

**THE EFFECT OF MOTHERS' ORAL HEALTH RELATED KNOWLEDGE,
ATTITUDE AND BEHAVIOR ON THE ORAL HEALTH OF THEIR 6-7 YEAR OLD
CHILDREN IN YEREVAN, ARMENIA**

Master of Public Health Project Utilizing Research Grant Proposal Framework

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Yerevan, Armenia

October 2005

Acknowledgement

I am deeply grateful to all those people who have contributed to my study at the American University of Armenia and guided me during working on the proposal for their commitment and enthusiasm.

I would like to express my deepest gratitude to my primary advisor Dr. Varduhi Petrosyan for her precious advice and consultations that contributed to the improvement of the proposal as well as for support provided to me during the preparation of the proposal.

I also express my acknowledgement to my secondary advisor Dr. Krikor Soghikian for his kindest support and cooperation.

Additionally I would like to express my gratitude to the College of Health Sciences at the American University of Armenia in the person of Dr. Haroutune Armenian, Dr. Michael Thompson and Dr. Grace Sullivan for giving me an opportunity to study at AUA as well as for their support, encouragement and numerous pieces of advice given to me during these two years.

My special thanks and gratitude are addressed to Arpine and Arda Hovnanians and Jirair Turpanjian for their generosity in providing me with the special opportunity of the financial support that I received for the academic years of 2004 and 2005.

A great deal of gratitude is owed to Eliza Kekejian and Patricia Boyle from the Department of English Programs of the American University of Armenia whose encouragement and faith allowed me to withstand difficulties I faced while being a student at the Department of English Program.

I would also like to thank Melissa Brown and Tamara Melkumyan from the Department of English Programs for their readiness to help me in the revision of my proposal, Manushak Aslanyan, who helped me with the translation of this study instrument, as well as to Ani Dallakyan from the Turpanjian Center for Policy Analysis at the American University of Armenia for her support and advice during the data analysis of the pilot study results.

Furthermore, I am very thankful to Rimma Stepanyan and Lusine Arakelyan, the principals of kindergartens #4 and #12, for their agreement to conduct the pilot study in these kindergartens as well as those mothers and their children without whom the conduct of the pilot study would be impossible.

I greatly value the understanding, patience and encouragement I have received from the members of my family, my relatives and friends.

Finally, I am thankful to my classmates, especially Hripsime Martirosyan, for their kindest support.

Abstract

Oral diseases are a major public health problem throughout the world. The US Surgeon General described the current oral health situation in the US as a “silent epidemic of dental and oral diseases.” A high risk of oral diseases is mainly related to socio-cultural factors (poor living conditions, lifestyle).

The oral health of children is a significant public health issue. Poor oral health in childhood often continues into adulthood, impacting economic productivity and quality of life.

Oral diseases are mainly preventable, and routine care can detect and correct problems before they become serious. Since most of oral health disorders are not life threatening, they are usually ignored.

In Armenia, there have been several programs aimed at improving the oral health of vulnerable populations. But these programs have been mainly directed to treatment of caries. Prevention and educational activities are still lacking in Armenia.

The Dental Care Project implemented by United Methodist Committee of Relief (UMCOR) in Armenia in 2003 revealed that, on average, four out of five of children had dental problems. A pilot study to examine oral health status of five to seven year old children and to assess their mothers’ oral health related knowledge, attitude and behaviors conducted in Yerevan (2005) revealed that 84% of children needed dental treatment, and 19% of them needed urgent treatment; mean dmft score was 4.10. Sixty-one percent of surveyed mothers had no or poor knowledge on oral health issues.

This project is a Research Grant Proposal aimed to determine the prevalence of oral disorders (tooth decay and gingivitis) among six and seven year old children, their oral hygiene status (plaque and calculus) and to assess the level of oral health related knowledge, attitudes and behaviors of mothers of these children in Yerevan, Armenia. The goal of the program is to improve the oral health status of Armenian schoolchildren by determining children’s oral health needs, factors affecting their oral health and to contribute to prevention of potential oral health problems through improving the quality of personal dental care and oral hygiene.

The study will be conducted in 12 Yerevan secondary schools. It will utilize cross-sectional one group study design. Multistage cluster sampling technique will be used for selecting study participants. The budget of the program is about 5,315 USD.

The results of the study can serve as the basis for developing and implementing an educational program for children and mothers.

Table of Content

<i>Acknowledgement</i>	i
<i>Abstract</i>	ii
<i>Table of Content</i>	iii
<i>Specific Aims</i>	1
<i>Introduction</i>	2
Background for Armenia	5
<i>Methods</i>	8
Study Design.....	8
Study Population	8
Sample Size.....	9
Sampling Methodology.....	10
Study Variables.....	11
Study Instruments	12
Data Collection	14
Personnel.....	15
Time frame	16
<i>Analysis</i>	16
<i>Ethical Considerations</i>	17
<i>Study Limitations</i>	17
<i>Conclusion</i>	18
<i>References</i>	20
<i>Budget</i>	24
<i>Table 1. Study Variables</i>	26
<i>Appendices</i>	28
Appendix 1. Study Instrument/Questionnaire English.....	29
Appendix 2. Study Instrument/Questionnaire Armenian.....	39
Appendix 3. Study Instrument/OH Screening Form/Schoolchildren	47
Appendix 4. Study Instrument/Oral Hygiene Index Simplified (OHIS).....	48
Appendix 5. Consent Form for School Principals	51
Appendix 6. Consent Form for School Principals	52
Appendix 7. Consent Form for Mothers	53
Appendix 8. Pilot Study Results	54
Appendix 9. OH Screening Form/Preschool Children.....	61
Appendix 10. Glossary of dental terms.....	62

Specific Aims

This project is a Research Grant Proposal for determining the prevalence of oral disorders such as tooth decay and gingivitis among six and seven year old schoolchildren, their oral hygiene status in terms of presence of plaque and calculus and assessing the level of oral health related knowledge, attitudes and behaviors of mothers of these children in Yerevan, Armenia.

The goal of the study is to improve the oral health status of Armenian schoolchildren by determining their oral health needs, main risk factors for poor oral health and to contribute to the prevention of potential oral health problems through improving the quality of personal dental care and oral hygiene. Based on results of the study, recommendations for future actions for improving children's oral hygiene practices and the utilization of oral health services that will lead to improved children's oral health will be made. The results of the study can serve as a basis for developing and introducing an educational program for children and/or their mothers.

The research questions addressed by the proposal are:

- 1) What is the oral health status of children of age six and seven in Yerevan?
- 2) What is the oral health related knowledge, attitudes and behavior mothers of these children?
- 3) Is there an association between children's oral health and their mothers' oral health related knowledge, attitudes and practices?
- 4) What are the main reasons for poor utilization of oral health services?

The study will explore the following hypothesis:

The main reason for children's poor oral health status and poor utilization of oral health services is lack of their mothers' oral health related knowledge and attitudes after

controlling for families' socio-economic status, mothers' age, employment status and education level.

Introduction

Oral health (OH) refers to the condition of the mouth. The mouth includes teeth, gums (gingiva) and their supporting connective tissues, ligaments, and bone, the hard and soft palate, the soft mucosal tissue lining the mouth and throat, the tongue, the lips, the salivary glands, the chewing muscles, as well as the upper and lower jaws [1]. Therefore, oral health has a broader meaning: "oral health means being free of chronic oral-facial pain conditions, oral and pharyngeal (throat) cancers, oral soft tissue lesions, birth defects (such as cleft lip and palate), and scores of other diseases and disorders that affect the oral, dental, and craniofacial tissues" [1].

Oral health and general health are interconnected: oral health can affect general health, and general health can affect oral health. The mouth is considered a mirror and can provide information on the condition of the body [1]. About 90% of systemic diseases have oral manifestation, and sometimes they can be initial signs [2, 3, 4]. A thorough examination of oral cavity can reveal symptoms of nutritional deficiencies, microbial infections, immune disorders, injuries, and some cancers [1, 3, 4]. Poor oral health could also be a result of complications of some chronic conditions, for instance, periodontal disease is considered the sixth complication of diabetes [5].

Oral diseases, in their turn, are considered as risk factors for a number of general health conditions [5]. The consequences of poor oral health can include acute and chronic pain; infections, which may become systemic and contribute to other health problems; impaired eating ability, leading to poor diet and nutritional status; speech difficulties; partial

or total tooth loss in adulthood; negative impact on social and financial well being due to poor appearance; and morbidity and mortality from oral cancer [5].

Several studies have reported about significant associations between oral diseases such as dental decay and gum diseases with other health problems including cardiovascular diseases, diabetes, cancer and chronic obstructive pulmonary diseases (they share common risk factors) [3, 4]. A systemic spread of the specific etiologic bacterial agent *Streptococcus mutant*, responsible for tooth decay disorder, can cause or seriously worsen infections throughout the body, particularly among individuals with suppressed immune systems, heart disease and diabetes [2, 3]. Recent research shows associations between chronic oral infections and low -birth-weight and premature births [1].

In recent years, tremendous changes in the pattern of oral health took place in the world [7]. Current economic policies have contributed to an increase in the number of people living in absolute and relative poverty that can affect the overall health, including oral health [8]. In 2000, the Surgeon General of the United States of America (US) described the current oral health situation in the US, where the prevalence of caries is lower than in other countries, as a “silent epidemic of dental and oral diseases” [1, 9]. Risk of oral diseases is mainly related to socio-cultural factors such as poor living conditions and low education [1]. Besides, many people do not realize the importance of oral health for general health and well being. Even when OH is acknowledged, many consider it separate from their general health [10]. Oral diseases are highly preventable, and routine care can detect and correct problems before they become serious. But most oral health disorders are not life threatening, and majority of people usually ignore them [1].

Children are at the highest risk of having oral diseases [3, 4]. Poor oral health is detrimental for children because it affects their nutrition, growth and development [1]. Childhood oral diseases, if untreated, can lead to pain, development of dentofacial anomalies

and other serious general health problems, loss of school time, low self-esteem, and poor quality of life [9]. Adverse dental experience during childhood may lead to dental phobia that can negatively change the attitudes towards oral health and self-care as well as seeking dental care from professionals for life. Poor oral health in childhood often continues into adulthood, impacting economic productivity and quality of life [9]. In most high-income countries, 60-90% of schoolchildren have dental caries, the most common childhood disease [3, 4]. Statistics indicate that at least one in four five to six year old children experience tooth decay and this figure is above 90% in some low-income countries and countries with economies in transition [5]. According to the Office of the US Surgeon General, tooth decay is five times more common than pediatric asthma, seven times more common than hay fever and is second in prevalence after the common cold in the US [1]. It has been also estimated that an average schoolchildren in the US has at least one cavity in permanent teeth by age nine and three cavities by age 12 [11]. The Decayed, Missing and Filled Teeth index (DMFT) for 12-year-old children is in the Americas 3.0 and in the European region is 2.6 [3]. In the Philippines, it has been reported that dental decay outranks the combined rates of other diseases in the country [12].

The main reasons for this situation are increasing consumption of sugary foods and soft drinks, inadequate exposure to fluorides, poor hygiene as well as the lack of parental knowledge on oral health and effective preventive methods [3, 13]. In many countries, a considerable number of parents have limited knowledge about the causes and prevention of the most common oral disease as well as of the role of fluoride in prevention of dental decay [6]. An oral health survey of children of age two to five and on knowledge, opinions and practices (KOP) of their parents conducted in Washington DC in 1995 among 142 children and 121 parents showed parents' limited knowledge on oral health [14].

