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Prevalence and Determinants of Dental Caries Among Private Primary School Children in Bahirdar City, North West Ethiopia

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BAHIRDAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH



**PREVALENCE AND DETERMINANTS OF DENTAL CARIES AMONG PRIVATE
PRIMARY SCHOOL CHILDREN IN BAHIRDAR CITY, NORTH WEST ETHIOPIA**

**A THESIS SUBMITTED TO BAHIRDAR UNIVERSITY, SCHOOL OF PUBLIC
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FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF
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Bahir Dar, North West Ethiopia

Assurance of investigator

The undersigned agrees to accept responsibility for the scientific, ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the research and publication of Bahir Dar University

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ACRONYMS/ ABBREVIATION

AIDS	Acquired Immunodeficiency Syndrome
AOR	Adjusted Odd Ratio
CI	Confidence Interval
DMFT	Decayed Missing Filled Teeth
PI	Principal Investigator
SPSS	Social Package for Social Science
SRS	Simple Random Sampling
WHO	World Health Organization

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ABSTRACT

Background: In developing countries including Ethiopia, there is an increase in prevalence of dental carries among school children. In urban areas where there is nutrition transition, the risk for emergence of chronic diseases and dental carries is high. There is limited information in prevalence of dental carries among School aged children in Bahir Dar city.

Objectives: This study aimed to estimate the prevalence and determinants of dental caries among private primary school children in Bahir Dar city, northwest region, Ethiopia.

Methods: Institution based cross sectional study was conducted from April 1, 2017 to May 15, 2017. Multistage sampling technique was carried out to select a total of 706 students. The data were entered using Epi data version 3.1 and analyzed using SPSS statistical software version 20. Bivariable and multivariable logistic analysis were employed. Adjusted Odds ratio with 95%CI was computed to assess the presence and degree of association between dependent and independent variables. Variables with p-value<0.05 were considered statistically significant in this study. Interviewers administered, pretested structured questionnaires' were used to assess dietary habit, demographic, socio economic and behavioral variables and using pretested and structured Prepared by American dental association oral examination checklist were used for dental caries assessment

Results: A total of six hundred one private primary school children aged 6-15 years were participated in this study making response rate of 85%. The prevalence of dental carries among private primary school children was found to be 31.6 %.(CI; 28.01%-36.79%) and the mean of DMFT was 1.32. Age less than 10 years (AOR=1.254, 1.25-2.72), tooth brushing with tooth paste (AOR=0.41, 0.2-0.82) and mothers' having illiterate (low grade) educational status 0.67(0.58, 0.77) were associated with dental caries.

Conclusion and recommendations:

Education and awareness on tooth brushed with paste, for illiterate mothers and children's specially whose age less than ten (10) years and dental visit to the nearby clinic should be given for children's to prevent and control dental caries.

Using all methods of diagnosis of dental caries and assessment of knowledge, attitude and practices of children and their mothers on tooth brushed with tooth paste should be recommended.

Keywords: Dental carries, School age, Private School, Bahir Dar

1. INTRODUCTION

1.1 Background

Dental caries is the localized destruction of susceptible dental hard tissues by acidic by-products from bacterial fermentation of dietary carbohydrates(1)and infectious microbiologic disease of the teeth in which *Streptococcus mutans* is considered to be the main etiological agent, which leads to localized dissolution and destruction of the calcified tissues. It is the most commonly seen oral disease which shows a striking geographic variation, socioeconomic patterns and severity of distribution all over the World(2).

It is one of the most prevalent chronic and preventable diseases among primary school children in the world(3, 4)and the main cause of tooth loss developmental defects of enamel, dental erosion and periodontal disease in which diet plays a significant etiological role in dental erosion(4, 5). It is occurring on a world basis where the prevalence of caries is declining in developed countries, to moderate and low and increasing in less developed countries and an epidemic in countries with emerging economy(6). These increases are in children in primary and permanent teeth, and include coronal and root surfaces.(7)

1.2 Statements of the problems

Dental caries is the most common chronic adverse health condition among primary school children caused by the interaction of bacteria mainly streptococcus mutans (2, 7, 8). It forms through a complex interaction over time between acid-producing bacteria and fermentable carbohydrate, and many host factors including teeth and saliva..(4)

According to World Health Organization (WHO), dental caries is ranked as third most prevalent yet non transmittable oral disease that affects person irrespective of their demography and it ranges 60%-90% among school aged children(5, 6). A number of western developed countries had shown remarkable decline among prevalence and severity of dental decay and continually growing of caries free individuals over past two decades, through various public health campaign (2, 7).

Dental caries development data from recent studies, in all European countries showed a general trend towards a further decline for children & adolescents, however in several countries with already low caries prevalence in primary teeth there was on a further decrease(8, 9) but in some central & eastern European countries caries prevalence in children and adolescents were still high(10, 11).

In developing countries, until recent years the levels of dental decay were found to be lower, but currently the trend has been changed due to increase consumption of sugars and inadequate exposure to fluoride supplements(7) and there has been an increasing of its severity from low to moderate(11, 12) and that is increasing in certain developing countries and more than 90% of caries is untreated. The level of caries is higher for the primary dentition than the permanent dentition for children of developing countries(13).

In Ethiopia, according to evidences prevalence of dental caries becomes a public health problem (14, 15). There are evidences in which dental caries is common in high income families and in Ethiopian Context commonly high income families enroll their children in private school and the information of magnitude of dental caries in private school is limited. As far as my knowledge is concerned there is limited information in magnitude of dental caries and its determinants among private school students. Hence, assessing of dental caries among private school students is important to design appropriate intervention.

1.3. Significance of the study

Dental Caries is the emerging and prevalent public health problem among primary school children in developing countries including Ethiopia.

As far as my knowledge is concerned there is limited of information on magnitude and determinants of dental carries among private school children in Bahir Dar city.

Hence, assessing the magnitude of dental carries among school aged children provides an evidence for intervention in tackling the problem, evidence on magnitude and associated factors of dental carries among private school children to be used as an input for program planner to design intervention to tackle dental carries among school aged children. More over it will be used as an input for further research.

