PILOT STUDY TO DETERMINE PREVALENCE OF ORAL DISORDERS AMONG SCHOOLCHILDREN AND THEIR ORAL HEALTH CARE KNOWLEDGE IN METSAVAN VILLAGE, LORI MARZ: A RESEARCH GRANT PROPOSAL

Master of Public Health Project Utilizing Research Grant Proposal Framework

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Yerevan, Armenia
October 2003

Executive Summary

Caries is known to be the most frequent chronic disease among children worldwide. Children who suffer from oral disorders (i.e. caries, gum diseases, periodontal diseases, etc.), are more affected by malnutrition and other health problems as well. In Armenia, the magnitude of dental care problems among school age children has not been accurately assessed and comprehensive regional prevention activities have not been initiated. Although there are several programs implemented by the Armenian Dental Society of California and by the student council of Yerevan State Medical University that seek to improve oral health of vulnerable populations in Armenia, these programs are mainly dedicated to treatment of caries. Educational programs and preventive measures are still lacking in Armenia.

The proposed program seeks to determine the prevalence of oral disorders via basic dental screening among approximately 1,100-1,200 school children living in rural areas such as Metsavan village of Lori Marz. The program is intended to assess dental care awareness among children and to educate them about appropriate dental care.

The pilot study will take approximately three months from initiation/planning to final report. Four dentists and four nurses will be resonsible for interviewing children (complete a questionnaire about dental care); conduct a basic screening for dental problems; assess dental needs; and carry out the educational part of the program. Staff will enter, clean, and analyze the data, and prepare the final report containing a detailed descriptive summary with recommendations.

In addition to screening, specialists will identify those children who require further diagnostics, treatments, and surgical intervention, and will provide a written recommendation for further treatment. During the field visits, the educational component of the program will be conducted in the classrooms. Education will be carried out by distributing booklets and conducting dental care related lectures. Toothpaste and brushes will be distributed to the children at the end of the screening in the schools.

The budget for the pilot study is $8,071.20. The administrative staff will contribute in-kind working time to the project during preparatory, training and data management/analysis phases of the project. Total in-kind contribution is equivalent to $1,164.80.

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I. Background and Significance:

Dental caries is the most frequent chronic disease among children worldwide (1-4). Dental caries results from the interplay of dietary carbohydrates, cariogenic bacteria within dental plaque, and susceptible tooth surfaces. Many studies (5-11) suggest that the magnitude and severity of dental caries in primary and permanent teeth continue to be a major problem and should receive special attention. Tooth decay or early loss of teeth may lead to malnutrition and other health problems (12). Caries and its complications affect the quality of life, both physiologically and psychologically (12). The premature loss of primary teeth may result in a variety of adverse consequences, such as gastro-intestinal disorders, esthetic and psychological problems (12).

Fortunately, most oral health problems can be prevented or effectively treated if found in their early stages of development (13-17). The four most accepted measures for prevention of dental caries and its complications are: oral hygiene, dietary counseling, fluorides, and fissure sealant (8). The first two measures do not require much expenditure. They can be implemented in any place via an educational program. Good oral hygiene and diet can prevent periodontal disease and dental caries (13, 17).

The most important means of maintaining oral hygiene is using a toothbrush (8, 13, 17). Tooth brushing at least twice daily with a small headed, medium hardness brush will help to reduce caries if fluoride toothpaste is used (18). However, tooth brushing removes plaque only from smooth dental surfaces and not from the depths of contact areas, pits, and fissures; more effective inter-dental removal requires regular flossing (some flosses also contain fluoride) (18).

Diet also plays an important role in preventing caries (13, 16). Sugars, particularly non-milk sugars, in items other than fresh fruits and vegetables, are the major dietary causes of caries (19). Frequency of intake is more important than the amount because the risk is approximately the same for small or big portions of food. For reducing the risk of developing caries, it is better to have a meal a few times per day than to eat many times in small portions. For older children and adults, snack foods and especially drinks should be free of sugars. Because of the risk of erosion as well as of caries, frequent consumption of carbonated and cola type drinks should be discouraged (19). Water, milk, and sugar-free fruit juices are the preferred options for children (19).