Children's health is mainly influenced and determined by their parents [15, 16, 17]. Parents can encourage or discourage particular attitude and behavior in their children [17]. Literature supports mothers' crucial role in evolution of oral health behavior of their preschool children [18, 19]. Some studies found the association between parents' knowledge, attitudes and behavior and their ability to promote appropriate dental health behavior to their children (17). The Norwegian Longitudinal Health Behavior Study (1993) investigated the effect of parental dental health behavior regarding flossing, using toothpicks, toothbrushing, consumption of sugar-free mineral water, and consumption of sugared mineral water on that of their adolescent child [17, 20]. The study showed statistically significant association between the dental health behaviors of parents and their adolescent children at least regarding flossing, toothbrushing, and consumption of non-sugared mineral water. The study also confirmed the important role of mothers in forming their children's behavior and identified mothers as "the family gatekeeper of oral health behavior" (17).

In some western European countries, the priority in public health care is given to children through conducting oral health education campaigns and systematic school-based oral health programs [21]. At the same time, oral health reports indicate the growing burden of oral disorders in low-income countries and countries in transition, where promotion and prevention of oral diseases are currently ignored [5].

Background for Armenia

Oral health services in the former Soviet Union were provided through independent stomatological policlinics for adults and children, stomatological departments and cabinets within general policlinics and hospitals as well as school and kindergarten dental services [22]. These services provided a wide range of free preventive and treatment services to the

population. In accordance with the Resolution # 830 of 1988, preventive activities and planned check-ups should have been strengthened and improved through early detection and treatment of oral disorders [22, 23]. As an effective way of comprehensive prevention, a systematic clinical examination and observation of children's oral cavity was introduced in 1977 [22, 23].

With independence, the health care system in Armenia collapsed. Reforms and changes were implemented in the health care system during the last decade. Decentralization of dental services, privatization, and new forms of financing, planning and management is the main characteristics of these changes [24]. The poor socio-economic situation in the country resulted in elimination of dental services both in the schools and kindergarten and planned examination of oral cavity at large [24, 25]. At present, in the absence of any insurance coverage of the population oral health services by financed in the form of direct out-of-pocket payments [24].

In 2002, the DMFT index among 12-year old children was estimated at 4.5 on average [26]. At the age of 35, the DMFT index was approximately 14 and at the age of 60 there were only 5-6 teeth in the oral cavity [26].

The Dental Care Project implemented by the United Methodist Committee on Relief (UMCOR) in Gegharkunik, Syunik, and Lori marzes of Armenia in 2003, during which 3,411 children were screened, revealed that, on average, four out of five of these children had dental problems [27]. A pilot study to examine the oral health status of five to seven year old and to assess their mothers' oral health related knowledge, attitudes and behaviors was conducted among 31 children and their mothers in two kindergartens in Yerevan in August 2005 [Appendices 8, 9]. The mean number of decayed, missing and filled teeth (dmft index) was 4.10 with the range from 0 to 14. The pilot study also revealed that 84% of the children needed dental treatment, 19% of which needed urgent treatment. Twenty eight percent of

children had never visited a dentist. Sixty one percent of mothers had no or poor oral health related knowledge.

There were several programs aimed at improving the oral health of vulnerable population in Armenia. For example, the Armenian Dental Society of California operated several special programs, and the student council of the Yerevan State Medical University organized health programs that also included dental care [28, 29]. But these programs were mainly focused on treatment of caries; determination of main risk factors for poor oral health, prevention and educational activities are still lacking in Armenia.

Oral health information system should be established in the country. This system will allow analyzing the situation, revealing main risk factors for poor oral health of different groups of the Armenian population, reasons for poor utilization of oral health services as well as providing focused interventions that will benefit these specific groups. To develop educational programs for the population and to provide preventive activities aimed at improving people's oral health, people's oral health needs and main risk factors for poor oral health should be identified.

This proposal is suggested to fill the existing gap. The focus of the study is on children as they are considered a vulnerable population and their mothers as family gatekeepers of oral health, according to the literature. The study seeks to determine the prevalence of oral disorders such as caries and gingivitis among children of age six and seven, their oral hygiene status in terms of plaque and calculus and to assess their mothers' oral health related knowledge, attitudes and behaviors as one of possible determinants of children's oral health. The study will provide reliable data on the oral health status of children of age six and seven in Yerevan and can set a basis for the conduct of future research not only for a particular group but also for the whole Armenian people. Based on the results of the study, recommendations for future actions for improving mothers' and their children's

oral hygiene practice, positively changing their attitudes towards oral health and increasing access to oral health services will be made that will eventually lead to improved children's and mothers' oral health. The results of the study can serve as a basis for developing and introducing educational programs for children and/or their mothers.

Methods

Study Design

As this study aims to provide a snapshot view of six and seven year old children's oral health and their mothers oral health related knowledge, attitude and behavior as well as to explore possible relationship between them and data is to be collected at one point in time, the most appropriate study design for this study is cross-sectional (descriptive and analytical) one group study design [31].

Study Population

The target population for this study is six and seven year old children and their mothers in Yerevan, Armenia. The decision to select children of these particular ages is based on the recommendation of the WHO [30]. According to this recommendation, children should be first examined between their fifth and sixth (sixth and seventh in those countries where children begin attending school at these ages) birthdays since "this age is of interest in relation to levels of caries in the primary dentition that may exhibit changes over a shorter time span than the permanent dentition at other index ages. Five and six years are the ages at which children begin primary school and at which can be easily available for examination."

The study population is the first grade schoolchildren of ages six and seven from 12 schools of Yerevan.

To participate in the study, children should meet the following inclusion criteria:

1. be the first grade schoolchild (six and seven year old);
2. have mothers who are residents of Republic of Armenia
3. have mothers who speak and read Armenian

Those children whose parents are dentists will be excluded from the study.

Sample Size

Sample size calculation is done taking into consideration the study research question and the study design [31]. The first step is calculating the preliminary sample size by using the formula for one group cross-sectional design:

$$n=(z^2_{1-\alpha/2} *P(1 -P))/d^2,$$

where P is the estimated prevalence of the outcome of the interest, d is the level of precision (d=0.08) and z = 1.96 (95% confidence interval), a=0.05 [31].

Data from the Dental Care Project conducted by UMCOR are used for the calculation of the preliminary sample size. According to this project, on average, 80% of children had dental problems (p=0.8, q=0.2):

$$n=(1.96^2*0.8*0.2)/0.08^2=96$$

Then additional adjustments to the calculated sample size are made because of the implementation of a complex sampling design such as multistage cluster sampling [31, 32]. Cluster sampling can produce sampling errors that is higher than those introduced by simple random sampling [31, 32]. Therefore, design effect is taken into account [31]. The estimated sample size of 96 is multiplied by design effect of two, and the sample size equals to 192.

Finally, while calculating the sample size, an adjustment for non-response is also performed [31]. For this purpose, the response rate of the pilot study (78%) is used. By dividing the sample size by this response rate, the ultimate sample size is obtained: **246 children** will participate in the study. Since these children's mothers will also participate in the study, the total number of study participants equals to **492 people** (246 children and 246 mothers).

Sampling Methodology

In the sample selection process, multistage cluster sampling method will be used with random selection of schools and schoolchildren. Cluster sampling technique will allow selecting study participants from all the 12 districts (hamaynks) of Yerevan to have a more representative sample while reducing cost [31]. Clustering along with randomization will also increase the external validity of the results [31].

The manager of the study will first obtain information regarding the numbers of the secondary schools in each hamaynk, their addresses and school principals contact information from the Ministry of Education and Sciences of the Republic of Armenia. Each hamaynk will represent a cluster of schools. Then the manager will randomly select one school from each district for participation in the study; the total number of schools to participate in the study will be 12.

The next step will be selection of the first grade schoolchildren within selected schools after getting school principals' approvals for the conduct of the study. Proportionate number of children appropriate to number of children in a particular school will be selected from the list of all the first grades schoolchildren provided by the school principal.

Study Variables

The dependent (outcome) variables of the study are children's oral health status and utilization of oral health services [Table 1]. The oral health status will be measured by means of:

- 1) the total score of decayed, missing and filled teeth (dmft+DMFT), which is a continuous variable and will be assessed on an ordinal scale;
- 2) the oral hygiene score, which is also a continuous variable and will be assessed on an ordinal scale ;
- 3) the presence of gingivitis that is a binary variable and will be assessed on a nominal scale.

The dmft+DMFT score is a continuous variable and will be assessed on an ordinal scale. DMFT and dmft indexes numerically express the prevalence of dental caries in permanent dentition (32 teeth) [30]. For primary dentition (20 teeth), the corresponding index is dmft. DMFT and dmft is obtained by totaling the number of decayed, missing and filled teeth in adults (in permanent dentition) and in children (in primary dentition), respectively. Since starting approximately from age of six, the first permanent teeth (the first molar or the sixth teeth) erupts and children begin to change their teeth, that is, they have both primary and permanent teeth, the combined dmft+DMFT index will be calculated. The higher dmft, DMFT and dmft+DMFT indexes, the worsen individuals' dental health is. DMFT=0 means that an individual does not have decayed, filled and missing teeth.

The oral hygiene score will be obtained by calculating the Oral Hygiene Index Simplified (OHI-S) [30]. The OHI-S consists of two parts, the Simplified Debris Index (DI-S) and the Simplified Calculus Index (CI-S). They represent numerically the amount of debris and calculus found on the pre-selected tooth surfaces. The CI-S and DI-S values may

range from 0 to 3. As the OHIS is the sum of these two indices, its range is from 0 to 6. The higher the score, the poorer the oral hygiene is.

The oral health services utilization will be assessed separately for mothers and children. Both the utilization of oral health services by mothers and the utilization of oral health services by children are binary variables and will be assessed on a nominal scale as poor if no dental visits were made at all or during the last year and good if mothers and children had at least one visit during the last year.

The independent variables of the study are knowledge score, attitude score and behavior score that measure mothers' oral health related knowledge, attitudes and behavior, respectively, and children's behavior scores that measures children's oral health related behaviors [Table 1]. Knowledge, attitude and behavior scores are treated as continuous variables and will reflect the proportion of correct answers to total knowledge, attitude and behavior related questions, respectively.

The intervening variables of the study [Table 1] are:

- 1) mothers' age, a continuous variable, that will be measured on an ordinal scale;
- 2) mothers' educational level measured as an ordinal variable;
- 3) mothers' employment status measured as a binary variable (yes/no);
- 4) families' socio-economic status as an ordinal variable (low -income, middle -income, high-income).

Study Instruments

For collecting information on mothers' oral health knowledge, attitudes and behaviors, the student investigator has developed an interviewer-administered questionnaire [Appendices 1, 2]. The development of the questionnaire was possible after conducting a

thorough literature review. Attitude and behavior related questions were adapted from oral health questions included in the National Health Surveys in the US [33, 34]. Knowledge related questions were adapted from oral health surveys conducted in other countries [16, 33]. The questionnaire was first developed in English and then translated into Armenian. Back translation into English was done to evaluate the quality of the translation. The instrument changed after pre-testing and piloting it a similar population in August of 2005 in Yerevan.