2. LITERATURE REVIEW

2.1. Magnitude of the problem

Based on a study conducted in US African refugees children, 51.3% experienced caries and 48.7% with untreated decay(16).The Study conducted in Portuguese showed, dental caries prevalence was 72.1% and its prevalence was associated with the child's age, parents' educational level and residence rural and Urban area(11).

The study done in Saudi Arabia revealed that there was high prevalence of dental carries and around 34.37% of the subjects surveyed brush their teeth at least twice a day, and only 24.31% of the respondents don't know about the fluoridated tooth pastes. with significantly high prevalence Among subjects who consume sweets more than twice a day compared to those who consume sweets once or less(17).In developing countries where fluoride is not available and populations have more opportunity to consume free sugars and other fermentable carbohydrates, the prevalence of decay is increasing (18).

The study done in Maharashtra, dental caries was observed80.92%.the caries prevalence in boys' was 39.62% and in girls was 41.32%(19). The study conducted in Nairobi revealed, the overall prevalence of dental caries that included both permanent and deciduous teeth was 50.3%. However, the prevalence of dental caries in the permanent dentition was 44.5%(20) .

A study done in Addis Ababa showed the prevalence of dental caries among young adolescents was 47.4%(21) and in Finote Selam the overall prevalence of dental caries was is 48.5%(16). The study in Gondar town revealed that 36.3% of school aged children's had dental carries(14) and study done in Bahir Dar revealed 21.8% of dental carries among school aged children(15).

2.2. Factors associated with dental caries among primary school aged children.

Dental caries: is a localized, progressive distraction of teeth which is caused mainly by

Organic acids, produced by microorganisms on the tooth surface that ferment carbohydrates,

Particularly sugars. These factors include

Demographic Factors: age and sex are factors of dental caries(6, 12)

Dietary habit: Study of population living primarily on starchy foods but consuming little sugar have found low caries rates. Starch can cause caries but much less than caused by sugar. Stable starchy foods, such as potatoes, pasta, rice and bread, are considered little threat to teeth.(1, 15, 18, 21).

Socioeconomic factors: Family income and educational backgrounds of parents.(11, 21-23).

Behavioral factors: Oral hygiene is the maintenance of a state of normal health in the mouth taken as a whole enabling its function namely mastication deglutination, phonation and esthetic properties to be carried out with maximum efficiency. Daily tooth brushing and proper dental care help prevent and reduce tooth decay and, as studies showed that there is a relationship between frequency of brushing and dental caries.(15, 21, 24).

3. CONCEPTUAL FRAME WORK

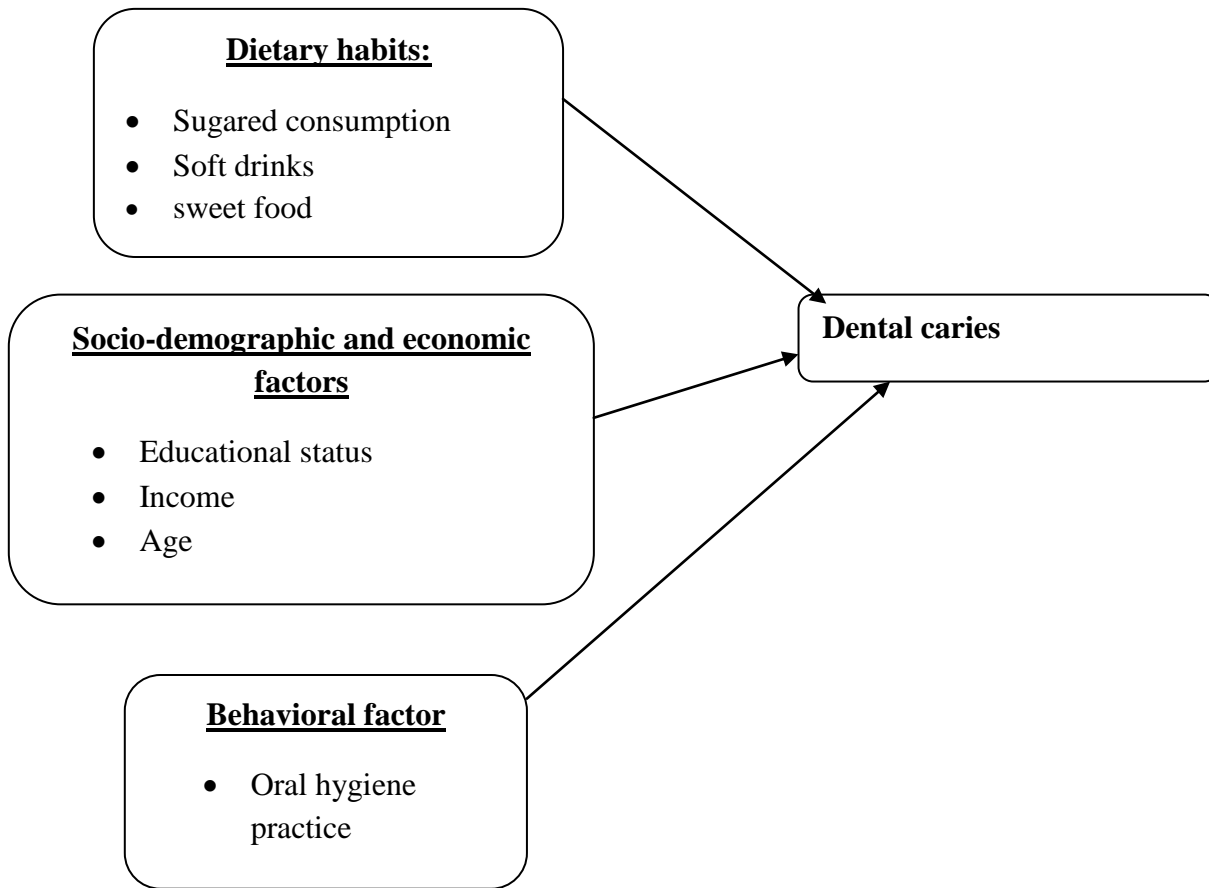


Figure 1: Conceptual framework of prevalence and determinants of dental caries among private primary school aged children in BahirDar city, North west Ethiopia, 2017(1, 15, 16).

