيل دلالة إحصائية ($P < 0.05$) من حيث انتشار التسوس في الأسنان الدائمة ومؤشر صحة الفم.

الاستنتاجات والتوصيات

أظهرت الدراسة الحالية أن انتشار تسوس الأسنان كان مرتفعاً بين أطفال المدارس الابتدائية في صنعاء. تعتبر المعطيات والبيانات في الدراسة الحالية مهمة للتخطيط للوقاية المستقبلية بصحة الفم وبرامج العلاج التي تستهدف الأطفال الصغار في المدارس الابتدائية وعليه يوصى بتنقيف صحة الفم في المدارس الابتدائية لزيادة الوعي العام بين الاطفال.