The main domains of the questionnaire are mothers' oral health related knowledge, attitude and behavior, and the utilization of oral health services. There are 44 questions in the questionnaire on:

- 1) socio-demographic characteristics of the study participants: mothers' and children's personal characteristics (such as sex, age), mothers' education level and employment status, and household income;
- 2) mothers' oral health related knowledge: the role of fluorides in prevention of tooth decay, frequency of changing toothbrushes, age at which a child must begin brushing his/her teeth, and other questions.
- 3) attitude towards oral health: willingness to obtain more information on oral health and to acquire good oral hygiene practice, reliable sources of information, and other questions.
- 4) oral health behavior: the oral health practices of mothers and their children, toothbrushing frequency, health-seeking behavior, eating sweets by children, and other questions.
- 5) utilization of oral health services both by mothers and their children.

The second instrument is the Oral Health Screening Form for Schoolchildren recommended by the WHO [34]. This form will be used for conducting examination of children's dental health [Appendix 3].

The third instrument to be used in the study is the Oral Hygiene Index-Simplex (OHI-S) suggested by Greene and Vermillion in 1964 [30; Appendix 4]; it will examine children's oral hygiene status. The usage of Oral Health Screening Form for Schoolchildren and OHI-S would permit comparison of the results of this study to results of similar studies conducted in other countries.

Data Collection

Before starting the fieldwork, the student investigator will train all the members of the research team: two pediatric dentists and two interviewers. The training will take two days. The dentist will get familiar with screening procedures and the screening forms. The interviewers will have training guides. The training guide will contain information regarding the research objectives, methods, sampling, questionnaire administration and tips for the conduct of the interviews. Each interviewer will have an opportunity to conduct five preliminary interviews.

Data collection will be performed at selected schools. After obtaining school principals' agreement for the conduct of the study, the manager of the study will sample children, and arrange a suitable date and time for the conduct of the interviews with mothers and children's oral cavity examination. Teachers will send informed consent forms to the mothers of children enrolled in the study. School principals will be asked to provide a room with a window where oral health examinations will be conducted since examination should ideally be carried in natural light.

When data collection starts, the manager will provide the dentists with the screening forms and equipment, and the interviewers with the questionnaires, consent forms for school principals and children's mothers as well as the incentives (toothpaste, toothbrushes and

flosses) for children. First, the interviewers will conduct the interviews with children's mothers. Each interview will take approximately 15-25 minutes. Then the examination of children's oral cavity will follow. Kappa statistics will be calculated for inter-dentists reliability. For this purpose, 20% of all children involved in the study will be examined by the both dentists.

The examination of each child will last at maximum five minutes. The dentist will conduct the comprehensive screening of the children's oral cavity and record the results in the screening forms [Appendices 3, 4]. The screening will provide information for computing the dmft+DMFT index and oral hygiene score. After examination, the dentists will fill out forms on the results of assessments for each child [Appendix 5], which will be sent to children's parents.

Personnel

The team of five people will conduct the survey: a study manager, two pediatric dentists and two study assistants. The student investigator will be the manager of the study as well as will perform all necessary financial operations. The manager of the study will select two dentists and two study assistants on a competitive basis. The dentists will conduct the screening of children's oral cavity and record them. The assistants will be recruited from the students of the College of Health Sciences at the American University of Armenia. They will carry out interviews with children's mothers, review of completed questionnaires, data entry and cleaning procedures.

Time frame

The overall duration of the study implementation is three months. During the first month, the manager will settle all organizational issues, conduct the recruitment and training of the staff, and select schools and schoolchildren for the participation in the study. During the second month, data collection (interviews with mothers and children's oral cavity examination) will be carried out, and data entry and cleaning will be performed. The third months of the project implementation will be spent on the data analysis and preparing the final reports.

Analysis

Data analysis will start after the completion of the fieldwork. Upon finishing data collection, the assistants will review and code the questionnaires, perform double data entry and cleaning to assure the accuracy of the data entry. The Statistical Package for Social Sciences for Windows (SPSS 11.0) will be used for these purposes. The data from SPSS will be transferred into STATA 7 by using DBMS/Copy program Version 6.0.

SPSS will be used for obtaining descriptive statistics for socio-demographic characteristics of the study population such as mothers' age, educational level, and employment status and others. STATA will be used for conducting further analysis.

As dmft+DMFT score and oral hygiene score are continuous variables, simple and multiple linear regressions will be used to test association between them and the independent variables. Simple and multiple logistic regression methods will be used for analysis of the binary dependent variables of the study, that is, the utilization of oral health services by

mothers and children, and presence of gingivitis to test associations between these dependent variables and independent variables.

Ethical Considerations

The student investigator has submitted the proposal to the Institutional Review Board (IRB) of the American University of Armenia to obtain the approval for the conduct of the study. After recruiting the staff, the student investigator will organize a special training course for the staff and will provide the staff with the training guides.

The approval of school principals and children's mothers to involve children in the study will be obtained. First, school principals will be contacted and written and oral consent statements will be introduced to them [Appendix 6]. After obtaining their agreement, oral and written consent statements will be introduced to children's mothers [Appendix 7]. The consent forms contain all necessary information on the study aims, the voluntarily nature of participation in the program, issues of confidentiality as well as contact information of the study manager. Only those mothers who agree to participate in the study will be interviewed, and their children's oral cavity examinations will be conducted.

Study Limitations

The limitations of the study can be attributed to selection, instrumentation, and information biases. Selection of study participants from the secondary schools of Yerevan can introduce a selection bias as children from auxiliary schools remain out of the focus of the study. Due to this fact, the results of the study cannot be generalized to the child population even in Yerevan.

An instrumentation bias can result from the fact that student investigator has developed the study instrument-questionnaire. Although the questionnaire was pre-tested and piloted, however, its validity is still under concern.

A possible source for information bias may be a recall bias. The pre-test of the questionnaire and the pilot study showed that some mothers had difficulties with remembering the time of their children first and/or last dental visit, reasons for dental visits. In addition, mothers can underreport or over-report some data. To minimize this, several questions on the same topic are included in the questionnaire. Since two assistants will interview children's mothers, they can introduce some information bias. In this regard, appropriate training of the interviewers will be conducted.

To assure the accuracy of data on children's oral health status provided by the dentists, a special training program will be offered to the dentists, and Kappa statistics will be calculated. As mentioned earlier, 20% of all children will be examined by the both dentists.

Conclusion

Most oral diseases are highly preventable and can be controlled. Nevertheless, oral health diseases are a major public health issue worldwide. Children are at the highest risk of having poor oral health. Poor oral health in childhood affects children's nutrition and can lead, first of all, to the development of dentofacial anomalies and also to different health problems. Reasons for children's poor oral health are diverse. Lack of parental, especially mothers, oral health related knowledge, attitudes and behavior is among the main determinants of poor oral health in children. The pilot study conducted in Yerevan to determine the oral health status of five to seven year old children and to assess their mothers' oral health related knowledge, attitudes and behaviors has demonstrated that children's oral

health is a serious problem and that mothers have no or little knowledge on oral health issues. It also has revealed the need for educational and preventive community-based programs that would improve children's oral health. Therefore, further detailed investigation is needed. That is why this study is suggested.

The main goal of the study is to improve the oral health status of the Armenian children. The first step in achieving this goal is to have reliable data on children's oral health status and to reveal the extent to which children's oral health status is determined by their mothers' oral health related knowledge, attitudes and behaviors.

The budget of study is 5,315 USD. The allocation of resources will make the conduct of the study possible. Based on the results of the study, the student investigator will suggest appropriate recommendations and develop an educational program for mothers and children. The study will also provide reliable baseline data and can serve as a basis for the conduct of future research to identify and evaluate risk factors for poor oral health and to undertake actions to minimize risks for oral diseases.

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Budget

The budget of the study is developed for the three months of its operation and constitutes 5,315 USD [Next page]. It includes personnel cost, operating cost, and project material cost as well as value-added tax (VAT). To calculate personnel costs, consultations with the other project managers has been conducted. While calculating the operating cost, market prices for conducting oral health examination and transportation expenses have been taken into account. The stationary calculations are based on the number of items, such as the number of questionnaires, consent forms, and training packages for the staff, tooth brushes, toothpastes and flosses for the children.

	Quantity	Amount\$/month	Total
Personnel			
Project Manager	1	600	1,800
Dentist	2	250	500
Interviewer	2	150	300
Total Personnel			2,600
Operating Cost			
Office Rent, equipment (computers (2), laser printer (1)),	1	300	300
Transportation		100	100
Office Supplies (pens, pencils, writing pads, etc)		30	90
Total Operation Cost			490
Project Materials			
Questionnaires (250)	2250	0.02	45
WHO Recommended OH Examination Forms (250)	250	0.02	5
Consent forms for principals and mothers, training packages	300	0.02	6
Tooth paste	246	0.8	197
Tooth brushes	246	1.18	290
Dental floss	246	1.55	382
Renting dental equipment		100	100
Mirror, disposable	246	1	246
Gloves (3 set/100)	3	11	33
Solution for instrument sterilization		35	35
Total Project Materials			1,339
Cost		1,581	4,429
Value -Added Tax (20%)		316	886
Overall Cost		1,897	5,315

Table 1. Study Variables

<u>Study Variables</u>	<u>Scale</u>	<u>Measurement</u>
Dependent		
<i>Oral Health:</i>		
dmft+DMFT score	Continuous	The total number of decayed, missing and filled teeth in primary dentition (dmft) and permanent dentition (DMFT)
Oral Hygiene Index	Continuous	The total of debris and calculus scores
Presence of gingivitis	Binary	0-No, 1-Yes
<i>Utilization of oral health services:</i>		
Utilization of oral health services by mothers	Binary	0-No, 1-Yes
Utilization of oral health services by children	Binary	0-No, 1-Yes
Independent		
<i>Knowledge score</i>	Continuous	The proportion of correct answers to total knowledge questions
<i>Attitude score</i>	Continuous	The proportion of correct answers to total attitude questions
<i>Mothers' behavior score</i>	Continuous	The proportion of correct answers related to mothers' behavior
<i>Children's behavior score</i>	Continuous	The proportion of correct answers related to children's behavior

<u>Study Variables</u>	<u>Scale</u>	<u>Measurement</u>
Intervening		
<i>Mothers' age</i>	Continuous (Categorical)	Numbers corresponding to mothers' age
<i>Mothers' educational level</i>	Ordinal	1-incomplete school education, 2-school education 3-college-special education, 4-undergraduate education, 5-postgraduate education
<i>Mothers' employment status</i>	Nominal	0-No, 1-Yes
<i>Families' socio-economic status</i>	Ordinal	1-Low- income, 2-Middle -income, 3-High-income

Appendices

ID _____

Questionnaire on oral health related knowledge, attitudes and behavior of the first grade children's mothers in Yerevan, Armenia

Dear mother,

The aim of this study is to investigate oral health related knowledge, attitudes and behavior of mothers having 5-7-year-old children. You do not need to put your name on it and the answers will be confidential. Please mark only one answer for each question. For the questions that need more than one answer, the instructions are given in the parenthesis next to the question

1. How old are you? _____
2. What is your marital status?
 1. Married
 2. Single
 3. Widow
 4. Divorced
3. Please check your educational level:
 1. Incomplete secondary education (8 year)
 2. Complete 10 years education
 3. Secondary special education
 4. Institute/University
 5. Postgraduate
4. Do you currently work?
 1. Yes
 2. No

5. In your opinion, are oral diseases serious ones?
1. Yes
 2. No
 88. Do not know/Difficult to answer
6. Toothpastes with fluoride are effective in preventing tooth decay.
1. Yes
 2. No
 88. Do not know/Difficult to answer
7. How often do you believe a child should go to the dentist?
1. Every 6 months
 2. Once a year
 3. Whenever needed-no regular schedule
 4. Other _____
 88. Do not know/Difficult to answer
8. At what age should a child start cleaning his/her teeth?
1. As soon as the first tooth appeared
 2. 1-2 years of age
 3. 3-4 years of age
 4. After 4 years of age
 5. When attending a dentist
 6. Other (*specify*) _____
 88. Do not know/Difficult to answer