4. OBJECTIVES

4.1. General objective

To determine the prevalence and determinants of dental caries among private primary school children in BahirDar city, north Ethiopia, 2016/17.

4.2. Specific objectives

1. To determine the prevalence of dental carries among private primary school children.
2. To identify associated factors with dental caries among private school children.

5. METHODS

5.1 Study Design

Institution based cross sectional study was conducted from April, 01, 2017 to May15, 2017.

5.2 Study area and Period

The study was conducted among private primary school aged children in BahirDar city from April 1, 2017 to May 30, 2017. BahirDar city is the capital city of Amhara national state, which is found in the northern part of Ethiopia, faraway 563Kilometer from Addis Ababa and those population is 220,344 living with eighteen kebeles or ninesub cities .The city comprises different religious, economic backgrounds &cultures& in this city there are 32 privateprimarieschools. From these 9 (nine) schools are first cycle primary school that is from grade one (1) grade4 (four) and 23(twenty three) are both first cycle and second cycle (from grade5-grade 8) primary schools.

5.3 Source Population and Study

Sourcepopulations were all private primary school aged children who are attending elementary schoolinBahirDarcity and private primary school children selected by multistage simple random sampling techniques were study population.

5.4 Inclusion criteria

Private primary school children attending in the school during the study period.

5.5 Sample size& sampling techniques

5.5.1Sample size

The sample size wererecalculated by EPI Info 7 for single population proportion based on the following assumption of taking 21.8% prevalence of dental carries among school children from previous studies carried at BahirDar in 2014 among primary students, At 95% confidence level with margin of error 4%, 15%non-response rate 1.5 designeffect providesa total sample size of 706students were be included in the study.

5.6. Sample procedure and Sampling techniques

Multistage sampling technique was used for this study. The primary sampling units are all 32 private schools in BahirDar city and from these 11 schools were selected by using simple random sampling and samples were proportionally allocated for each school. The secondary sampling units are students from these primary private schools. Students were proportionally allocated and systemic random sampling was used to select a total of 706 students.

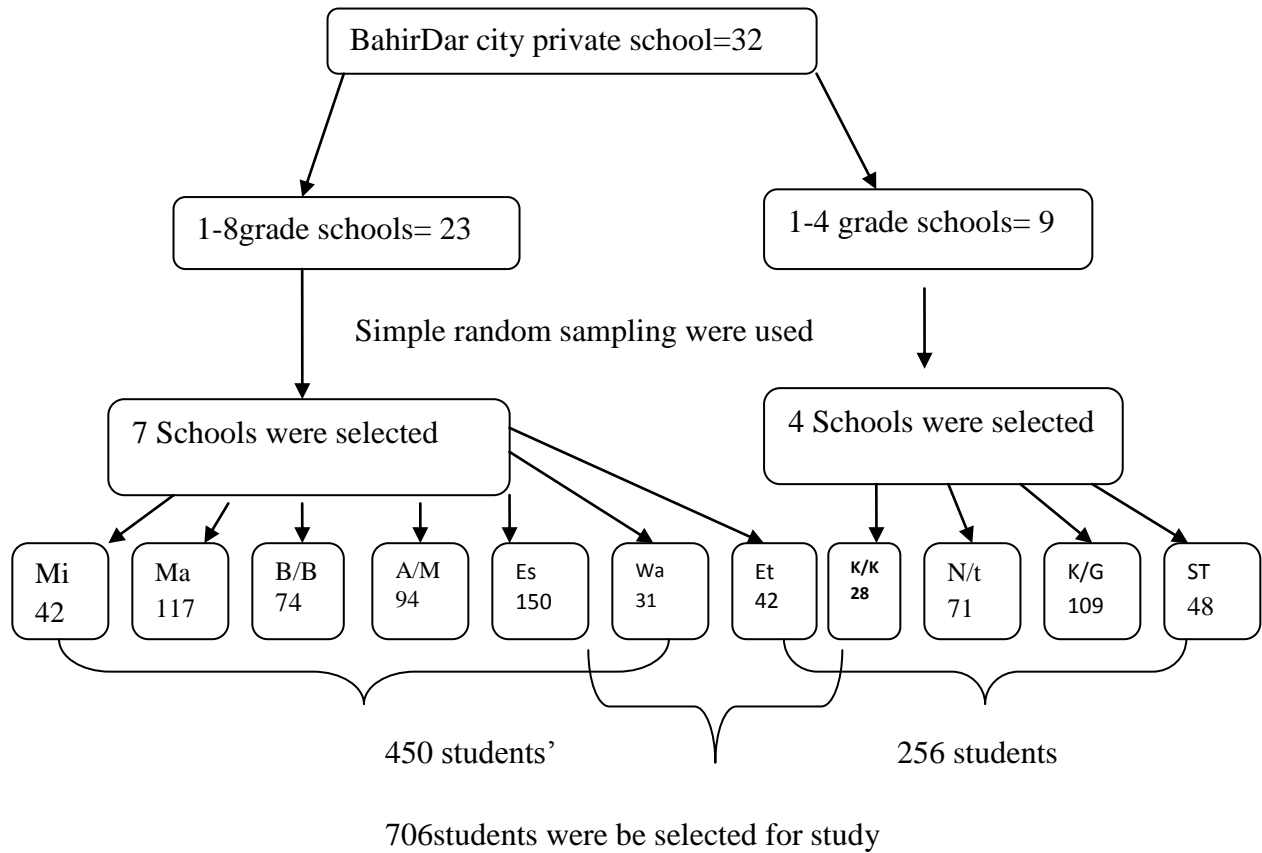


Figure.2Sampling procedure.

By using systematic random sampling, N/n , K number wasfound, then using SRS to find the starting number, 706 studentswere selected in the class.

5.7. Study variables

Dependent variables

- ✓ Dental caries (yes/no)

Independent variables

- ✓ Demographic factors, socioeconomic factors, behavioral factors and dietary habits.

5.8. Operational definition

Dental caries: when there is a cavity New lesions, Smooth surface caries, Deep pits and fissures and DMFT which is diagnosed by visual examination/probing of the mouth and Measured by the presence or absence of the above conditions(14).