Both children and adults suffer from dental problems. Ideally, oral health programs should be carried out for the entire population. However, in case of limited time and resources, children are the preferred target. First, it is easier to change their habits and to teach them to use oral hygiene measures. Second, once they get accustomed to these habits they will hopefully keep them for all their lives and keep natural teeth for their lifetime (8, 13). Adults have mostly problems that require treatment rather than prevention. This does not decrease the importance of prevention for older people, but it shows that working with children can have more significant impact.

In Armenia, dental care is far from satisfactory. The number of Decayed, Missing, and Filled Teeth (DMFT index) among 12-year old children is estimated at 4-5 (17). At the age of 35, the DMFT index is approximately 14 and at the age of 60 there are only 5-6 teeth in the oral cavity (17). The norms of this index vary from country to country and only comparisons between them

can be made. The DMFT index indicates that situation in Armenia is similar to those of other NIS countries, but it is still worse than western European countries (20). The socio-economic difficulties and limited public awareness of the importance of preventive dental care make it difficult to improve the oral health of the Armenian population, especially in rural areas (21). Most people do not visit a dentist for regular check-ups and even ignore mild toothache; they visit the dentist only when they have severe symptoms, e.g. unbearable pain (3). Moreover, the lack of knowledge about appropriate dental care results in a high prevalence of oral diseases among both children and adult population (22-28).

The quality of dental care in rural areas differs from that of Yerevan. According to data from the "Demographic and Health Survey 2000", people in rural areas have less income compared with people in urban areas, so the cost for dental services is often unacceptably high for them (29). Moreover, in rural areas, the number of medical personnel is not adequate to satisfy all dental needs of the population: not every village has a dentist. Sometimes people have to go to the nearest town to see a specialist. Transportation is not always available because of cost, distance, road conditions, weather (30).

There are now several programs aimed at improving the oral health of vulnerable populations in Armenia. For example, the Armenian Dental Society of California operates several special programs (31). It owns a mobile clinic and periodically organizes trips to schools throughout Armenia. The student council of the Yerevan State Medical University has also organized health programs which included dental care (32). However, these programs are mainly directed to treatment of caries. Education and prevention are still lacking in Armenia.

The proposed program seeks to determine the prevalence of oral disorders via basic dental screening among school children in rural areas and to educate them about appropriate dental care. For education booklets will be distributed and dental care related lectures will be presented. Prevalence of oral disorders among school children in rural areas may guide future activities for dental treatment of school children.

The program will be implemented in Metsavan, Lori Marz. The Marz, located on Armenia's northern border, is one of the largest of Armenia's eleven marzes (33). Lori Marz is an industrial, heavily populated area that includes the third largest city of Armenia, Vanadzor (33). Located along active fault lines, the Marz suffered a disastrous earthquake in December 1988, which attracted international financial and medical support, allowing the initial move toward the creation of Armenian health care system.

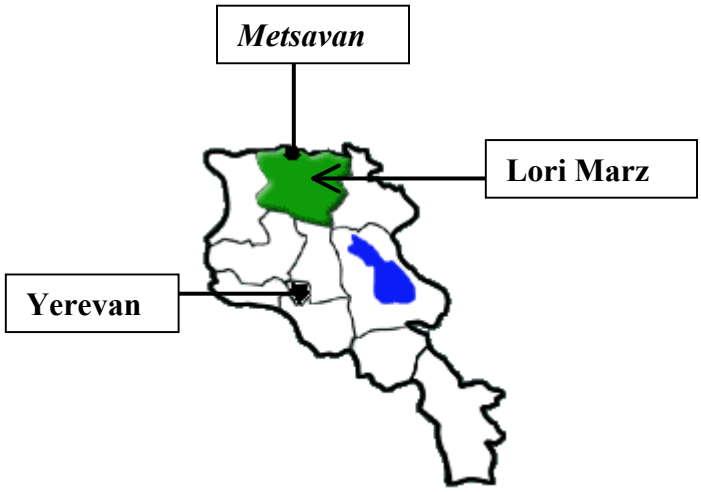

Figure 1, Map of Armenia

General living conditions have improved slightly during the last 5 years, but much more needs to be done. Lori is one of the highly unemployment regions in the country. In 1999, unemployment in Lori Marz was 16.9%, compared to a nationwide average of 9.9% (34). The marz involves 18 cities and towns, and 118 villages (30).