9. Has a dentist or any of the dental staff ever demonstrated to you how teeth should be cleaned?

1. Yes
2. No

10. How important is oral health to overall health?

1. Very important
2. Somewhat important
3. Not very
4. Not at all important

88. Do not know/ Difficult to answer

11. In your opinion, which of the following is the best method/are the best methods for preventing tooth decay? (**Check all that apply**)

1. Limiting sugary snacks
2. Using fluoridated water and dental products with fluoride
3. Chewing sugarless gum
4. Regular dental visits
5. Proper oral hygiene (brushing and flossing the teeth)

88. Do not know/ Difficult to answer

12. How often do you put off going to the dentist until you have a toothache?

1. Always
2. Sometimes
3. Rarely
4. Never

13. Do you think that you need to learn how correctly clean your teeth?

1. Yes
2. No

14. If your children have signs of tooth decay what do you do?

1. Do not care if no pain
2. Use pills for pain killing
3. Visit to a dentist only in pain
4. Visit to a dentist immediately for dental filling
5. Go to a dentist for extraction of tooth
6. No decayed tooth

15. How often do you pay attention to the condition of your children teeth?

1. Always
2. Sometimes
3. Rarely
4. Never

16. Are you able to access dental services for oral health care when necessary?

1. Yes
2. No

17. About how long has it been since your child last visited a dentist?

1. 6 months ago or less
2. Within past 12 months
3. More that one year ago
4. Never has received dental care (**go to question 18**)
88. Do not remember/Difficult to answer

18. What was the main reason that your child last visited a dentist? **(Please check one)**

1. Regular checkup
2. Something was wrong, bothering or hurting
3. Went for filling tooth/teeth
4. Went for pulling out tooth/teeth
5. Other (specify) _____
88. Do not remember/Difficult to answer

19. During the past 12 months, was there a time when your child needed dental care but could not get it at that time?

1. Yes **(go to question 19)**
2. No **(go to question 20)**
88. Do not remember/Difficult to answer **(go to question 20)**

20. What was the main reason that he/she could not get dental care?

1. Could not afford it because of cost
2. Problem was not serious enough
3. Do not like/trust/believe in dentist
4. Child is afraid of dentist
5. Other (specify) _____

21. How old was your child when he first received dental care?

1. Under 4-year-old
2. 4-year- old and older
3. Never has been at a dentist
88. Do not remember/Difficult to answer

22. How often do you go to the dentist or dental hygienist?

1. At least once a year
2. Twice a year
3. Less than once a year
4. Do not go
5. Whenever needed-no regular schedule
6. Other (specify)_____

23. Do you have a dentist you usually see for care?

1. Yes
2. No

24. How often do you brush your teeth?

1. Every few weeks
2. Every few days
3. Twice a day
4. Once a day
5. Never

25. How would you describe the condition of your child's teeth?

1. Excellent
2. Good
3. Fair
4. Poor
88. Do not know/Difficult to answer

26. How often does your child brush his/her teeth?

1. Brushing once a day
2. Brushing twice a day
3. More than twice a day
4. Seldom
5. Never (**go to question 27**)

27. If your child brush his/her teeth, please indicate whether tooth brushing is performed by:

1. supervision of adults
2. without help of adults

28. Do you think that having accurate preventive information on oral health will help maintain good oral health?

1. Yes
2. No
88. Do not know/Difficult to answer

29. In your opinion, how often should people replace their toothbrushes?

1. Every 6 months
2. At least once a month
3. Every year
4. Until it gets broken
88. Do not know/Difficult to answer

30. If your teeth are sensitive to heat, cold, or sweet things, you should switch to a toothpaste with:

1. Tartar control
2. Strontium chloride
3. Baking soda
4. None of the above
88. Do not know/Difficult to answer

31. If you needed some additional information on prevention oral disorders, where would you like to get it? (**Check one, most preferable options for you**)

1. TV
2. Newspapers, journals
3. Dentists
4. Children pediatrician
5. School-based programs
6. Others (specify)_____
88. Do not know/Difficult to answer

32. Does your child have sweets in -between-meals every day (desserts or candy, sugary drinks)?

1. Yes (**go to question 32**)
2. No (**go to question 33**)

33. Please check the frequency of eating sweets by your child:

1. 1 time per a day
2. 2 times per a day
3. 3 times and more
4. Do not have such habits
88. Do not know/Difficult to answer

	1. Strongly agree	2 Agree	3. Neither agree nor disagree	4. Disagree	5. Strongly disagree	88. Don't know/ Difficult to answer
34. I think that tooth decay often occurs in poor quality teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Tooth brushing once a day is sufficient to have healthy teeth if it is done carefully	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. My family cannot afford themselves to apply for dental services in case of need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. I think that eating many sugary foods/drinks causes tooth decay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. The regular dental visits are important for having good oral health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Early teeth cleaning is important for children's health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Frequency of sugar consumption has a greater role than total amount consumed in causing caries (tooth decay)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. I will receive high-quality dental treatment if it is expensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

42. When does your child brush his/her teeth? **(Check all that apply)**

1. In the morning after getting up
2. In the morning after having breakfast
3. In the evening after having supper
4. In the evening before going to bed
5. Never

43. How many people are living in your household including you?

44. Approximately how much money did your family spend last month?

1. Less than 25,000 AMD (\$50)
2. 25,000 - 49,999 AMD (\$50-99)
3. 50,000 – 99,999 AMD (\$100-199)
4. 100,000 – 250,000 AMD (\$200 – 500)
5. More than 250,000 AMD (\$500)
88. Don't know/ difficult to answer

Thank you very much for your participation.

6. Ò»ñ Ì³ ñÍÇuáí, ³ ñ¹láù ýí áñ à³ ñáoÝ³ ÍáÕ ³ Ì³ ÙÇ Ù³ ÍáóíÝ»ñÁ ³ ñ¹láóÝ³ Í»±í »Ýµ»ñ³ ÝÇ ÉáéááÇ ÑÇí ³ Ý¹áóÁláóÝÝ»ñÁ Ì³ ÝÉ»Éáó Ñ³ Ù³ ñ
1. ²á
 2. àã
7. Ò»ñ Ì³ ñÍÇuáí Ç±Ýá Ñ³ ×³ È³ Ì³ ÝáóÁÕ³ Ùµ ¿ á»í ù »ñ»È³ ÙÇÝ Ì³ Ý»É ³ Ì³ ÙÝ³ µáóÁÇ Ùáí
1. 6³ ÙÇéÁ Ù»Í ³ Ý. ³ Ù
 2. í³ ñÇÝ Ù»Í ³ Ý. ³ Ù
 3. ØÇ³ ÙÝ³ ÝÑñ³ Á»ßí áóÁÕ³ Ý/Í³ ñÇùÇ/ ¹»áúáóÙ
 4. ²ÙÉ Ì³ ñµ»ñ³ Í (Ýß»ù) _____
 5. â· Çí »Ù/ Áí³ ñ³ ÝáóÙ »Ù á³ Ì³ ³ èÈ³ Ý»É
8. à±ñ Ì³ ñÇùáóÙ »ñ»È³ Ý á»í ù ¿ èí èÇ Ù³ ùñ»É ³ Ì³ ÙÝ»ñÁ
1. ²é³ çÇÝ ÇèÍ ³ Ì³ ÙÁ ¹áóñè · ³ Éáóó Ñ»í á
 2. 1-2 Ì³ ñ»Í³ ÝáóÙ
 3. 3-4 Ì³ ñ»Í³ ÝáóÙ
 4. 4 Ì³ ñ»Í³ ÝÇó èí è³ Í
 5. ØÇ³ ÙÝ³ Ì³ ÙÝ³ µáóÁÇÝ³ Ùó»É»Éáó Á³ Ù³ Ý³ Ì
 6. ²ÙÉ Ì³ ñµ»ñ³ Í (Ýß»ù) _____
 7. â· Çí »Ù/ Áí³ ñ³ ÝáóÙ »Ù á³ Ì³ ³ èÈ³ Ý»É
9. ²í³ ÙÝ³ µáóÁÁ Ò»½ »ñµ·Çó¿ µ³ ó³ Ì³ ñ»É ¿ ³ Ì³ ÙÝ»ñÇ ×Çßí Ù³ ùñ»Éáó Ì³ ÝáÝÝ»ñÁ;
1. ²á
 2. àã
10. Ò»ñ Ì³ ñÍÇuáí, ³ éáÕç µ»ñ³ ÝÇ Éáéáá áóÝ»Ý³ ÉÁ ³ ÝÑñ³ Á»ßí ¿± ÁÝ¹Ñ³ Ýáóñ ³ éáÕçáóÁláóÝ áóÝ»Ý³ Éáó Ñ³ Ù³ ñ
1. Þ³ Ì³ ÝÑñ³ Á»ßí ¿
 2. ²ÝÑñ³ Á»ßí ¿
 3. àã³ Ù¹ù³ Ý³ ÝÑñ³ Á»ßí ¿
 4. ²ÝÑñ³ Á»ßí à¿
 5. â· Çí »Ù/ Áí³ ñ³ ÝáóÙ »Ù á³ Ì³ ³ èÈ³ Ý»É

11. Ù»ñùáÑÇβl³É ó³ÝíÇó ÁÝí ñ»ù Ò»ñ í³ñíÇùáí ³Ù»Ý³ ×Çβí
 í³ñμ»ñ³íÁ/í³ñμ»ñ³íÝ»ñÁ ³í³ÙÇ í³ñÇ»éÁ (³í³ÙÝ³ ÷ áõí Á) í³ÝÉ»Éáõ
 Ñ³ Ù³ ñ (Ùβ»ù μάφαñ ÑÝ³ ñ³ í áñ á³ í³ ³ èÉ³ ÝÝ»ñÁ)

1. Þ³ ù³ ñ á³ ñáoÝ³ í áõ èÝÝ¹³ ÙÁ»ñùÇ è³ ÑÙ³ Ý³ ÷³ í áóÙÁ
2. Ùí áñ³ óí³ í çñÇ " ýí áñ á³ ñáoÝ³ í áõ ³ í³ ÙÝ³ μάóÁ³ í³ Ý³ ñí³ ¹ñ³ ÝùÇ
 ù· í³ · áñí áóÙÁ
3. Þ³ ù³ ñ á³ ñáoÝ³ í áõ Ù³ èí³ ³ íÝ»ñÇ ù· í³ · áñí áóÙÁ
4. í³ ÝáÝ³ í áñ³ ðó»ÉáóÁùáóÝ³ í³ ÙÝ³ μάóùÁÇÝ
5. ´»ñ³ ÝÇ É á é á á Ç Ñ³ Ù³ á³ í³ ³ èÉ³ Ý ÑÇ· Ç»Ý³
6. á· Çí »Ù/ Áí³ ñ³ ÝáóÙ »Ù á³ í³ ³ èÉ³ Ý»É

12. Ùβ»ù, Á» ÷ á³ ó³ í³ ³ í³ Ù áóÝ»Ý³ Éáó ¹»áùáóÙ áñù³ ±Ý Ñ³ ×³ É »ù Ñ»í³ Ó· áóù
 ³ í³ ÙÝ³ μάóùÁÇÝ³ ðóÁ, ù³ ÝÇ ¹»é áóÁ»Ö³ í³ Ù³ ó³ í ááóÝ»ù:

1. ØÇβí
2. °ñμ»ÙÝ
3. Ð³ ½í³ ¹»á
4. °ñμ»ù

13. Ò»ñ í³ ñíÇùáí , áóù í³ ñÇù áóÝ»ù éáí áñ»É, Á» ÇÝá»è ×Çβí Ù³ ùñ»É³ í³ ÙÝ»ñÁ

1. ²ùá
2. àã

14. ÆÝáá»±è »ù í³ ñí áóù Ò»ñ »ñ»É³ ðÇ³ ³ í³ ÙÇ ÷ á³ óÙ³ Ý Ýβ³ ÝÝ»ñ áóÝ»Ý³ Éáó
 ¹»áùáóÙ

1. °Á» ó³ í áí³ áóβ³ ¹ñáoÁùáóÝ á»Ù ¹³ ñÓÝáóù
2. ò³ í³ ½ñí áõ »Ù í³ ÉÇè
3. ²ùó»Éáóù »Ýù³ í³ ÙÝ³ μάóùÁÇÝ ÙÇ³ ðÝ ó³ í áóÝ»Ý³ Éáó ¹»áùáóù
4. ²ÝÙÇÇ³ á»è³ ðó»Éáóù »Ýù³ í³ ÙÝ³ μάóùÁÇÝ³ í³ ÙÁ μάóÁ»Éáó Ýá³ í³ í áí
5. , ÇÙáóù »Ýù³ í³ ÙÝ³ μάóùÁÇÝ³ í³ ÙÁ Ñ»é³ óÝ»Éáó Ýá³ í³ í áí

15. àñù³ ±Ý Ñ³ ×³ É »ù èí³ áó· áóù Ò»ñ »ñ»É³ ðÇ³ ³ í³ ÙÝ»ñÇ í Ç×³ í Á

1. ØÇβí
2. °ñμ»ÙÝ
3. Ð³ ½í³ ¹»á
4. °ñμ»ù

16. í³ ñÇùÇ ¹»áùáóù , áóù áóÝ»±ù³ í³ ÙÝ³ μάóùÁÇÝ ¹ÇÙ»Éáó ÑÝ³ ñ³ í áñáoÁùáóÝ

1. ²ùá
2. àã

17. Øáí ³ í áñ³ á»è »ñµ ç Ò»ñ »ñ»É³ Ý ³ Ìó»É»É ³ í ³ ÙÝ³ µáóÙÁÇÝ í »ñçÇÝ ³ Ý. ³ Ù
1. ì »ñçÇÝ 6 ³ Ùèí ³ ÁÝÃ³ óúáóÙ
 2. ì »ñçÇÝ 12 ³ Ùèí ³ ÁÝÃ³ óúáóÙ
 3. 1-2 í ³ ñÇ ³ é³ ç
 4. °ñµ ç ³ í ³ ÙÝ³ µáóÙÁÇÝ á»Ýù ¹ÇÙ»É (³ Ýó»ù 18-ñ¹ Ñ³ ñóÇÝ)
 5. á»Ù ÑÇΒáóÙ/ , Áí ³ ñ³ ÝáóÙ »Ù á³ í ³ èÉ³ Ý»É
18. àñÝ ç ñ í »ñçÇÝ ³ Ý. ³ Ù Ò»ñ »ñ»É³ ÙÇ Ñ³ Ù³ ñ ³ í ³ Ù³ ÝµáóÙÁÇÝ ¹ÇÙ»Éáó á³ í ×³ éÁ
1. éáí áñ³ í ³ Ý èí áó· áóÙÁ
 2. ÆÝã-áñ µ³ Ý ³ ÝÑ³ Ý· èí ³ óÝáóÙ ç ñ
 3. ²í ³ ÙÝ»ñÁ á»ÉáÙµ»Éáó Ñ³ Ù³ ñ
 4. ²í ³ ÙÝ»ñÁ Ñ»é³ óÝ»Éáó Ñ³ Ù³ ñ
 5. ²ÙÉ Ýá³ í ³ í áí (ÝΒ»ù)_____
 6. á»Ù ÑÇΒáóÙ
19. ì »ñçÇÝ 12 ³ ÙÇèÝ»ñÇ ÁÝÃ³ óúáóÙ »Ò»É ç ³ ÙÝáÇèÇ ¹»áù, áñ Ò»ñ »ñ»É³ Ý ³ í ³ ÙÝ³ µáóÙÁÇ ¹³ ñÇù áóÝ»Ý³, µ³ Ìó áí³ ñáÒ³ Ý³ í í Ù³ É á³ ÑÇÝ ³ ÝÑñ³ Á»Βí ù· ÝáóÁáóÝÁ èí ³ Ý³ É
1. ²Ùá (³ Ýó»ù 19-ñ¹ Ñ³ ñóÇÝ)
 2. àã (³ Ýó»ù 20-ñ¹ Ñ³ ñóÇÝ)
20. àñÝ ç ³ Ù¹ ù· ÝáóÁáóÝÁ äèí ³ Ý³ Éáó á³ í ×³ éÁ
1. ²ÝÑñ³ Á»Βí · áóÙ³ ñÇ µ³ ó³ í ³ ÌáóÁáóÝÁ
 2. àñáµé»ÙÁ ³ Ù¹ ù³ Ý çÉ Éáóñç á ç ñ
 3. ¹ÁÇΒí Ý»ñÇÝ á»Ýù í èí ³ ÑáóÙ
 4. °ñ»É³ Ý ³ í ³ ÙÝ³ µáóÙÁÇó í ³ È»ÝáóÙ ç
 5. ²ÙÉ í ³ ñµ»ñ³ í / ÝΒ»ù/ _____
21. ø³ ÝÇ± í ³ ñ»í³ ÝáóÙ ç Ò»ñ »ñ»É³ Ý ³ é³ çÇÝ ³ Ý. ³ Ù ¹ÇÙ»É ³ í ³ ÙÝ³ µáóÙÁÇ
1. ØÇÝá 4 í ³ ñ»í³ Ý
 2. 4 í ³ ñ»í³ Ý Ñ³ è³ í áóÙ í ³ Ù³ í »ÉÇ áóΒ
 3. °ñµ ç áÇ ³ Ìó»É»É ³ í ³ ÙÝ³ µáóÙÁÇÝ
 4. á· Çí »Ù/ , Áí ³ ñ³ ÝáóÙ »Ù á³ í ³ èÉ³ Ý»É
22. Æ±Ýã Ñ³ ×³ È³ í ³ ÝáóÁáó³ Ùµ »ù , áóù ³ Ìó»ÉáóÙ ³ í ³ ÙÝ³ µáóÙÁÇ
1. ²éÝí ³ ½Ý í ³ ñÇÝ 1 ³ Ý. ³ Ù
 2. 2 í ³ ñÇÝ Ù»í
 3. á»Ù ³ Ìó»ÉáóÙ
 4. ØÇ³ ÙÝ ³ ÝÑñ³ Á»Βí áóÁáó³ Ý / í ³ ñÇùÇ / ¹»áùáóÙ
 5. ²ÙÉ í ³ ñµ»ñ³ í (ÝΒ»ù)_____

23. «áóú áóÝ»±ú ³ ì ³ ÙÝ³ μαóóÁ, áñÇÝ Ùβì ³ á»è ³ úó»ÉáóÙ »ù
1. ²úá
 2. àã
24. Α±Ýã Ñ³ ×³ È³ ì³ ÝáóÁÙ³ Ùμ »ù Ù³ ùñáóÙ Ò»ñ ³ ì³ ÙÝ»ñÁ
1. ØÇ ù³ ÝÇ β³ μ³ ÁÁ Ù»í
 2. ØÇ ù³ ÝÇ ùñÁ Ù»í
 3. úñÁ 2 ³ Ý. ³ Ù
 4. úñÁ 1 ³ Ý. ³ Ù
 5. °ñμ»ù
25. ΑÝãá»è ì· Ý³ Ñ³ ì³ »ù Ò»ñ »ñ»È³ ÙÇ ³ ì³ ÙÝ»ñÇ í Ç×³ íÁ
1. ¶»ñ³ ½³ Ýó
 2. È³ í
 3. ´³ í³ ñ³ ñ
 4. ì³ ì³
 5. â· Çì »Ù/» Áí³ ñ³ ÝáóÙ »Ù á³ ì³ èÈ³ Ý»É
26. àñù³ ±Ý Ñ³ ×³ È³ ç Ò»ñ »ñ»È³ Ý Ù³ ùñáóÙ Çñ ³ ì³ ÙÝ»ñÁ
1. ²Ù»Ý ùñ Ù»í ³ Ý. ³ Ù
 2. ²Ù»Ý ùñ »ñí áó ³ Ý. ³ Ù
 3. Ð³ ½í ³ ¹»á
 4. °ñ»È³ Ý ááóÝÇ ³ Ù¹ áÇèÇ éáí áñáóÁáóÝ (³ Ýó»ù 27-ñ¹ Ñ³ ñóÇÝ)
27. °ñ»È³ Ý ³ ì³ ÙÝ»ñÁ Ù³ ùñ»Éáó Á³ Ù³ Ý³ ì³
1. ÇÙáóÙ ç Ù»í »ñÇ ù· ÝáóÁÙ³ ÝÁ
 2. Í³ ì³ ñáóÙ ç ì³ ÙÝ»ñÇ Ù³ ùñáóÙÁ ÇÝ· ÝáóñáóÙÝ
28. Ò»ñ ì³ ñí Çùáí , μ»ñ³ ÝÇ ÈééáÇ ÑÇì ³ Ý¹ áóÁáóÝÝ»ñÇ ì³ ÝÈ³ Ý· »ÉÙ³ Ý í »ñ³ μ»ñÙ³ É μ³ ì³ ñ³ ñ ì³ »Ó»í áóÁáóÝÝ»ñ áóÝ»Ý³ ÉÁ í Ýá³ èì Ç ³ ñ¹ úá±ù ³ éáÓÇ μ»ñ³ ÝÇ Èééáá áóÝ»Ý³ ÉáóÝ
1. ²úá
 2. àã
29. àñù³ ±Ý Ñ³ ×³ È³ ì³ ÙÇ Èá½³ Ý³ íÁ áÇì Ç ÷ áÈí Ç
1. 6 ³ ÙÇèÁ Ù»í ³ Ý. ³ Ù
 2. ²ñÝÁí ³ ½Ý³ ÙÇèÁ Ù»í ³ Ý. ³ Ù
 3. í³ ñÇÝ Ù»í ³ Ý. ³ Ù
 4. °ñμ í áí ñí Ç

30. °Ā» Ò»ñ ³ i ³ ÙÝ»ñÁ ½· ³ ðáóÝ »Ý ç»ñÙáóĀĀ³ Ý, óñi Ç Ĩ ³ Ù ù³ ÓóñÇ ÝĨ ³ Ĩ Ù³ Ùμ, ³ áóù á»Ĩ ù ĵ ³ ÝóÝ»ù Ñ»Ĩ ³ Ĩ ³ É ³ Ĩ ³ ÙÇ Ù³ Í áóĨ Ç ù· Ĩ ³ · áñŌÙ³ ÝĀ