DMF: Index per person: It is the average number of permanent teeth which are decayed(D),missing (M),filled (F)because of caries it is a quantitative expiration of life time caries of expiration of an individual.(12)

5.9. Data collection procedures

Data was collected by using pretested and structured oral examination checklist. The oral examination was performed by qualified dental professionals with degrees in dental health science and trained for data collection. The examination was carried out using a glove and wooden spatula in natural light. Basic hygienic procedures were observed during oral examination, and sterile examination materials were used for each study participant. The teeth were examined for dental caries by the presence of decay (D), missing (M) and filled teeth (F). Dental caries experience was measured by calculating the mean number of DMFT (decayed, missing, or filled tooth).

Interviewers administered, pretested structured questionnaires' were used to assess dietary habit, demographic, socio economic and behavioral variables.

5.10. Data quality control

To assure the quality of the data collecting instruments, properly designed and standardized questionnaire and caries risk assessment check list for dental caries prepared from American dental caries association tools were used and pre-test were done on 5% of students or 35 respondents were done. Training was given for data collectors and supervisors.

5.11 Data Processing and analysis

Data were cleaned; coded, entered using EPI-data and analyzed using SPSS version 20 software, Bi-variable and Multivariable logistic regression analyses were employed. Adjusted Odds ratio with 95% CI was computed to assess the presence and degree of association between dependent and independent variables. Variables with $p\text{-value} < 0.05$ were considered statistically significant in this study.

5.12. Ethical Consideration

Ethical clearance was obtained from Ethical review committee of College of Medicine and Health Sciences, BahirDar University. A written consent were be obtained from children's parents/or legal guardians of those parents and from schools' director and the students before dental examination and filling the questionnaire. The study participants have the right to refuse from the study at any time and confidentiality was kept appropriately. The aim of the study was explained for each parents/or guardians, schools 'directors and for the students. There was no any personnel identification on the questionnaire& examining checklists. Cases of dental caries wereadvised to attend the nearby dental clinic. No risk and special benefit from this study. Wemet and took permission with their parents and consent the questionnaires' to be filled.

6. RESULTS

Socio-demographic characteristics of the respondents.

A total of six hundred one private primary school children aged 6-15 years were participated in this study making response rate of 85%. The prevalence of dental carries among private primary school children in BahirDar city was found to be 31.6 %.(CI; 28.01%-36.79%).

Four hundred sixty three, (57.9%) were females. Three hundred seventy seven (62.7%) of the children were in the age group of 6 to 10 years. The mean (\pm SD) age of the children was 10.14(\pm 2.14) years. The majority, 505(84%) of children, were Amharain ethnicity and 438(72.9%) were Orthodox Christian in religion. Two hundred four (33.9%) mothers attained grades 12 and above, while 329 (54.7%) of fathers were above grade 12 in their educational status. The majority, 593 (70.4%) of children were in first cycle education. Seventy-five (12.5%) families were earned below 1000ETB? per month (Table 1).

Table 1 Socio-demographic characteristics of children and their parents at BahirDar Private School, Northwest Ethiopia July 2017(N=706)

Variable	Frequency	Percentage (%)
Age of the child		
6-10	377	62.7
11-15	224	37.3
Sex of the child		
Male	253	42.1
Female	348	57.9
Ethnicity		
Amhara	506	84.4
Oromo	53(4)	8.8
Tigre	41	6.8
Religion		
Orthodox	438	72.9
Muslim	146	24.3
Protestant	10	1.7
Catholic	6	1
Others	1	
Marital status of parents		
Single	25	4.2
Married	527	87.7
Divorced	44	7.3
Widowed	5	0.8
Educational status of mother		
Illiterate	40	6.7
Writing and reading	94	15.6
1-6 grades	77	12.8
7-12 grades	186	30.9
12 and above	204	33.9

Con't---Table 1 Socio-demographic characteristics of children and their parents at BahirDartown, Northwest Ethiopia July 2017

Variable	Frequency	Percentage (%)
Educational status of father		
Illiterate	5	0.8
Writing and reading	53	8.8
1-6 grades	66	11
7-12 grades	148	24.6
12 and above	329	54.7
Monthly Income		
<500	11	1.8
501-1000	64	10.6
1001-1500	152	25.3
>1500	374	62.2

Food consumption pattern and dietary habits of children

Of the total five hundred sixty two (93.5%) of the children had three times meal schedule per day. Four hundred sixty Six(77.5%) had breakfast bread with tea, 482(80.2%) and 531(88.4) had lunch and dinner injera respectively. One hundred six (17.6%) ate snacks three times per day. Five hundred seventy seven (96%) of the subjects drunk tea with sugar, 494 (82.2%) of the children used to drink soft drinks and 478 (79.5%) used to consume sweet foods and drinks. Among the sweet food consumers, 268 (44.6%) took once a week (Table 2).

Table 2 Food consumption pattern and dietary habits of children aged between 6–15 years, BahirDar private school, North West Ethiopia, July 2017(N=706)

Variable	Frequency	Percentage (%)
Frequency of meal		
Once per day	11	1.8
Twice per day	24	4
Three times per day	562	93.5
Four times and above	4	0.7
Type of food for breakfast		
Bread with tea	466	77.5
Injera with wot	83	13.8
Kinche	6	1
Pourage	3	0.5
Others	43	7.2
Type of food for lunch		
Bread	12	2
Injera with wot	482	80.2
Pasta	65	10.8
Kinche	1	
Pourage	6	1
Others	35	5.8
Snack frequency		
Three times per day	106	17.6
Twice per day	112	18.6
Once per day	106	17.6
Occasional	277	46.1
Consumption of sugared tea		
Yes	577	96
No	24	4

Con't.....Table 2, Food consumption pattern and dietary habits of children aged between 6–15 years, BahirDarprivateschool, North West Ethiopia, July 2017

Variable	Frequency	Percentage (%)
Consumption of sugared coffee		
Yes	173	28.8
No	428	71.2
Consumption of soft drinks		
Yes	494	82.2
No	107	17.8
Consumption of sweet foods and drinks		
Yes	478	79.5
No	123	20.5
Frequency of sweet foods and drinks		
Daily	64	10.6
2-3 day in a week	123	20.5
Once per week	268	44.6
Occasionally	23	3.8

Factors associated with dental caries problem among children

There was statistically significant association in multivariable logistic regression between dental caries and educational status of the mother (AOR = 0.66, 95%CI, 0.57, 0.76). Dental caries among children whose mothers were above grade 12 were 34% at a lower risk compared to illiterates. Children who had cleaned their teeth with toothpaste were 59% less likely to have dental caries as compared to those who did not clean with toothpaste (AOR = 0.41, 95%CI, 0.2-0.82). The odds of having dental caries was also lower in children whose age greater than ten years as compared to those whose age less than ten years in which children whose age less than 10 years were 1.254 more likely to have dental caries. (AOR = 1.254, 95%CI 1.25-2.72) (Table 3).

