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**Evaluation of oral health intervention among primary schoolchildren
living in Mrgashat and Sardarapat Communities of Armavir province, Armenia**

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1 Introduction

1.1 Oral Health

According to the World Dental Federation (Fédération Dentaire Internationale (FDI)), oral health (OH) is acknowledged as a multidimensional condition, which comprises “the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex”.^{1,2} Poor OH impairs one's life at individual and social levels and diminishes the quality of life.³ According to the 2017 Global Burden of Disease (GBD) estimates, over 3.5 billion individuals worldwide suffer from oral conditions.⁴ The rising prevalence of oral diseases over the globe, particularly in many low- and middle-income countries (LMICs), has confronted policymakers with a serious public health problem.^{5,6}

1.2 Plaque and caries in children

Dental plaque is a viscous biofilm that is naturally produced by the adhesion of the oral microbial community on a tooth surface.⁷ Frequent exposure to dietary sugar breaks the oral homeostasis and disrupts the microbiological composition of dental biofilms.⁸ Cariogenic bacteria in dental plaque convert the majority of consumed sugars to acids, which subsequently results in enamel demineralization and development of biofilm-mediated diseases.⁹ Globally, the most prevalent OH condition among school-aged children is dental caries.¹⁰⁻¹² This preventable, multifactorial, sugar-driven disease is a chemical demineralization of the tooth surfaces, arising from continuous metabolic interactions between microbial biofilm and dental hard tissues.¹³ Children with dental caries suffer from oral pain, discomfort, tooth loss, poor growth, delayed speech development, and impairment of daily activities.¹⁴ According to the World Health Organization (WHO) estimates, 60% to 90% of children of school-going age have some type of dental caries, worldwide.¹⁵ A commonly used indicator of dental plaque is the plaque index, also known as the Quigley and Hein Index, which uses a 0 to 5 scale, demonstrating the presence of plaque covering the 6 surfaces of a tooth.¹⁶ Dental caries can be assessed by the decayed, missing, and filled teeth index (DMFT/dmft), which is the total number of the decayed, missing and filled teeth of an individual. The upper case letter abbreviation is used for permanent teeth and the lower case letter abbreviation for primary teeth.¹⁷

Results of one study conducted in 2014 among Palestinian school-going children aged 12-15 years demonstrated that 54.4% of the students had dental caries in their permanent teeth, with a mean DMFT score of 5.39.¹⁸ In addition, in 2018, the findings of a systematic review and meta-analysis showed that schoolchildren with dental caries were 44% more likely to have poor academic performance and had 57% higher odds of poor school attendance than caries-free students.¹⁹

Previous studies showed that caries and periodontal diseases lower the oral-health-related quality of life (OHRQoL) of school-aged children.^{20,21} In 2019, a systematic review of factors impacting OHRQoL indicated that socioeconomic status and area of residence may also play an important role in determining the OH status of children.²² A study among Chilean urban and rural children demonstrated that rural schoolchildren had poorer OH status (67.5% prevalence of caries with mean DMFT of 3.36) in comparison with those from urban areas (54.0% prevalence of caries with mean DMFT of 2.29).²³

Studies have found that factors protective against the development of caries in children include regular tooth brushing (twice a day) and the use of fluoridated toothpaste.^{24,25} Good knowledge in caries prevention and parents' behavior regarding oral hygiene play a role in children's tooth brushing behaviors, and thus caries status.^{26,27} Among preventive measures, fluoride varnish^{28,29,30,31} and sealant^{32,33,34} application are effective measures in preventing the development of caries among children, as well as interventions aimed to improve children's oral hygiene behavior through the education of children and counseling of caregivers on proper oral care.^{35,36} Hence, proper dental care and plaque control, particularly through regular toothbrushing, is essential for the prevention of caries.³⁷

1.3 Situation in Armenia

According to the World Bank income classification, Armenia is identified as an upper-middle-income country since 2019.³⁸ After the collapse of the Soviet Union and the independence of Armenia in 1991, the country's health system shifted towards decentralization and privatization of its sectors, including dental care services.³⁹ This led to higher out-of-pocket (OOP) payments and subsequently more limited access to health and dental care facilities for the poorer households.³⁹ There is a very limited data on fluoride concentration in drinking water in