1. ²i ³ Ù³ ù³ ñÇ ³ é³ ç³ óáóÙĀ Ĩ ³ ÝĒáŌ
2. èi ñáÝóÇáóÙ á³ ñáóÝ³ Ĩ áŌ
3. Í »ñ³ Ĩ ñÇ èá¹³ á³ ñáóÝ³ Ĩ áŌ
4. Ĩ »ñÁ ÝβĨ ³ Í Çó áá Ù»Ĩ Á
88. â· ÇĨ »Ù/ ³ ÁĨ ³ ñ³ ÝáóÙ »Ù á³ Ĩ ³ èĒ³ Ý»Ē

31. àñĨ »ŌÇó Ĩ ó³ ÝĨ ³ Ý³ ðÇ ù Ĩ »Ō»Ĩ ³ Ý³ É μ»ñ³ ÝÇ Ē áéááÇ ÑÇĨ ³ Ý¹ áóĀĀóÝÝ»ñÇ Ĩ ³ ÝĒ³ ñ· »ĒÙ³ Ý Ù³ èÇÝ (Ùβ»ù Ō»ñ Ñ³ Ù³ ñ ÙÇ³ ŪÝ Ù»Ĩ · »ñ³ ¹³ è»ĒÇ Ĩ ³ ñμ»ñ³ Ĩ):

1. Ð»éáóèĨ ³ óáóĀóÇó
2. ²Ùé³ · ñ»ñÇó, Ā»ñĀ»ñÇó
3. ²i ³ ÙÝ³ μáóĀĀÇó
4. Ø³ ÝĨ ³ Ĩ ³ Ý μĀÇβĨ Çó
5. ³ áñáóÝ»ñáóÙ Ĩ ³ ½Ù³ Ĩ »ñáĨ ³ Ĩ ¹³ èÁÝĀ³ óÝ»ñÇó
6. ²ÙĒ (Ýβ»ù) _____
7. â· ÇĨ »Ù/¹ĀĨ ³ ñ³ ÝáóÙ »Ù á³ Ĩ ³ èĒ³ Ý»Ē

32. Ō»ñ »ñ»Ē³ Ý³ Ù»Ý ùñ ĵ±ù³ Ōóñ³ Ĩ »ÝÇ ù áóĨ áóÙ

1. ²Āá (³ Ýó»ù 32-ñ¹ Ñ³ ñóÇÝ)
2. àā (³ Ýó»ù 33-ñ¹ Ñ³ ñóÇÝ)

33. ĒÝ¹ñáóÙ »Ýù Ýβ»Ē ù³ Óóñ³ Ĩ »ÝÇ ù áóĨ »Ēáó Ñ³ ×³ Ē³ Ĩ ³ ÝáóĀĀáóÝĀ

1. ÚñĀ 1 ³ Ý· ³ Ù
2. ÚñĀ 2 ³ Ý· ³ Ù
3. ÚñĀ 3 ³ Ý· ³ Ù ³ Ĩ »ĒÇ
4. °ñ»Ē³ Ý ááóÝÇ ³ Ū¹ áÇèÇ èáĨ áñáóĀĀáóÝ

	1. ÈÇáí ÇÝ Ñ³ Ù³ Ó³ ÙÝ »Ù	2. Ð³ Ù³ - Ó³ ÙÝ »Ù	3. à`ā Ñ³ Ù³ - Ó³ ÙÝ »Ù, āā ĵĒ āā	4. Ð³ Ù³ - Ó³ ÙÝ ā»Ù	5. ÈÇáí ÇÝ Ñ³ Ù³ Ó³ ÙÝ ā»Ù	6. ā· Çĭ »Ù/ Āĭ ĩ³ ĩ³ ÝáóÙ »Ù ĩ ĩ³ ĩ³ ěĒ³ Ý»Ē
34. °è ĩ³ ĩ³ ĩ³ áóÙ »Ù, āñ ĩ³ ĩ³ ÙÝ»ñÇ ÷ ā³ óÙ³ Ý ā³ ĩ³ ×³ éÁ Ýñ³ Ýó³ Ýāñ³ ĩ³ ÈÇÝ»ĒÝ ĵ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. ĩ³ ĩ³ áóÙ »Ù, āñ ĩ³ ĩ³ ÙÝ»ñÁ ùñÁ Ù»ĭ ĩ³ Ý. ĩ³ Ù Ē³ ĩ³ Ù³ ùñ»ĒÁ µ³ ĩ³ ĩ³ ĩ³ ĩ³ ĩ³ éáÓÇ ĩ³ ĩ³ ÙÝÝ»ñ áóÝ»Ý³ éáó Ñ³ Ù³ ĩ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Ø»ñ ÁÝĭ ĩ³ ÝÇùÁ āáóÝÇ Ñ³ Ù³ ā³ ĩ³ ĩ³ ěĒ³ Ý ĵÇÝ³ Ýě³ ĩ³ Ý ÑÝ³ ĩ³ ĩ³ áñáóĀĵáóÝ ĩ³ ĩ³ ÙÝ³ µáóĀ³ ĩ³ Ý ĩ³ é³ ĵáóĀĵáóÝ»ñÇÝ ¹ÇÙ»Ēáó Ñ³ Ù³ ĩ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. ÆÙ ĩ³ ĩ³ ĩ³ Çuáĭ ù³ ÓóñÇ ā³ ÷ ĩ³ ½³ Ýó Ñ³ ĩ³ ù· ĩ³ ĩ³. áñĭ áóÙĀ/ ā³ ĩ³ Ñ³ ÑáóÙĀ Ýā³ ěĭ áóÙ ĵ ĩ³ ĩ³ ÙÝ»ñÇ ÷ ā³ óÙ³ ÝĀ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. ĩ³ ĩ³ ÝáÝ³ ĩ³ áñ ĩ³ ĵó»ĒáóĀĵáóÝ»ñÁ ĩ³ ĩ³ ÙÝ³ µáóĀÇÝ ĭ³ ĩ³ ĩ³ áñ »Ý Ó»ñ ĩ³ Ó»ñ »ñ»Ē³ ĒÇ³ ĩ³ éáÓÇ µ»ñ³ ÝÇ Ēáñāā áóÝ»Ý³ éáó Ñ³ Ù³ ĩ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. ĩ³ ĩ³ Óĭ ĩ³ ĩ³ ĩ³ ÇùÇó ĩ³ ĩ³ ÙÝ»ñÇ ĒÝ³ ÙùĀ Ñ³ ĩ³ ĩ³ ĩ³ ĩ³ »ñ»Ē³ ĒÇ³ ĩ³ éáÓÇáóĀĵáóÝ Ñ³ Ù³ ĩ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Ñ³ ù³ ĩ³ ĩ³ ā³ ĩ³ ĩ³ áóÝ³ ĩ³ áó ěÝÝ¹³ ÙĀ»ñùÇ µ³ ½Ù³ ĩ³ Ç ù· ĩ³ ĩ³. áñĭ áóÙĀ³ ě³ ĩ³ »Ē đ³ ×³ Ē ĵ³ ě³ Ç³ óÝáóÙ ĩ ĩ³ ÙÝ³ ÷ áóĭ , ù³ Ý³ Ù¹ ěÝÝ¹³ ÙĀ»ñùÇ Ñ³ ĩ³ ù³ Ý³ ĩ³ Ā	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. °è ĩ³ ěĭ ĩ³ Ý³ Ù ĒÇ³ ĩ³ Ā»ù ĩ³ ĩ³ ÙÝ³ µáóĀ³ ĩ³ Ý ù· ÝáóĀĵáóÝ Ā³ Ýĭ· Ý»ñ ĩ³ ×³ ĩ³ ĩ³ Ē»Ēáó ¹»āùáóÙ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

42. $\circ_{\pm}\tilde{\mu}$ ζ $\acute{O}\tilde{n}$ $\gg\tilde{n}\gg\tilde{E}^3\tilde{Y}$ $\acute{E}i^3\tilde{Y}\acute{a}\acute{o}\tilde{U}$ $\zeta\tilde{n}$ $^3i^3\tilde{U}\tilde{Y}\gg\tilde{n}\tilde{A}$: ($\tilde{U}\tilde{B}\gg\tilde{u}$ $\mu\acute{a}\tilde{f}\tilde{a}\tilde{n}$ $\tilde{N}\tilde{Y}^3\tilde{n}^3i\tilde{a}\tilde{n}$
 $\tilde{a}^3i^3\tilde{e}\tilde{E}^3\tilde{Y}\gg\tilde{n}\tilde{A}$)

1. $^2\acute{e}^3i\tilde{a}\tilde{i}$ $\tilde{U}^3\tilde{Y}$, $^3\tilde{n}\tilde{A}\tilde{Y}^3\tilde{Y}^3\tilde{E}\acute{a}\acute{o}\tilde{O}$ $\tilde{N}\gg\tilde{i}$ \acute{a}
2. $^2\acute{e}^3i\tilde{a}\tilde{i}$ $\tilde{U}^3\tilde{Y}$, $\tilde{Y}^3\tilde{E}^3\times^3\tilde{B}\zeta\tilde{O}$ $\tilde{N}\gg\tilde{i}$ \acute{a}
3. $\circ\tilde{n}\gg\tilde{i}\tilde{a}\tilde{l}^3\tilde{Y}$, $\tilde{A}\tilde{Y}i$ $\tilde{n}\zeta\tilde{u}\zeta\tilde{O}$ $\tilde{N}\gg\tilde{i}$ \acute{a}
4. $\circ\tilde{n}\gg\tilde{i}\tilde{a}\tilde{l}^3\tilde{Y}$, $^3\tilde{Y}i\tilde{a}\tilde{O}\zeta\tilde{Y}$ $\tilde{a}^3\tilde{e}i$ $\gg\tilde{E}\acute{a}\acute{o}\tilde{O}$ $^3\tilde{e}^3\zeta$
5. $\circ\tilde{n}\mu\gg\tilde{u}$

43. $\emptyset^3\tilde{Y}\zeta\pm^3\tilde{Y}\acute{O}$ ζ $\mu\tilde{Y}^3\tilde{i}i\tilde{a}\acute{o}\tilde{U}$ $\acute{O}\gg\tilde{n}\tilde{i}$ $^3\tilde{Y}\tilde{A}$, $\tilde{Y}\gg\tilde{n}^3\tilde{e}\tilde{l}^3\tilde{E}$ $\frac{1}{4}\gg\frac{1}{2}$: _____

44. $\emptyset\acute{a}i^3i\tilde{a}\tilde{n}^3\tilde{a}$ $\gg\tilde{e}$ $\tilde{a}\tilde{n}\tilde{u}^3\pm\tilde{Y}$. $\tilde{a}\acute{o}\tilde{U}^3\tilde{n}$ ζ $i^3\tilde{E}\tilde{e}\gg\tilde{E}$ $\acute{O}\gg\tilde{n}$ $\tilde{A}\tilde{Y}i$ $^3\tilde{Y}\zeta\tilde{u}\tilde{Y}^3\tilde{Y}\acute{o}^3i^3\tilde{U}\tilde{e}i^3$
 $\tilde{A}\tilde{Y}\tilde{A}^3\acute{o}\tilde{u}\tilde{a}\acute{o}\tilde{U}$:

1. 25 000 $^1\tilde{n}^3\tilde{U}\zeta\acute{o}$ $\tilde{a}^3i^3\tilde{e}$ (\$ 50)
2. 25 000 – 49 999 $^1\tilde{n}^3\tilde{U}$ (\$ 50 - 99)
3. 50 000 – 99 999 $^1\tilde{n}^3\tilde{U}$ (\$ 100 - 199)
4. 100 000 – 250 000 (\$ 200 - 500)
5. 250 000 $^1\tilde{n}^3\tilde{U}\zeta\acute{o}$ $^3i\gg\tilde{E}\zeta$ (\$ 500 $^3i\gg\tilde{E}\zeta$)
6. $\tilde{a}\cdot\zeta i$ $\gg\tilde{U}/$, $\tilde{A}i^3\tilde{n}^3\tilde{Y}\acute{a}\acute{o}\tilde{U}$ $\gg\tilde{U}$ $\tilde{a}^3i^3\tilde{e}\tilde{E}^3\tilde{Y}\gg\tilde{E}$

$\tilde{P}\tilde{Y}\tilde{a}\tilde{n}\tilde{N}^3i^3\tilde{E}\tilde{a}\tilde{o}\tilde{A}\tilde{U}\tilde{a}\tilde{o}\tilde{Y}$ $\tilde{U}^3\tilde{e}\tilde{Y}^3\tilde{i}\acute{o}\tilde{a}\tilde{o}\tilde{A}\tilde{U}^3\tilde{Y}$ $\tilde{N}^3\tilde{U}^3\tilde{n}$

Oral Health Screening Form/Schoolchildren

Screen Date: ___ / ___ / _____		School Code:		Screener's Initials:	
ID Number:		Grade:		Age:	
Gender:	1=Male 2=Female	Race/Ethnicity:		1=White 2=Black/African American 3=Hispanic/Latino 4=Asian 5=American Indian/Alaska Native 6=Native Hawaiian/Pacific Islander 7=Multi-racial 9=Unknown	
Untreated Cavities:	0=No untreated cavities 1=Untreated cavities	Caries Experience:		0=No caries experience 1=Caries experience	
Sealants on Permanent Molars:	0=No sealants 1=Sealants	Treatment Urgency:		0=No obvious problem 1=Early dental care 2=Urgent care	
Comments:					

(Basic Screening Surveys: *An Approach to Monitoring Community Oral Health*
Association of State and Territorial Dental Directors 1999, Revised September 2003)

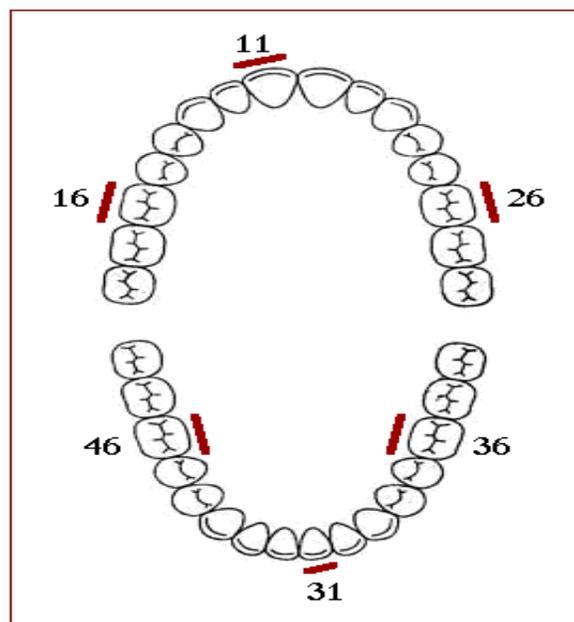
Oral Hygiene Index Simplified (OHI-S)

The Oral Hygiene Index is composed of the combined Debris Index and Calculus Index. Each of these indexes is in turn based on six numerical determinations representing the amount of debris or calculus found on the pre-selected tooth surfaces.

Selection of Tooth Surfaces

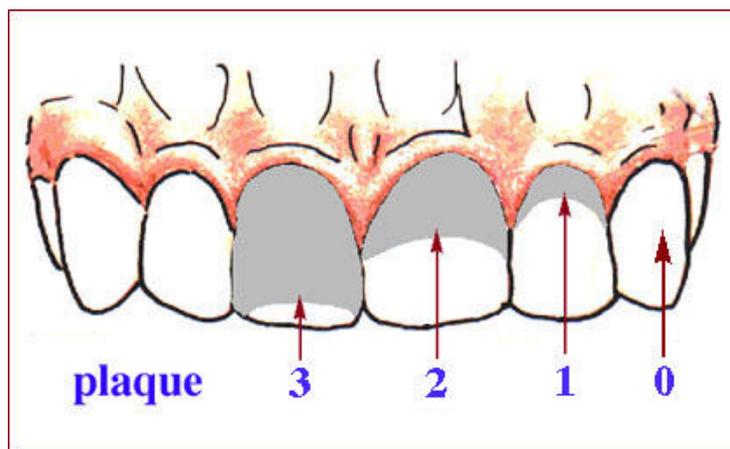
The six surfaces examined for the OHI-S are selected from four posterior and two anterior teeth.

- In the posterior portion of the dentition, the first fully erupted tooth distal to the second bicuspid (15), usually the first molar (16) but sometimes the second (17) or third molar (18), is examined. The buccal surfaces of the selected upper molars and the lingual surfaces of the selected lower molars are inspected.
- In the anterior portion of the mouth, the labial surfaces of the upper right (11) and the lower left central incisors (31) are scored. In the absence of either of these anterior teeth, the central incisor (21 or 41 respectively) on the opposite side of the midline is substituted.



Criteria for classifying debris

Scores	Criteria
0	No debris or stain present
1	Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered
2	Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface.
3	Soft debris covering more than two thirds of the exposed tooth surface.



Debris

	Right molar		Anterior		Left molar		Total	
	Buccal	Lingual	Labial	Labial	Buccal	Lingual	Buccal	Lingual
Upper								
Lower								

Debris Index = (The buccal-scores) + (The lingual-scores) / (Total number of examined buccal and lingual surfaces):

$$\text{Debris Index} = \frac{\text{Total score}}{6}$$

Criteria for classifying calculus

Scores	Criteria
0	No calculus present
1	Supragingival calculus covering not more than third of the exposed tooth surface.
2	Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both.
3	Supragingival calculus covering more than two third of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.

Calculus

	Right molar		Anterior		Left molar		Total	
	Buccal	Lingual	Labial	Labial	Buccal	Lingual	Buccal	Lingual
Upper								
Lower								

Calculus Index = (The buccal-scores) + (The lingual-scores) / (Total number of examined buccal and lingual surfaces):

$$\text{Calculus Index} = \text{Total score} / 6$$

Appendix 5. Consent Form for School Principals

NOTICE TO PARENTS OF CHILD'S ORAL HEALTH ASSESSMENT

Dear Parents,

Today, the dentist _____ has conducted the
Name

assessment of the oral health of your child _____
Name

The assessment has found the following finding(s):

Your attention is called to the finding(s), so that you may contact your dentist for
diagnosis, advice, or treatment.

If you have any questions, you can call the project manager

_____ at _____
Name Telephone Number

Date of Assessment: _____

Appendix 6. Consent Form for School Principals

Dear Mr./Mrs. _____

My name is Ruzanna Simyan. I am a dentist. Currently I am an MPH 2nd year student at the American University of Armenia (AUA). As part of the study requirements, I am conducting the study titled “Oral health status of the first grade children and their mothers’ oral health related knowledge, attitudes, and behavior in Yerevan, Armenia.” The study is conducted in 12 Yerevan schools. During the study, individual interviews with mothers will be conducted as well as children’s oral cavity examination.

Your school has been chosen randomly among the other Yerevan schools. The participation in the study is voluntary. You can refuse from the participation in the study at all or withdraw from it at any time without any harm to you, children, their mothers and the school.

There is no risk associated with the participation in the study. In case of the participation in the study, the school will have no benefits.

Every effort will be made to protect the confidentiality of the information provided. Only aggregated data will be reported in the final report. The information will be only used in research purposes.

I would greatly appreciate you giving your agreement for the school participation in the study.

Should you have any questions about the survey, please free to contact *Varduhi Petrosyan* at 51 25 64 or at the American University of Armenia at 51 25 68.

Signature _____

Date _____

Appendix 7. Consent Form for Mothers

Hello, my name is Ruzanna Simyan. I am an MPH 2nd year student at the American University of Armenia (AUA). As a part of my study requirements, I am conducting a study to reveal the first grade children mothers' oral health related knowledge, attitudes and behaviors as well as to conduct children oral cavity examination. You will have an interview that will last about 15-25 minutes. This is neither an examination nor a test. This is just to help the research work. The information obtained during the survey will contribute to better understanding of oral health problems, factors affecting it and possible impediments to dental services as well as will help undertake appropriate actions to improve children oral health in the future. The confidentiality of the information provided by you will be maintained. You are not required to mention your name in the questionnaire. Only aggregated data will be reported in the final report, and will be only used in research purposes.

Your and your child participation in the study is voluntary. You can refuse to participate without any harm to you and your child. There are no benefits for participation in the study. I would greatly appreciate your taking time to participate in the study.

Have you any questions about the study please contact please free to contact Varduhi Petrosyan at 51 25 64 or at the American University of Armenia at 51 25 68.

Thank you for working with us to learn how to improve the oral health of our children.

Signature_____

Date_____

A pilot study on 5-7-year-old children oral health and their mothers' oral health related knowledge, attitude and behavior conducted in two kindergartens in Yerevan

In order to assess oral health status of 5-7-year-old children as well as their mothers' oral health related knowledge, attitude and behavior, a pilot study was conducted in two kindergartens of Yerevan (#4 in Erebuni hamaynk and #120 in Malatia hamaynk) in August 8-12, 2005. The AUA Committee on Human Research (IRB) approved the conduct of this pilot study.

At the first stage of the study, two hamaynks (Erebuni and Malatia) were chosen at random. After that, lists of kindergartens in those hamaynk were obtained, from which two kindergartens were randomly selected. In Malatia hamaynk, it was kindergarten #120, and a private kindergarten in Erebuni. An oral consent form was introduced to the principles of the kindergartens, after which the principle of Erebuni kindergarten refused from participation in the program. This kindergarten was replaced by the nearest kindergarten #4, the principle of which approved the conduct of the study.

The ultimate sample size for this pilot study was determined to be 30 children and 30 mothers. As most of the children were absent from the kindergarten because of their parents' vacation, there were only 14 children at the age of 5-7 in kindergarten #120 and 26 children of the same age in kindergarten #4. Since the number of children in the both kindergartens did not exceed 40, it was decided to involve all of them into the study. In total, 40 mothers were contacted. Oral informed consent was introduced to them. In kindergarten #120, all the mothers agreed to participation in the study. In kindergarten #4, one mother agreed the

child's participation in the study but refused filling out a questionnaire because of lack of time. This child was automatically excluded from the participation in the study, though the child's oral health status was examined. Children's oral health examinations were mostly conducted in the presence of their mothers. Some mothers completed questionnaires at the site, while others took them home and returned the next day.

Results

The pilot study describes current 5-7-year-old children's oral health status as well as their mothers' oral health related knowledge, attitude and behavior. The survey data are presented in accordance with the main areas of interest and questionnaire domains, that included socio-demographic information, knowledge, attitude and behavior (KAB) related to oral health.

A total of 62 people participated in the survey: 31 children from two kindergartens of Yerevan, whose oral health status was examined, and their mothers completed the questionnaires. The response rate was 78%.

The information on socio-demographic status of children and their mothers: the mean age of the mothers was 29.07 (with ranging from 24 to 38, standard deviation=3.615). Eighteen mothers were less than 30-year-old, 11 of them were 30-years of age or older. The overwhelming majority of mothers (97%) were married and only one mother (3%) was single. Twenty six percent of mothers had undergraduate education, 26% had secondary-special education, 42% had secondary education and only 6% had incomplete primary education. None of the mothers had a higher education.