Table 3 Factors associated with dental caries among children aged 6-15 years at Bahir-Dar private school, Northwest Ethiopia, July 2017

Characteristics	Dental caries		COR 95% CI	AOR 95%CI
	Yes	No		
Educational status of mother				
Illiterate	17	23	1	1
Writing and reading	45	49	1.127(.589, 2.620)	0.67(0.58,0.77)
1-6 grades	35	42	0.629(.522,2.437)	0.66(0.58,0.76)
7-12 grades	59	127	0.271(.312,1.264)	0.66(0.57,0.76)
>12 grades	34	170	0.804 (0.131,0.860)	0.66(0.57,0.76)
Tooth cleaned by toothpaste				
Yes	20	17	0.52(0.67,1.02)	0.41(0.2,0.82)
No	391	173	1	1
Age of the child				
6-10	241	136	0.56(0.39,0.82)	1.254(1.25,2.72)
11-15	170	54	1	1

7. DISCUSSION

This study demonstrated that, the overall prevalence of dental caries among private primary school child was found to be 31.6%. The finding of this study is consistent with the study done in North Gondar (14) but lower in BahirDar governmental primary school(15), the study done in Addis Ababa (21)and Finote -Selam.(16).The variation in prevalence of dental caries in this study might be due to study area, data collection methods, income and educational status of the children's parents.Hence the previous studies were in community and governmental schools. The finding of this study is also lower than the study conducted in Portuguese in prevalence of dental caries 72.1%(11),A study done on Maharashtra in the prevalence of 80.92%(19) and in Nairobi 50.3%(20) . The variation might be due to population, feeding habit and living area but the finding of this study is higher than the study done in Nigeria which was 24.1%(14).This variation might be due to the different in knowledge, attitude and practice and dental health consideration and the awareness level of most of Ethiopians` family including BahirDar private primary school students' family is low.

The mean DMFT in this study is 1.32 which is relatively comparable with the previous study done in Finote Selam town which was 1.23(16).

In this study the age of children were significantly associated with dental caries in which children's less than 10 years were more likely to have dental caries and children's greater than 10 years and this evidence is supported by other studies (14, 21). This might be due to the fact that ,when children's' age increases there might be good self care practice such as tooth brushing ,properly and adequate use of brushing with toothpasteand selection of feeding style were considered to have less likely dental caries when the age of children increased.

Educational status of the mother was found to be protective against dental caries which is in agreement with others studies(15, 16).The possible reason might be educated mothers might have awareness about the risk of sweet food and soft drinks which might be the cause of dental caries.

In this study, performing tooth cleaning with tooth paste was found to be protective against tooth decay. The finding of this study is supported by other studies done in Ethiopia (15, 21, 24).

In most studies dental caries is strongly related with income but the finding in this study showed no significant association between dental caries and income (15). The possible reason may be the difficulty in measuring the daily (monthly) income because parents were not volunteer to tell the exact income when collected the data.

8. Limitation of the study

This study is not far from pitfalls of cross sectional study. Dental caries cases were identified only with clinical diagnosis, difficulty of radiological examination at field level might reduce the actual magnitude of the problem. With regard to risk factors Sweet food items and drinks were assessed by the usual patterns and/frequency of intake but the amount and the duration of intake was not well assessed. Income was not estimated using Household asset

9. CONCLUSION

The study showed that dental caries were high among private primary school children in Bahir Dar city. Educational status of the mother, age of the child and cleaning teeth with tooth paste were the associated factors for dental caries.

10. RECOMMENDATIONS

To schools and parents

Education and awareness on tooth brushed with paste, for illiterate mothers and children's specially whose age less than ten (10) years and dental visit to the nearby clinic should be given for children's to prevent and control dental caries.

For researcher

Further studies using all methods of diagnosis of dental caries and assessment of knowledge, attitude and practices of children and their mother on tooth brushed with tooth paste should be recommended.

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12. ANNEX

Consent form

Letter to get permission from school Director

To school director

Title of the study:

I am a student at BahirDar University college of Medicine and Health Science department of Public Health pursuing master's Degree in general public Health.

Your school has been selected to participate in the study. The purpose of the study was to assess the prevalence and determinants of dental caries among primary school children in Bahir Dar city private schools. Results that were obtained from this study were used to propose school based on assessment methods for prevention of dental caries among primary school children. In this study children's oral examination were carried for determining the prevalence of dental caries. There were no straight benefits for participating in the study. But the study was obtain the information on prevalence and risk factors of dental caries. The study was recommended preventive measures that can be adopted by schools or parents to prevent dental caries. Please note that your school's participation in this study was voluntary and you had a right to refuse to consent. If you consent for your school to participate you had the right to withdraw your school from the study at any time if you wish to do so.

There were no risks or discomforts involved in this study. Children were assessed for dental caries.

Names of examined children were not appeared on the questionnaire and no record of their participation as individuals were kept confidential.

I confirmed that I have read carefully and understood the information provided and consent for my school to participate in the study. I am aware that I can freely withdraw my school from this study any time I wish to do so.

Signature of the participant (Head Teacher) _____

Date: _____

Signature of Researcher _____

Date _____

Consent form from parents/care givers before interviewing

Greetings!

How are you, I am------. I am working my post Graduate thesis research in Bahir Dar university college of Medicine and Health Science department of Public Health; I would like to ask you a few questions about your children's oral hygiene practice, your income, and your willingness for your child participation in our study. We were taken oral hygiene examination of your child. We were also asked you about your Childs' dietary habits amoral hygiene practice.