Armenia. Like many other post-soviet countries, water fluoridation, and preventive measures such as fluoride varnish and sealant application programs are not widely implemented in Armenia.⁴⁰ However, children under the age of 18 are provided with free dental care at public clinics.⁴¹ Additionally, some non-governmental organizations, such as Children of Armenia Fund (COAF) and Karagheusian Foundation have taken various measures to improve the OH status of children in Yerevan and other provinces in Armenia by providing free dental care to them.^{42,43} In 2005, results of a pilot study in Yerevan showed that 84% of participant children required dental care, of whom 19% needed immediate treatment.⁴⁴ In 2012, a survey in Tavush region showed that schoolchildren 6-15 years of age had 90.8%-96.8% dental caries prevalence.⁴⁵ In 2005, findings from another study demonstrated that 86% of 12-year old school-going children living in the Sisian region of Armenia had dental caries.⁴⁶

The Entrepreneurs in Health (EIH) program was launched by the Turpanjian College of Health Sciences (CHS) at the American University of Armenia (AUA), in collaboration with the AUA Turpanjian Rural Development Program (TRDP). The aim of this project is to improve access to quality health services in rural communities and regional small towns of Armenia through the introduction of advanced technologies and innovative approaches supporting healthcare professionals to develop private health practices. EIH supports private health services through education, financial assistance, continuous professional support and professional development.

This evaluation study was conducted within the framework of “EIH Dental Hygiene Project”, which aimed to improve the OH status of communities through providing support to dental services there. EIH Dental Hygiene projects started in 2022 in one of the EIH rural communities (Mrgashat village in Armavir province) having a dentist supported by the EIH program. The intervention in this community included OH awareness raising activities among primary schoolchildren and their parents and a clinical intervention among children to prevent caries. In another community of the same province (Sardarapat village), only awareness raising activities among primary schoolchildren and their parents were carried out in the scope of the project.

The study aimed at evaluating the OH intervention in Mrgashat and Sardarapat communities. The study objectives included:

1. To estimate the prevalence of plaque, as well as DMFT/dmft indices among primary schoolchildren in rural communities of Mrgashat and Sardarapat, Armavir province, Armenia.
2. To identify factors associated with the presence and severity of plaque and DMFT/dmft indices among primary schoolchildren in these two rural communities.
3. Through baseline and two-year follow-up assessments, evaluate the effectiveness of the above-described interventions in Mrgashat and Sardarapat communities in improving DMFT/ and plaque indices dmft among primary schoolchildren and OH knowledge and behavior among their parents.

2 Methods

2.1 Study design

For the objectives of estimation of plaque and DMFT/dmft indices and factors associated with them, the study utilized a cross-sectional study design based on the baseline assessment.

For the objective of intervention evaluation, the study utilized a quasi-experimental nonequivalent intervention 1 - intervention 2 group design with the two study waves (baseline and follow-up) conducted with an interval of two years.

The baseline and follow-up studies included: 1) a researcher-administered telephone survey on OH knowledge and practice among parents of primary schoolchildren in intervention 1 (Mrgashat) and intervention 2 (Sardarapat) communities; and 2) clinical examinations of OH of primary schoolchildren of intervention 1 and intervention 2 communities. As briefly introduced above, the intervention consisted of awareness-raising activities in the form of training and distribution of booklets covering topics of OH, caries, oral hygiene and teeth brushing (including also practical exercise on teeth models) at the schools of intervention 1 and 2 communities, and application of caries-preventive measures (fluoride varnish and sealant) to all children having indications for these preventive measures only in intervention 1 community.

Intervention 1 community (Mrgashat village, Armavir) was the chosen EIH community where one of the EIH beneficiaries started providing previously unavailable pediatric dental services.

Intervention 2 community (Sardarapat village, Armavir) was selected, as it was comparable with Mrgashat in terms of similar population size and distance from nearby big city (Armavir).

2.2 Study population and sample size

The study population for the OH assessment were primary schoolchildren studying in Mrgashat village as intervention 1 group, and primary schoolchildren studying in Sardarapat village as the intervention 2 group. At the time of study, there were two schools in Mrgashat, one had 134 primary schoolchildren, and the other had 135 primary schoolchildren. Sardarapat had only one school, with around 300 primary schoolchildren. The study population for the OH knowledge and practice survey were parents (mother or father) or primary caregivers of primary school children living in Mrgashat and Sardarapat villages.