Metsavan is the largest village in Lori Marz (29). Its population was about 7,000 people in the early 1990's, but now there are only 4,800 people living in the village (30). This dramatic decline is due to high migration rates. For comparison, the official census, which was conducted in 1989, revealed a population of 3,283,000 in Armenia (35). According to the preliminary results of the last census that was conducted in October 2001, the population of Armenia is 3,210,606 (36). The demographic and natural characteristics of Metsavan (population, health services, climate, water and its composition, "disaster zone" after 1988's earthquake) are very similar to those of other villages of the northern regions of Armenia. As Metsavan is a large village, the results there can be generalized to small towns as well as to other villages of the region.

Currently there are 2 schools in Metsavan, with 550-600 children in each (37), and a health center (30). There are 3 physicians and about 20 nurses working in the health center. The physician specialists are: general practitioner, gynecologist, and pediatrician (30). Dental care is of very low priority. There has been no dentist in the village for more than 10 years. The nearest dental clinic is in Tashir which is about 10 km away, and it costs about 500 drams per person for transportation (37). During the wintertime, the road connecting Metsavan and Tashir is often closed so. People in Metsavan only go to dentists if they have severe pain or other severe symptoms. This fact has negatively impacted the dental health of children living in the village

(37). People lose their teeth or suffer from different types of dental problems at a very young age.

II. Specific Aims

The proposed program is designed to determine the prevalence of oral disorders among school children and assess the level of general knowledge about dental care in the target population. Implementation of the program will increase awareness of the target population regarding the problems of oral hygiene, followed by a decrease in the incidence of caries and other disorders among school age children. Baseline screening and appropriate educational information will be carried out in 2 schools in Metsavan, Lori marz. The goal of the program is to determine children's needs and to prevent potential dental health problems while improving the quality of personal dental care and oral hygiene.

Program Objectives:

The objectives of the proposed program are the following:

1. Conduct baseline dental screening among school children in 2 schools of Metsavan.

2. Assess baseline knowledge of personal dental care and caries prevention among children via questionnaires.

3. Identify those children who need further diagnostic, therapeutical treatment, and/or surgical intervention beyond the scope of this project.

4. Create and distribute printed educational materials for children and their parents.

5. Train children in the classrooms to promote healthy behaviors regarding dental care.

6. Improve the knowledge and behavior of children regarding oral hygiene at least by 30%. This difference will be measured based on pre- and post-intervention assessment tests.

7. Provide written recommendations for advanced diagnostics/treatment for parents.

8. Analyze data and provide written final report containing a detailed descriptive summary with recommendations for follow-up interventions and further studies.

III. Program Design and Methods

III. a Study Design

The proposed project is a preliminary program, which could be expanded into a treatment program if its results indicate effectiveness. The program will detect and prevent future dental health problems among school children aged 6-17 years. It provides an opportunity to determine the baseline prevalence of caries and other dental health related disorders among children in two

selected schools in Metsavan. The WHO recommended form for oral health status evaluation (Appendix 1) will be used. As the survey will be conducted among schoolchildren, some modifications of the questionnaire have been made: Questions not applicable to the specified age group will be excluded. The use of this form would permit comparing the results to those of other studies. The faculty of the Pediatric Dental Department at YSMU have experience in using this form and that experience suggests its effectiveness (4, 10, 16, 17). The author of this proposal was among the Departmental research team.

All children will receive the baseline screening and educational program. During the educational program the two schools will be divided into four groups matched on the basis of age. Each school will have two groups: students from 1^{st} -5^{th} forms will be included in the first group and from 6^{th}-10^{th} in the second. Age distribution is important because of the difference of incognitive ability to perceive the presented materials.