This were helped us to know the prevalence anddeterminants of dental caries among school age children which helped to evidence on designing effective treatment and prevention of primary school aged children in Bahir Dar based on the information you and your child provided.

Name were not be written in this form and were never be used in connection with any Information you tell us. All information given by you and your child were kept strictly Confidential. Your participation was voluntary and you were not obligate to answer any question which you didn't wish to answer. If you filled discomfort to respond to the questioner, please fill free to stop filling the form.

This questionnaire was taken about 15 minutes.

Could I have your permission to continue?

1. If yes, continue to fill the question.
2. If no, stop filling the question by writing your reason for refusal.

Informed consent Certified by

Data collector: Code-----Name-----signature-----

Name of investigator: EnanuTigabu

Phone no +2510918708041

Email;

Thank you!!

Verbal assent form before examining dental caries for the students.

Greeting

How are you, I am----- . I am working my post Graduate thesis research in BahirDar university college of Medicine and Health Science department of Public Health; I would like to ask you a few questions about your oral hygiene practice, feeding habits, income, and education status and your willingness for your child participation in our study. We were examined dental caries from you.

This were helped us to know the prevalence and risk factors of dental caries among primary school children which helps to evidence on designing effective treatment and prevention of primary school children dental caries in Bahir Dar based on the information you and your child provides.

Name was not written in this form and was never used in connection with any Information you told us. All information given by you and your child were kept strictly Confidential. Your participation is voluntary and you are not obligate to answer any question which you do not wish to answer. If you fill discomfort to respond to the questioner, please fill free to stop filling the form.

This questionnaire was taken about 15 minutes.

Could I have your permission to continue?

1. If yes, continue to fill the question.
2. If no, stop filling the question by writing your reason for refusal.

Caries Risk Assessment Checklist

Dentist's name-----Date-----

Child's code----- school-----first assessment Yes/No

Risk factors / Indicators	Please circle the most appropriate answer.	
A "YES" in the shaded section indicates that child is likely to be at high risk of or from caries.		
<ul style="list-style-type: none"> • Age 4-6with dmft>2orDMFT>0 	Yes	No
<ul style="list-style-type: none"> • Age7and over with active smooth surface caries(cavitated or non cavitated) on one or more permanent teeth 	Yes	No
<ul style="list-style-type: none"> • New caries lesion in the last12 months 	Yes	No
<ul style="list-style-type: none"> • Hypomineralisd permanent teeth 	Yes	No
<ul style="list-style-type: none"> • Medical or other conditions where dental caries could put the patient's general health at increased risk. 	Yes	No
<ul style="list-style-type: none"> • Medical or other conditions that could increase the patient's risk of developing dental caries. 	Yes	No
<ul style="list-style-type: none"> • Medical or other conditions that may reduce the patient's ability to maintain the oral health, or that may complicate dental treatment. 	Yes	No
The following indicators should also be considered when assessing the child's risk of developing caries.		
<ul style="list-style-type: none"> • Age 7-10 with dmft>3orDMFT>0 	Yes	No
<ul style="list-style-type: none"> • Age 11-13with DMFT>2 	Yes	No
<ul style="list-style-type: none"> • Age 14-15 with DMFT >4 	Yes	No
<ul style="list-style-type: none"> • Deep pits and fissures in permanent teeth. 	Yes	No
<ul style="list-style-type: none"> • Full medical card 	Yes	No
<ul style="list-style-type: none"> • Sweet snacks or drinks between meals more than twice a 	Yes	No

day.		
Protective factors		
A "No" in this section indicates the absence of protective factors which may increase the child's risk of developing caries.		
• Fissure sealants	Yes	No
• Brushes twice a day or more	Yes	No
• Use of toothpaste containing 100 ppm F or more	Yes	No
• Fluoridated water supply	Yes	No/don't know
Is this child at high risk of or from caries	Yes	No

Amharic Version of Participant's Consent and Information Sheet

ባህሪ ዳርዳራ ኒሽርስቲቴጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የጥናቱና የፈቃደኝነት መግለጫ ቅጽ

ለ ----- ት/ቤት ዳይሬክተር

የጥናቱ ስም:- የጥርስ መበስበስና መንስኤዎቹ

ጤና ይስጥልኝ!

ስሜ-----

ይባላል። እዚህ የመጣሁት በባህሪ ዳርዳራ ኒሽርስቲቴጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት መስክ የድህረ ምረቃ ተማሪ የሆነችውን ወ/ሮ እና ኑጥ ጋቡን ወክቤሲ ሆን የጥርስ መበስበስና ተያያዥ መንስኤዎችን በግልትምህርት ቤት ተማሪዎች ላይ ለማጥናት ነው።

የእርስዎ ትምህርት የጥናቱ ተሳታፊ ሆኖ ተመርጧል።

የጥናቱ አላማ የጥርስ መበስበስ መኖሩና አለመኖሩን በትምህርት ቤቱ ውስጥ ባለ-ተማሪዎች ላይ ለማጥናት ነው። የጥናቱ ውጤት ትምህርት ቤትን ማዕከል ያደረገ የተማሪዎችን የጥርስ መበስበስ ይከላከላል።

በዚህ ጥናት ተማሪዎቹ ጥርሳቸውን በጤና መታዘብ ላይ ተኝ እንዲታይ ይደረጋል ለተሳታፊዎች የተለየ ጥቅም አይደለም። ይሁን እንጂ ጥናቱ ስለ ጥርስ መበስበስና ተያያዥ መንስኤዎቹ መረጃ ይሰጣል። ጥናቱ የጥርስ መበስበስ መከላከያ መንገዶችን በትምህርት ቤት ወይም በወላጆች እንዲለመድ ያደርጋል። እባክዎ የትምህርት ቤቱ ተማሪዎች ፈቃደኝ እንዲሆኑ ያደርጉልን። በጥናቱ ያለ መሳተፍ መብት አላቸው። ትምህርት ቤቱ ለመሳተፍ ስምምነት ንዝደረገ በኋላ ከፈለገ የማቋረጥ መብት አለው። ምንም እይነት የሚጎዳ ነገር የለም። ተማሪዎቹ የጥርስ መበስበስና አለመበስበስን ይታያሉ።

የሚወሰዱት መረጃዎች በሚስጥር ይያዛሉ የተሳታፊው ስም በመጠየቁ ላይ አይጠቀስም።

የተሳታፊው ትምህርት ቤት ዳይሬክተር ፊርማ -----

ቀን -----

የአጥኝው ስም -----

ቀን -----

ባህሪ ዳርዳራ ኒሽርስቲቴጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የጥናቱና የፈቃደኝነት መግለጫ ቅጽ
ለወላጆች ወይም ላሳዳጊዎች
የጥናቱ ርዕስ፡- የጥርስ መበስበስና መንስኤዎቹ

ጤናይስጥልኝ!