A census was conducted for the intervention 1 and 2 groups, hence the whole target population of Mrgashat and Sardarapat villages were included in the study.

2.3 Study settings and recruitment of participants

An official letter was sent to the regional authority (Armavir marzpetaran) by the director of the Center for Health Services Research and Development at the American University of Armenia with the details of the study. After receiving their approval, the study coordinator contacted principals of all three schools, presented details of the intervention and study and, after having their consent, had separate meetings with the primary teachers of all primary classes of the three schools. The study coordinator presented the study to the teachers, explained the procedure of obtaining consent and transferred the hard copies of consent forms already signed by her part. Each teacher distributed two copies of consent forms (appendix 1) to all parents of their classes, asking to give consent for various aspects of the study and return one signed copy of the consent form to them. The aspects of consent were: 1) parent's participation in OH survey, 2) their child's OH assessment, 3) their child's participation in caries-preventive procedures (only in intervention 1 community). After collecting the signed consent forms, the teachers were asked to place them into a sealed envelope and transfer to the study coordinator.

After the receipt of consent forms, the study team initiated the telephone surveys with the parents carried out by trained interviewers, followed by OH assessments in school settings by a dentist and a nurse.

Before the actual OH examination, all children, whose parents gave consent for their child to undergo OH assessment, were presented the procedure in a manner understandable for their age group (assent form) (Appendix 2). The OH examination was conducted only after having written consent from a parent or caregiver, and oral assent from the child participant.

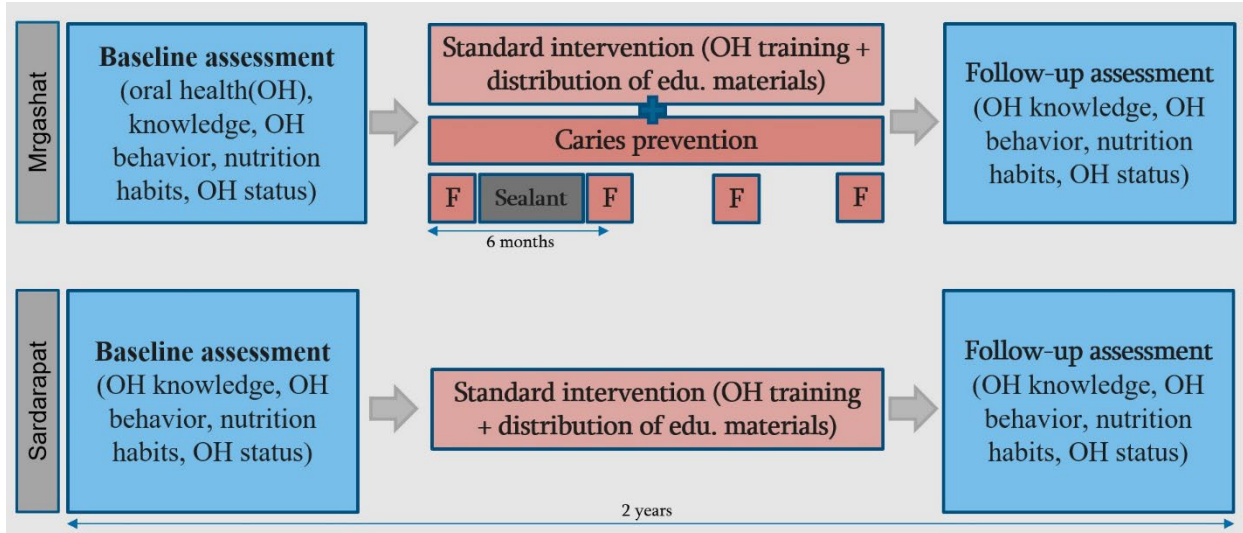
2.4 Data collection and OH intervention

The baseline and follow-up assessments consisted of a survey among parents on OH knowledge and behavior, as well as examination of their children's OH to assess it through standardized indices of DMFT/dmft and plaque.

Data collection of the baseline phase took place in spring 2022. The telephone survey of parents was performed by three trained interviewers, using the online survey tool Alchemer uploaded on electronic devices.