III. b Target Population/Sample:

The target population consists of children from 6-17 years old attending schools in Metsavan village, Tashir region, Lori marz. Dentists and nurses will determine oral disorders for all participating children and will teach them about oral hygiene.

This region of Armenia was selected because of its remote location from Yerevan, with socio-economic instability and insufficiency of health care services and informationThe program only

is proposed for one village because it is a pilot study and there is a need to keep expenditures to a minimum. Metsavan is most appropriate for that purpose as it is the largest village of Armenia and is similar both to other villages and to small towns. There are only two schools in the selected village, both of which will be included in the proposed program. Approximately 20-23 classes with an average enrollment of 550-600 students in each school will be involved. The potential size of the total population from the two schools ranges from 1,100-1,200.

III. c Participant Recruitment:

The key administration in the two schools and the parents of the children will be informed in advance about the screening and educational program. The specific number of children in the schools will be obtained from the school administration. School teachers and parents will be informed about the goals and objectives of the program in written form.

Inclusion Criteria: All students present at the two schools, aged from 6 to 17 years, and with permission by their parents will be included in the program.

Exclusion Criteria: Parents/caregivers may refuse participation. Those children whose parents are unwilling for their children to participate in the program will be excluded. Also, children absent from school during the screening or the educational portion of the program will not be included.

IV. Implementation strategies

IV a. Project Team

The Project Team will consist of administrative staff and field staff.

Administrative Responsibilities: The administrative staff (four people) will be responsible for the overall project design and implementation. They will prepare the Manual of Operations, train the field staff, monitor the screening, conduct data entry and data cleaning, and prepare the final report. Quality assurance and control activities will be carried out throughout the project duration to ensure validity and reliability of the data and the quality of the services. It will be reinforced by the continued collaboration between the administrative staff and the Department of Prevention of Oral Diseases and Pediatric Dentistry of the Yerevan State Medical University.

Field staff: Temporary field staff will be hired via a competitive interview process. Two-day unpaid training will follow staff recruitment. Two days are enough for training as the dentists are already qualified for diagnosing the symptoms indicated in the questionnaires. They will have to learn to become familiar with the questionnaires and to set common standards for this study. The field staff will consist of four dentists and four nurses. Two of the four nurses will be from the village schools. The dentists will perform a detailed examination of the oral cavity. Nurses will conduct interviews and assist dentists in their activities. If necessary, special recommendation forms for further treatment will be completed and distributed by nurses to parents.

The field-working group will interview and screen approximately 400 children per day (100 children per person). Thus, 1,200 children will be examined in three work days. After the screening procedure, one day will be dedicated to education. Age appropriate lectures will be delivered to four groups, two in each school, to promote healthy dental care behaviors. The groups will be formed according to grades of children (from 1st to 5th and from 6th to 10th) because of differences in their background knowledge and learning abilities.

School nurses will be actively involved in the assurance of a high response rate of participants and in assisting during the interview and screening. The examination units (rooms) will be established in the health care unit of each institution with the placement of necessary screening instruments. Continuous collaboration between field staff and administrative staff will be maintained throughout the process.

IV b. Screening

Manual of operations

The Manual of Operations will be developed by the administrative staff and will contain the following:

- List of equipment
- Questionnaire
- Training manual
- Educational materials (booklets)
- Interviewing techniques
- Standard screening procedures

- Guidelines for data collection, including storage, transfer, cleaning, management and analysis
- Quality assurance protocols for all steps, including pre-test, staff training

Wording and sequencing of the questionnaire will be pre-tested on 20 children selected randomly in one of the schools of the region not involved in the study. Following the pre-test, the instruments and the protocol guides will be revised to assure the clarity of the questions and the ease of implementation.

Training:

The administrative staff will conduct staff orientation and training in one day, followed by one day of pre-testing. Dentists will be trained to provide standardized dental examination. Nurses will obtain training on interviewing techniques and basic dental examination. When necessary, retraining of the staff will be organized.

Interview:

Face-to-face interviews will be administered to schoolchildren from first to fifth forms and will be conducted by the nurse interviewers in a secluded area to promote confidentiality. Each interview will last from 5 to 10 minutes. After the interviews, the schoolchildren from sixth to tenth forms will complete the questionnaire themselves, but with the help of nurses if needed.