ስሜ-----

ይባላል፡፡ እዚህ የመጣሁት በባህር ዳርዩኒቨርሲቲ በህብረተሰብ ጤና የትምህርት መስክ የድህረምረቃ ተማሪ የሆነችውን ወ/ሮ እና ኑጥ ጋቡን ወክዬሲ ሆን የጥርስ መበስበስና ተያያዥ መንስኤዎችን በግልትም ህርት ቤት ተማሪዎች ላይ ለማጥናት ነው፡፡

በቃለ መጠይቁ እንዲሳተፉ እጠይቃለሁ፡፡

በዚህም መጠየቅዎ ማራፊያዎ ፣ ኢኮኖሚያዊ የአባትና የእናት ትምህርት ደረጃ ፣ የገቢ ምንጭ ጭናቶች አመጋገብ ፣ የጥርስ አጸዳድ (አፋፋቅ)

በምን እንደሚያፀዱና እንዴት እንደሚያጸዱ እጠይቃለሁ፡፡ ከሲ/ከሱ የሚገኘው መረጃ በሚስጥር ይጠበቃል፡፡ እንዲሁም ከሲ/ከሱ ስም ጋር አይገናኝም፡፡ በዚህ ጥናት መስክ ለማሳተፍ በቅድሚያ የተሳታፊውን ፈቃደኝነት እንጠይቃለን፡፡

መጠየቆቹ 15 ደቂቃ ይፈጃሉ፡፡

ልቀጥል ፈቃደኝነት አዎ መጠየቆችን ይሙሉልን፡፡

ፈቃደኛ አይደለሁም ክንያቱን ይጻፉልን

ዳታ ሰብሳቢ ኮድ -----

ስም -----

ፊርማ -----

ስ.ቁ -----

የአጥኝ ስም -----

ስ.ቁ -----

አድራሻ -----

እና መሰግናለን!

ባህር ዳርዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የጥናቱና የፈቃደኝነት መግለጫ ቅጽ

ለተማሪዎች የስምምነት ቅጽ

የጥናቱ ርዕስ:- የጥርስ መበስበስና መንስኤዎቹ

ጤናይስጥልኝ!

ስሜ-----

ይባላል፡፡ እዚህ የመጣሁት በባህር ዳርዩኒቨርሲቲ በህብረተሰብ ጤና የትምህርት መስክ የድህረምረቃ ተማሪ የሆነችውን ወ/ሮ እና ኑጥ ጋቡን ወክዬ ሲሆን የጥርስ መበስበስና ተያያዥ መንስኤዎችን በግልትም ህርት ቤት ተማሪዎች ላይ ለማጥናት ነው፡፡

በቃለ መጠይቁ እንዲሳተፉ ፈቃደኝነትዎን እጠይቃለሁ፡፡

የምንጠይቃቸው ጥያቄዎች ስለጥርስን ጽህፈት ስለአመጋገብልሁም ድ፣ የቤተሰብ የገቢ ምንጭ፣ የትምህርት ደረጃን ይሆናል፡፡ እዚህ የተወሰደው መረጃ የጥርስ መበስበስ መንስኤዎችን ለመከላከል መረጃ ይሰጣል፡፡ በዚህ መጠይቅ ላይ ስም አይጻፍም የሰጡት መረጃ በሚስጥር ይያዛል፡፡

ተሳትፎ ወትበ ፈቃደኝነት ላይ የተመሰረተ ይሆናል፡፡

ፈቃደኝነት ላይ ማቆም ይችላሉ፡፡

ካቆሙ ምክንያቱን ይጻፉ -----

15 ደቂቃ የሚፈጅ መጠይቅ ነው፡፡

ፈቃደኝነት አዎ ይቀጥሉ

አይደለሁም ምክንያቱን ይጻፉ -----

English Questionnaire: Dental caries

Date _____

Identification .No _____

Section-1 A .Socio demographic Information			
S. No	Question	Option/ answers	SKIP
01	Age of the child	[] []	
02	Sex	1. male 2. female	
03	Ethnicity (parents)	1. Amhara 2. tigray 3. Oromo 4. Others (specify).....	
04	Religion (parents)	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Other (specify).....	
05	Marital status of parents	1. Single 2. Married 3. divorced 4. widowed	
06	Educational status of mother	1. illiterate 2. writing and reading 3. 1-6 grades 4. 7-12 grades 5. Above 12 grades	
07	Educational status of father	1. illiterate 2. writing and reading 3. 1-6 grades 4. 7-12 grades 5. Above 12 grades	
08	family income in Eth Birr		

Section 2- information on food habits

09	Frequency of meals of your children	<ol style="list-style-type: none"> 1. Once per day 2. Two times per day 3. Three times per day 4. Four times or more per day 	
10	What type of food do you give usually for breakfast for your child?(for the last one month) (Circle that apply)	<ol style="list-style-type: none"> 1. Bread with tea 2. Injera /wot or firfir/ 3. Kinchie 4. Pourage 5. Other (specify)..... 	
11	What type of food do you give usually for lunch for your child?(for the last one month) (Circle that apply)	<ol style="list-style-type: none"> 1. Bread 2. Injera /wot or firfir/ 3. pasta 4. Kinchie 5. Pourage 6. Other (specify)..... 	
12	What type of food do you give usually for dinner for your child?(for the last one month) (Circle that apply)	<ol style="list-style-type: none"> 1. Bread 2. Injera/wot or firfir/ 3. pasta 4. Kinchie 5. Pourage 6. Other (specify)..... 	
13	Snacking frequency of your children	<ol style="list-style-type: none"> 1. About 3 times a day or more 2. 2 times a day or more 3. About once a day 4. Occasionally not every day 5. Rarely or never eat between meals 	
14	Does your child drink sugared tea?	<ol style="list-style-type: none"> 1. yes 2. No 	