Most children (55%) were 5-year-old, 35% were 6-year-old and only 10% were 7-year-old. The mean number of adults living in the households was 5.74. Out of 31 mothers,

the approximate amount spent in the last month was possible to obtain only for 20 (64%) of them. In most cases, the expenditure amount spent in the last month did not exceed \$200 (26%) and \$50 (19%). Ten percent reported having spent more than \$500, 15% spent from \$200 to \$500, and only 5% spent less than \$50.

Mothers' oral health related knowledge, attitude and behavior

The total score for correct answers to the knowledge questions is 17. No mother gained the highest score. The scores ranged from 4 to 14, with the mean 9.42. The highest score of 14 was gained only by one mother. Sixty one percent of mothers gave correct answers to less than 2/3 of the knowledge questions, and they are considered to have no/poor knowledge on oral health. The rest 39% were considered to have good knowledge on oral health. In general, the mothers were aware of the importance of oral health to general health. Ninety seven percent considered oral health as very important/somewhat important to general health.

Fifty eight percent of mothers were aware of the effectiveness of fluoridated toothpastes in preventing tooth decay, and 22% had opposite opinions. But the effectiveness of using fluoridated water and dental product with fluoride as one of the best methods for the prevention of tooth decay was understood by only 26% of mothers.

When asked what toothpaste to use if teeth are sensitive to heat, cold, and sweets, only one correct answer was given. Nineteen percent thought it should be toothpaste containing baking soda, and 77% did not know. Approximately a half of respondents knew that toothbrushes should be change at least once a month. About 40% thought that it should be twice a year.

Although 97% of the mothers agreed or strongly agreed with the importance of early toothbrushing for children's oral health, none of them indicated the correct age at what a child should start cleaning teeth. The most common answers given by 39% of the mothers were 3 and 4 years of age. Two respondents thought that children should start brushing teeth at age 5 and 7 years.

Eighty percent mothers agreed on the importance of regular dental visits for having good oral health; 71% mentioned correctly the required frequency of dental visits. A set of five questions was asked on best methods of tooth decay prevention. Only 13% of the respondents mentioned all the five correct answers. Four correct answers were given by 19%, two and three correct methods were clear to 50%, and approximately 10% of the respondents determined only one method.

The harm of eating sweets on teeth condition was well-understood. Eighty four percent agreed that eating many sweets causes tooth decay, and 61% realized the harm of frequent consumption of sweets/sugary drinks over the amount consumed at a time. Fifty five percent gave correct answers both to sweets harm in general and their frequent use. Thirty six percent mentioned either of them, and only 10% answered either incorrectly or did not know.

Oral diseases were considered as serious diseases by 97% of the mothers. According to mothers' reports, access to oral health services in need was available for 84% of respondents. Thirty six percent of respondents reported that during the past 12 months their child needed dental treatment but could not receive it at that time. Sixteen percent mentioned cost as the main reason for not getting dental care in time, and 13% of the mothers reported that their children were afraid of the dentist. Only in one case it was reported that the dentist was on vacation. Fifty five percent of the mothers thought that the members of their families

cannot afford themselves to apply for dental services in case of need, in 36% dental services were affordable, and 7% neither agreed nor disagreed with this statement.

When asked whether customers would receive quality dental treatment by paying high cost for it, only 16% agreed with this statement. Thirty two percent disagreed, and 13% neither agreed nor disagreed. A half of the mothers reported having the dentist they usually see for care, the other part did not have a specialist they could visit in case of need.

Forty five percent of mothers described the condition of their children teeth as good, 52% though that it was fair or poor. Only one mother described the condition of the child's teeth as excellent.

Ninety three percent of mothers thought that having accurate prevention information on oral health would contribute to maintaining good oral health. The mothers were asked about possible sources they would like getting preventive information. Fifty one percent would like to get such information from the dentist, 16% from the children pediatrician, another 16% would like to get information from school-based programs on oral health. Only 13% preferred getting such information from either TV or journals/magazines. Fifty six percent of mothers mentioned that they had been demonstrated by a dentist or any of the dental staff how the teeth should be cleaned, and 44% reported never having had such a practice. About 50% though that they need to learn how clean their teeth correctly.

Health care seeking behavior of mothers was also investigated. The overwhelming majority of mothers (84%) reported visiting the dentist only in case of need. Three percent went to the dentist twice a year; six percent at least once a year. Another three percent never visited the dentist.

When asked about how often they put off going to the dentist until having a toothache, 36% responded that they did so always, 54% put off visits sometimes or rarely, and only 10% reported never delaying visits to the dentist. Ninety percent of mothers

brushed their teeth twice a day or once a day, the rest 10% brushed teeth on irregular basis (every few days or weeks).

The mothers were asked what they usually did if their child had signs of tooth decay. Seven percent reported that children did not have decayed teeth, 45% immediately took their children to the dentists, and 26% applied to the dentist only if children had pain. 6% either gave the child pain killing drugs or took them for teeth extraction. Sixty five percent of mothers reported always checking their children's oral cavity, 26% did it sometimes, and nine percent never paid attention to the condition of their child's teeth.

Twenty nine percent of children had the first dental visit before four years of age, and 39% visited the dentist after four years of age. Only one child saw the dentist at age of one. Twenty eight percent of children had no dental visits at all. Forty three percent had last dental visit within six months, 18% visited the dentist within the past 12 months, and 10% more than 12 months ago. The reported reasons for the last dental visits were: something bothering or hurting-29%, filling-19%, teeth extraction-16%, and only regular checkup-6%.

According to the mothers' reports, 19% and 39% of children brushed teeth twice a day and once a day, respectively; 29% did it seldom, and 3% never brushed teeth. In 23% of cases, children performed toothbrushing under the supervision of adults, and in 61%, they performed it by their own. Forty five percent of children consumed sweets in-between-meals every day. Out of them, 13% ate sweets twice a day, and 29% three or more times a day.

Children's oral health status

In total, of 31 examined children, only five did not experience any signs of oral disorders. The number of decayed teeth in children ranged from no decayed teeth to 10, the mean of decayed teeth is 4.10. The number of missing teeth ranged from no missing teeth to

6 teeth, the mean for missing teeth is 0.77. Ninety percent of children had no filled teeth, even the majority of them had decayed teeth, and the mean for filling is 0.35. The total dmf score ranged from 0 to 14, with the mean 5.29. Fifty eight percent did not have plaque, and 90% of them were calculus free. Only one child had gingivitis and needed urgent treatment. In total, 84% of the children needed dental treatment, 19% of which needed urgent treatment.

Oral Health Screening Form/Preschool Children

Screen Date: ___ / ___ / _____		Site Code:		Screener's Initials:	
ID Number:		Birth Date: ___ / ___ / _____		Age:	
Gender: 1=Male 2=Female		Race/Ethnicity: 1=White 2=Black/African American 3=Hispanic/Latino 4=Asian 5=American Indian/Alaska Native 6=Native Hawaiian/Pacific Islander 7=Multi-racial 9=Unknown			
Untreated Cavities: 0=No untreated cavities 1=Untreated cavities		Caries Experience: 0=No caries experience 1=Caries experience			
Early Childhood Caries: 0=No ECC 1=ECC		Treatment Urgency: 0=No obvious problem 1=Early dental care 2=Urgent care			
Comments:					

Appendix 10. Glossary of dental terms

Dental Term	Definition
Anterior teeth	Teeth situated in the front of the mouth, usually incisors and canine teeth.
Bicuspid	Transitional teeth located between the canine and molar teeth, two per quadrant identified as first and second premolars (the fourth and fifth teeth).
Buccal surface	The surface of teeth adjacent to the cheek.
Calculus	A hard substance that forms both above and below the gum line. It occurs when plaque is left on the teeth untreated. Calculus harbors bacteria, which produce toxins and can cause the gums to become inflamed (gingivitis).
Canines	The teeth located just to the left and right of the lateral incisors, four in total.
Caries	<i>See dental caries</i>
Cleft lip	A cleft lip is a condition that creates an opening in the upper lip between the mouth and nose. It looks as though there is a split in the lip. It can range from a slight notch in the colored portion of the lip to complete separation in one or both sides of the lip extending up and into the nose.
Cleft palate	A cleft palate occurs when the roof of the mouth has not joined completely. The result can range from just an opening at the back of the soft palate to a nearly complete separation of the roof of the mouth (soft and hard palate).
Craniofacial anomalies	This heading includes a rather large number of conditions that can affect the shape of a child's head and face.
Debris	<i>See plaque</i>

Dental caries/tooth decay	Dental caries is a demineralization of the tooth surface caused by bacteria: minerals of the tooth are dissolved into surrounding bacterial plaque and to saliva. A caries process going on for some time may result in a Caries Lesion . It is sometimes called White Spot Lesions, Initial Caries or Incipient Caries . If the process is not halted, the enamel surface breaks, resulting in a Cavity .
Distal surface	The surface of the tooth away from the mid-line.
DMFT/dmft	DMFT/dmft describes the amount - the prevalence - of dental caries in the permanent and the primary dentition, respectively, and is obtained by calculating the number of decayed (D/d), missing (M/m) and filled (F/f) teeth in an individual.
DMFT/dmft score	According to the WHO, DMFT/dmft= 0.0-1.2 indicates the lowest prevalence of caries; DMFT/dmft=1.2-2.6 -low caries prevalence; DMFT/dmft=2.7-4.4 -moderate prevalence of caries; DMFT/dmft=4.5 -6.5 -high prevalence of caries; and DMFT/dmft>6.5 indicates the highest prevalence of dental caries.
Filled teeth	Teeth with any fillings that have no cavitated or visual caries present.
Fluoride	A chemical substance that can strengthen tooth enamel and make teeth less susceptible to decay. Fluoride can make its way to teeth by ingestion through food or water, or by topical application made directly to the surface of the teeth by the dentist.
Gingivitis	Stage one of early periodontal disease characterized by inflammation, swollen, reddish gum tissue which may bleed easily when touched or brushed. Untreated, gingivitis can lead to chronic periodontal disease.
Incisors (two centrals and two laterals)	The first eight front teeth, four located on the top and four on the bottom of the mouth.
Lingual surface	The surface of tooth adjacent to the tongue.

Missing teeth	Teeth that are not present or visible in the mouth at the time of examination and have been extracted due to caries or trauma or are still unerupted.
Molars	The class of teeth found in the back of the mouth, characterized as having multiple biting surfaces, that is, the sixth, seventh and eighth teeth.
Periodontal disease	A chronic infection caused by bacteria that accumulate in plaque, and has been linked to various health problems including pre-term low birth weight babies, heart disease, stroke, pneumonia, and chronic respiratory disease.
Plaque	A sticky fairly transparent film that forms on the teeth or cracks of the teeth primarily composed of undigested food particles mixed with saliva and bacteria. Plaque left alone eventually turns in to tartar or calculus.
Posterior teeth	Teeth situated at the back of the mouth, refers to the premolar and molar teeth.
Premolars	<i>See</i> bicuspid
Sound and untreated teeth	This term is used for all surfaces of the teeth that are present and have no caries experience. A surface is recorded as “sound” if it shows no evidence of treated dental caries in dentine.
Trauma	This is an injury to the teeth or jaws.
Tooth decay	<i>See</i> dental caries
Unerupted teeth	Teeth that have not yet erupted, therefore, there is no tooth surface visible in the mouth at the time of examination.