The interview will include close-ended questions providing a list of possible responses. The questionnaire will contain the following domains:

- Demographic information, which includes age, gender and grade
- Assessment of knowledge about oral hygiene

- Utilization and availability of dental care services

Dental examination:

Dental examination will follow the interview. The screening will include comprehensive examination of the oral cavity. The dental examination form will provide information for computing DMFT (Decayed, Missing, Filled Teeth) index and the Oral Hygiene Index-Simplex (OHI-S) (38). The OHI-S has two components, the Debris Index and the Calculus Index. Each of these indexes, in turn, is based on numerical determinations representing the amount of debris or calculus found on the pre-selected (16, 11, 26, 36, 31, and 46) tooth surfaces. The examination forms will be completed by nurses based on dentists' order.

The screening will take approximately 5 minutes for each child. At the end of the examination, if necessary, special recommendation forms for parents/caregivers will be completed by nurses with the diagnosis and treatment suggestions. The Manual of Operations will provide more detailed description of the methodology used to conduct the dental examination.

IV c. Education

Education will be carried out using lectures by dentists, brochures (with color pictures, crosswords, and games), and instructions about proper ways of brushing and flossing, with illustrations. The materials will be different for the age groups. For the younger age group, the preference will be given to colored illustrations and games, while for the older age group more lectures and class discussions will be given. The children also will be taught practical skills of proper oral hygiene using video tapes and distributed toothbrushes and floss.

IV d. Data management and Analysis

A database will be constructed using the SPSS statistical software package. Data from the field will be sent to the data management center. Trained data operators (the four administrators) will perform double entry and cleaning of the data. Data entry experts will spend 5 minutes entering each questionnaire. Overall, 4 data operators will spend 7 days each for double entry of the data. This will be followed by 2 days of data cleaning.

After finalizing data entry and data cleaning, the data will be analyzed by the administrative staff. The prevalence of different oral disorders among the school age children in the selected region will be calculated. For measurement of the prevalence of caries the *DMFT index* will be used for permanent teeth, and the *dmft index* for deciduous teeth. For assessment of oral hygiene, the *OHI-S index* will be calculated. The use of the above mentioned indices will allow comparison of program results with international data. Data analysis will also determine the necessity and the volume of further treatment and care.

IV e. Evaluation

Considering that this is a pilot study, it should be evaluated in order to develop recommendations for further studies. The project will be considered as successful if participation rates are high (>90%), knowledge about oral hygiene and diet among children increases (>30%), and there is a positive change of children's attitude toward oral hygiene.

IV f. Reporting

A final report summarizing the process, the program, and descriptive findings will be submitted to the donors and to the Yerevan State Medical University, Department of Prevention of Oral

Diseases and Pediatric Dentistry shortly following the conclusion of the program. Complete, detailed records of the expenditures during the project implementation will be maintained and will be provided to the donors. Information about the need of further treatment and its volume will be included in the final report.

V. Ethical considerations

The protocols of interview, basic dental examination will be discussed with and affirmed by the Ministry of Health of Armenia (MOH), the Ministry of Education and Science (MES), and the Department of Prevention of Oral Diseases and Pediatric Dentistry of the Yerevan State Medical University. Written permission from MOH and MES will be provided to the administration of each school two weeks prior to the screening. A consent form for the parents will be developed by administrative staff in Armenian and Russian languages and will include information about the purpose of the study, screening procedure, risks/discomforts, confidentiality, right to withdraw at any time, and contact person for questions. The school administrations will inform the parents/caregivers about the screening program. Written consent form will be obtained from each parent/caregiver by the school administration. In addition, parents will be able to be in attendance during the screening.

Information about the results of the screening will be available for the parents/ caregivers of the children.

Possible Limitations:

The mothers/caregivers' unwillingness to participate, as well as the fear of children to undergo the examination, could become possible limitations of the proposed program.

Another limitation for the study is short time. It will be difficult to achieve long term results only in one week of education. As this is a pilot study, suggestions for longer educational component may be presented in recommendations of the final report.