15	If yes, how many caps of tea does your child drink in a day?	Number of caps _____	
16	Does your child Drink sugared Coffee?	1. Yes 2. No	
17	If yes, how many caps of Coffee do you drink in a day?	Number of caps _____	
18	Does your child take soft drinks?	1. Yes 2. No	
19	If yes, how many soft drinks does he/she drink in a week?	Number of caps _____	
20	Does your child eat sweet food staff like Cake, Cookies, honey and Others?	1. Yes 2. No	
21	If yes, how many times does the child take in a week?	1. Daily 2. 2-3days in a week 3. Once a week 4. sometimes 5. others _____	

Section 3: - information on oral hygiene practice			
22	Do clean your teeth?	1. Yes 2. No	
23	If yes, when do you clean your teeth?	1.before meal 2.After meal 3. Before and after meals. 4. No fixed time.	
24	Way of cleaning Do you clean your teeth?	1.Yes 2. No	
25	If yes, What materials use to clean?	1. Tooth stick 2.Tooth brush with paste 3. Charcoal 4. Rinsing with water 5. Other means	

የአማራጭ መጠየቅ

ተ. ቁ		
1	የህጻኑ ወይም የህጻናት ልጅ	
2	የታ	ወንድ
		ሴት
3	ዘር	1. አማራ 2. ትግራይ 3. ሌላ
4	እምነት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላም
5	የወላጅ የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ያገባች/ 3. የፈታ/ች/ 4. ወንድ/ሴት/ሌላ ጤ
6	የባት የት/ት ደረጃ	1. የማያነብ 2. ማንበብና መጻፍ ሚ ችል 3. ከ1-6 ክፍል 4. ከ7-12 ክል 5. ከ12 በላይ
7	የእናት የትምህርት ደረጃ	1. የማይችል 2. ማንበብና መጻፍ

		<p>ምቸል</p> <p>3.ከ1-6 ክፍል</p> <p>4.ከ7-12 ክል</p> <p>5.ከ12በላይ</p>
8	የቤተሰብ የገቢ ምንጭ	በኢትዮጵያ የሥራ ገቢ
9	ምንጭ ስንት ጊዜ በቀን ትመገባለህ/ሽ/	<p>1. አንድ ጊዜ በቀን</p> <p>2. ሁለት ጊዜ</p> <p>3. ሶስት ጊዜ</p>
10	በቁርስ ለሌላ ጉዳይ የሚመገበው/ት መገበው/ ምን ዓይነት ምንጭ ነው (ለአለፉት አንድ ወራት) አንዱን ያክብቡ	
		1. ዳቦ ሻይ
		<p>2. እንጅራ በወጥ/ፍር</p> <p>ፍር/</p> <p>3. ቅንጨ</p> <p>4. ገንፎ</p> <p>5. ሌላ ም</p>
11	በምሳሌ ጉዳይ የሚመገበው/የምትመገበው ምን ዓይነት ምንጭ ነው ለአለፉት አንድ ወራት	<p>አንዱን ያክቡ</p> <p>1. ዳቦ</p> <p>2. እንጅራ በወጥ/ፍር</p> <p>ፍር/</p> <p>3. ፓስታ</p> <p>4. ቅንጨ</p> <p>5. ገንፎ</p> <p>6. ሌላ</p>

12	ለእራት-በብዛት-የምት-መገበው/ቢው/ ምንአይነት-ምግብነው	<p>አንዱ ንያክቡ</p> <ol style="list-style-type: none"> 1.ዳቦ 2.እንገራበወጥ/ፍር ፍር/ 3.ፓስታ 4.ቅንጨፍ 5.ገንፎ 6.ሌላ
13	በቀንመቅሰስየምት-መገበው/ቢው/ ስንት-ጊዜነው	<ol style="list-style-type: none"> 1.ሶስት-ጊዜበቀን (ከዚቦላይ) 2.ሁለት-ጊዜበቀን (ከዚያቦላይ) 3.አንድ-ጊዜበቀን 4.አልፎአልፎ
14	ሻይበስኳርይጠጣል/ለች/	<ol style="list-style-type: none"> 1.አዎይጠጣል/ለች/ 2.አይጠታም/አትጠጣም/
15	አዎከሆነስንት-ኩባያ	በቁጥር
16	ቡናበስኳርይጠጣል/ለች/	<ol style="list-style-type: none"> 1.አዎይጠጣል/ለች/ 2.አይጠጣም/አትጠጣም

17	አዎከሆነስንትኩባያ	በቁጥር
18	ለስላሳመጠጦችንይተቀማል/ለች/	1.አዎየተቀማል/ለች 2.አይጠቀምም/አትተቀምም
19	አዎከሆነስንትኩባያ	በቁጥር
20	ጣፋጭምግቦችንእንደኩኪስማርናሌሎችንይተቀማል/ለች/	1.አዎየተቀማል/ለች 2.አይጠቀምም/አትተቀምም
21	አዎከሆነስንትጊዜበሳምንት	1.በቀን 2. ከሁለትእስከሶስትቀንበሳምንት 3.አንድጊዜበሳምንት 4.ሌላ
22	ጥርሱንያፀዳል /ለች/	አዎያፀዳል/ለች/ አያጸዳም /አታፀዳም/
23	አዎከሆነመቸ	1.ከቁርስበፊት 2.» በኋላ 3.» በፊትናበኋላ 4.የወሰነሰአትየለውም
24	ጥርሱንያጠዳል/ለች/	አዎያፀዳል /ለች/ አያፀዳም/አታፀዳም/

25	አዎከሆነበምንድንነው የሚያፀዳው/የምታፀዳው/	1.በመፋቂያ 2.በቡርሻእናሳሙና 3. በከሰል 4.በሌላመንገድ
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