Active involvment of teachers of schools also could have had positive impact on the results of the program. However, because of limitation of resources, they are not involved in the program proposal.

VI. Time Frame

The project is estimated to take approximately three months for planning, training, collecting data, providing interventions, analyzing data and preparing final report.

- Start Date: Upon acceptance of the proposal and the transfer of funds { September 2003}.
- Completion Date:

  Preparatory: completed on/before 2 October 2003

  Screening: school 1 – October 2003

  school 2 – October 2003

- Data entry: Electronic dataset will be provided approximately one and a half weeks following the completion of data collection.
- Data Analysis: Completed before November 15
- Final Report: Completed before December 1

	Sep	**Oct**	**Nov**
Preparatory phase	X		
Screening and education		X	
Data entry		X	X
Data analysis			X
Final Report			X

VII. Budget

The budget for the pilot study is $8,071.20 (Appendix 2). The administrative staff will contribute in-kind working time to the project during preparatory, training and data management/analysis phase of the project. Total in-kind contribution is equivalent to $1,164.80. The budget includes salaries of administrative staff, dentists, and nurses ($3,493), transportation cost to Metsavan from Yerevan for the group ($320), accomodation and food ($648), and cost of supplies and materials ($3,611).

References

1. Murray J. Prevention of oral disease. Oxford: Oxford University Press, 1996
2. Scully C, Flint S, Porter S. Oral diseases. London: Martin Dunitz, 1996
3. Watt R, Sheiham A. Inequalities in oral health: a review of the evidence and recommendations for action. Br Dent J 1999;187:6-12
4. Margarian M, Vardanian I. Frequency and intensiveness of caries among school students in Yerevan. Journal of clinical and expert dentistry 1995.
5. Ohrn R, Enzell K, Mansson A. Oral status of 81 subjects with eating disorders. Eur J Oral Sci 1999;107:157.63
6. Wierzbicka M, Petersen P, Szatko F, Dybizbanska E, Kalo I. Changing oral health status and oral health behavior of schoolchildren in Poland .Community Dental Health 2002;19. [online][cited 13 February, 2003]. Available from: URL: http://www.dundee.ac.uk/dhsru/cdh/latest.htm#1926
7. Reich E. Index system for caries epidemiology and treatment. FDI Science Commission Project 99-06. 2001
8. Holt R, Roberts G, Scully C. ABC of oral health: Dental damages, sequelae, and prevention. [online][cited 15 February, 2003]. Available from: URL: http://www.studentbmj.com/back_issues/1000/education/369.html
9. Ayala O. Prevalence of dental caries in school children in Nueva Esparta State, Venezuela. [online][cited 14 February, 2003]. Available from: URL: http://iadr.confex.com/iadr/2002SanDiego/techprogram/abstract_19295.htm.
10. Margarian M, Vardanian I. Periodontal status of 12-14 ages school students in Yerevan. First dental conference of Armenia. Yerevan. 1997
11. Margarian M, Vardanian I. Periodontal diseases of pregnant women and the prevention. International conference of oral surgery in Armenia. Yerevan. 2000
12. Peterson P. E., Christensen L. B. Oral Health Promotion, Health Promoting Schools Project. World Health Organization. 1995
13. Wickens J. Prevention and maintenance. British Dental Journal 186, 371 - 376 (24 Apr 1999)
14. Craig G. Fluorides and the prevention of dental decay: a statement from the Representative Board of the British Dental Association. British Dental Journal 188, 654 (01 Jan 1970)

15. Reekie D. Ending the misery of child dental decay. British Dental Journal 187, 174 - 176 (28 Aug 1999)

16. Margarian M, Vardanian I. Effectiveness of preventive anticariotic measures for 12-14 ages school students. Guide to industry and economics. Saint Petersburg. 2000

17. Margarian M, Vardanian I, Avagian A. Situation and prospective of development of dental disease prevention and pediatric dentistry. First international conference "Human Health", Yerevan, 2002

18. Helfe L. A., Konig K.G. Oral Hygiene and Educational Programs for Caries Prevention. Caries Research 12 (Supplement 1): 1978; 83-93.

19. King J. M. Patterns of sugar consumption in early infancy. Community Dentistry and Oral Epidemiology 1984; 6: 47-52.

20. WHO Oral Health Country/Area Profile Programme: European Union and European Economic Area. [online] [cited 12 October 2003]. Available from: URL: http://www.whocollab.od.mah.se/euro.html

21. Tumanyan S. To the question of dental health education in Armenian schools. Materials of "Young doctors" conference. Yerevan, September, 2001

22. Towner E. The history of dental health education: a case study of Britain. Oral Health Promotion, Oxford Medical Publications. 1993

23. Van Palestein Helderman W. H., Munck L., Mushendwa S., Van't Hof M. A., Mrema F. G. Effect evaluation of an oral health education programme in primary schools in Tanzania. Community Dentistry and Oral Epidemiology 1997; 25: 296-300.

24. Morgan M. V., Campain A. C., Adams G. G., Crowley S. J., Wright F. A. The efficacy and effectiveness of a primary preventive dental programme in non-fluoridated areas of Victoria, Australia. Community Dental Health 1998; 15: 263-271

25. Laiho M., Honkala E., Nyyssonen V., Milen A. Three methods of oral health education in secondary schools. Dental Research 1993; 101: 422-427.

26. Laiho M., Honkala E., Kannas L. How is oral health education conducted in Finnish health centers? Community Dentistry and Oral Epidemiology 1995; 23: 119-24.

27. Schou L. Active involvement principle in dental health education. Community Dentistry and Oral Epidemiology 1985; 13: 128-32.

28. Kay E. J., Locker D. Is dental health education effective? A systematic review of current evidence. Community Dentistry and Oral Epidemiology 1996; 24: 231-5.

29. National Statistical Service [Armenia], Ministry of Health [Armenia], an ORC Macro. 2001. Armenia Demographic and Health Survey 2000. Calverton, Maryland: National Statistical Service, Ministry of health, and ORC Macro.

30. Asya Chobanyan, Director of Health Center of Metsavan village. Personal communication. 5 Febraury, 2003.

31. Armenian Dental Society of California. [online] [cited 2002 October 21]. Available from: URL: www.adsc-org.org/about.html

32. Yerevan State Medical University, [online] [cited 2002 October 22] Available from: URL: www.ysmu.am

33. Virtual Armenia 2000. Lori Marz (Region). [online][cited 14 February 2003]. Available from: URL: http://www.virtualarmenia.am/lori/bn/p7.htm

34. United Nations Development Programme (UNDP). Poverty of Vulnerable Groups in Armenia, Chapter 5: Human Poverty (Basic social indicators for refugees and locals). 1999. [online][cited 14 February 2003]. Available from: URL:http://www.undp.am/pubs/pover/refugee/Main05.htm/

35. The demographic consequences of the catastrophic earthquake in Armenia. 1989. [online][cited 11 May 2003]. URL: http://www.iatp.am/economics/migr/demo89-e.htm

36. "Noyan Tapan" news agency. 2002. [online][cited 11 May 2003]. URL:http://www.nt.am/eng/news/22.10.2002/Other/o1.html

37. Karine Avetisyan, Organizer of Secondary School # 2 of Metsavan village. Personal communication. 15 February, 2003.

38. Oral Health Methods and Indices. World Health Organization. [online] [cited 3 October 2003]. Available from URL: http://www.whocollab.od.mah.se/expl/methods.html

Appendix 1

WHO ORAL HEALTH ASSESSMENT FORM (1986)

(SIMPLIFIED)

COUNTRY …….

Leave Blank	Year	Month Day	ID Number	Original/ Duplicate	Examiner
(1)□□□□(4)	(5)□□(6)	□□□□	(7)□□□□(10)	□(11)	□(12)

General Information Name……. **Other Data** (to be specified)

Age in years (13)□□(14) Geographic Location (18)□□(19) …….. □(21)

Sex (M=1, F=2) □(15) Location type: …….. □(22)

Ethnic Group □(16) 1 = urban, 2 = periurban, 3 rural □(20) …….. □(23)

Occupation □(17)

Malocclusion

0 = none □(17)

1 = slight

2 = moderate or severe

Periodontal Status (SPITN)

17/16 11 26/27

(25) □□□ (27) 0 = healthy 1 = pocket 4-5 mm

(28) □□□ (30) 1 = bleeding 4 = pocket 6 mm or more

47/46 31 36/37 2 = calculus x = excluded sextant

Dentition Status and Treatment Need

55 54 53 52 51 61 62 63 64 65

18 17 16 15 14 13 12 11 21 22 23 24 25 26 27 28

status

(31) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (46)

(47) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (62)

treatment

85 84 83 82 81 71 72 73 74 75

48 47 46 45 44 43 42 41 31 32 33 34 35 36 37 38

status

(63) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (78)

(79) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (94)

treatment

Status		Treatment
Permanent Teeth		
0= sound	A	0= none
1=decayed	B	1= caries arresting or sealant care
2= filled and decayed	C	2= one surface filling
3= filled, no decay	D	3= two or more surface fillings
4= missing due caries	E	4= crown or bridge
5= missing, any other reason	-	5= bridge element
6= sealant, varnish	F	6= pulp care
7= bridge abutment or special crown	G	7= extraction
8= unerupted tooth	-	8= other care
9= excluded tooth	-	9= (specify) ……

Fluorosis

☐ (495)

0= normal	3= mild
1= questionable	4= moderate
2= very mild	5= severe

Appendix 2

Task

Baseline Assessment/Knowledge & Prevalence	**Days Quant.**	**People/ Units**	**Rate**	**TOTAL**	**IN-KIND**	**%IN-KIND**
Task Managers [4 people for 3 months]	36	4	$18.00	$2,592.00	$1,036.80	40.00%
-logistical preparation						
-detailed protocol and procedures						
-instrument development						
-pre-testing						
-fielding						
-analysis						
-baseline report						
-development of educational program						
-training of nurses	1	4	$25.00	$100.00	$30.00	30.00%
Consultant DMD [materials preparation]	7	1	$35.00	$245.00	$98.00	40.00%
Dentists [screening]	1200	1	$1.00	$1,200.00	$0.00	0.00%
Data entry (double/knowledge) [daily rate/; 10/hour]	7	4	$16.00	$448.00	$0.00	0.00%
Data cleaning	2	2	$18.00	$72.00	$0.00	0.00%
TRANSPORTATION						
Trip Yerevan/Metsavan (165km), school/school	10	1	$32.00	$320.00	$0.00	0.00%
ACCOMMODATION						
Hotel	3	8	$14.00	$336.00	$0.00	0.00%
Food	3	8	$10.00	$240.00	$0.00	0.00%
Hotel	1	3	$14.00	$42.00	$0.00	0.00%
Food	1	3	$10.00	$30.00	$0.00	0.00%
SUPPLIES/MATERIALS						
Photocopies						
-questionnaires	1220	2	$0.10	$244.00	$0.00	0.00%
-written consent form for parents	1200	1	$0.10	$120.00	$0.00	0.00%
-educational materials (1200 copies, 2 pages each)	1200	2	$0.40	$960.00	$0.00	0.00%
-tooth brush	1200	1	$0.80	$960.00	$0.00	0.00%
-tooth paste	1200	1	$0.90	$1,080.00	$0.00	0.00%
-wood stick	1200	1	$0.04	$48.00	$0.00	0.00%
-mirror	400	1	$0.30	$120.00	$0.00	0.00%
-solution for sterilization	3	1	$10.00	$30.00	$0.00	0.00%
Office Supplies						
-pens, pencils, writing pads, etc	1	1	$35.00	$35.00	$0.00	0.00%

Public Relations/Documentation						
-photographic film with development	2	1	$4.00	$8.00	$0.00	0.00%
-video tape	2	1	$3.00	$6.00	$0.00	0.00%
In-kind provided technical supply						
-photo camera, video camera						100.00%
-computer, printer						100.00%
-mobile phones						100.00%
			TOTAL	$9,236.00		
			IN-KIND	$1,164.80		
			NET	$8,071.20		