OH examinations were performed simultaneously in two communities by two teams, each consisting of a dentist and a nurse. Both dentists and nurses were thoroughly trained prior to data collection in order to assure inter-rater reliability. The study team was supplied with the necessary equipment for OH examination in a non-dental setting, including proper lighting, sterilized and disposable equipment, as well as a first aid kit. Several spot-checks have shown proper arrangement of data collection. Each child was given a unique ID number. Paper-based data of clinical examination was entered into the SPSS database and merged with the parents' survey data. The follow-up assessment took place in spring 2024 and utilized the same methodology and tools.

The intervention consisted of a training on OH conducted in schools by a dentist and distribution of educational materials adapted for children and parents (Appendix 3) in both communities, as well as caries preventive procedures in the form of semi-annual fluoridization and sealant application on eligible molars of children in intervention 1 community.



The study team conducted a separate training session for each primary class in both communities, also inviting parents of schoolchildren. Overall, 22 sessions were conducted in the three schools. All participants received educational materials and presents in the form of fluoride toothpaste, toothbrush and a gift card worth 10,000 AMD that can be used in the local dental clinic for treatment purposes.

Children with eligible molars for sealant application were identified during the OH assessment carried out in the school, after which the parent of each eligible child was contacted and invited to bring the child to the local clinic for sealant application free of charge. The study team conducted fluoridization of the teeth of all study participants in the school settings, once every 6 months, overall – four times within the period of two years.

2.5 Study instruments

The survey questionnaire (Appendix 4) was adapted from three prior studies conducted in Armenia. It included questions on: 1) socio-demographic characteristics of parents and children, 2) parent-reported health of the child, both general and teeth and gum health, 3) OH knowledge, 4) OH behavior of the child, and 5) eating habits of the child. The data on DMFT/dmft and plaque indices for each examined child were recorded on a dental

examination form (Appendices 5 and 6, accordingly). The plaque index demonstrates the presence of plaque on the teeth surfaces after using a disclosing agent. The index ranges from 0 to 5; with a higher score indicating a larger area of the tooth covered by plaque.¹⁶ DMFT/dmft index is the total number of the decayed, missing and filled teeth of an individual.¹⁵ The upper-case letter abbreviation is used for permanent teeth and the lower case letter abbreviation for primary teeth.

2.6 Ethical considerations

In order to comply with the ethical requirements of a research involving human subjects for clinical examination, the study team applied to the AUA's clinical IRB with a comprehensive application form. The application included a detailed description of proposed activities, as well as safety information of the plaque disclosing agent and the fluoride varnish with corresponding regulations by the US Food and Drug Administration (FDA). The application was submitted for review and has undergone several stages of revisions by the study team at the request of the IRB board members. After all comments made by the IRB members were addressed, the AUA IRB for clinical studies approved the study protocol allowing initiation of data collection (# AUA-2022-003). Considering that IRB approval is valid for a one-year period, the study team reapplied for and got approval from IRB prior to the follow-up stage of data collection.

Written informed consent was obtained from parent participants, and verbal assent was obtained from child participants before the data collection. All records of any gathered information were kept without identifiable information, using only ID numbers of the participants, and were accessible only by the study team. The documents having linked names and contact details of individuals to their ID numbers were kept separate from the collected data.

2.7 Data management and analysis

The collected telephone survey data was extracted in SPSS format. The calculations of the OH indices were initially performed by the field nurses. After randomly selecting and checking 20% of all calculations by independently trained personnel and noticing minor calculation errors in

the Sardarapat community, the whole Sardarapat data was recalculated and a repetitive random check confirmed data accuracy. The data of OH indices was then entered into the SPSS database and merged with the survey data. The data entry was followed by cleaning, including range checks, recoding of categorical variables, and calculation of scores. The process was repeated for the follow-up data.

The data were analyzed using “IBM SPSS Statistics 22” and “STATA 13” software. The data analysis provided descriptive statistics describing the characteristics of the study population using means and standard deviations for continuous variables and percentages for categorical variables.

The prevalence of caries and plaque were calculated and presented in means and standard deviations for DMFT/dmft and plaque indices. The OH knowledge, behavior and eating habits of the surveyed population were presented in OH knowledge, OH behavior and eating habits scores, respectively. The scores were calculated based on the sum of right/ desirable answers to the relevant questions (Table 1).

Although DMFT/dmft score was initially chosen as the main outcome of the intervention evaluation, the study team decided to also look at the dynamics of secondary outcomes, including OH knowledge score, OH behavior score, eating habits score, and plaque index. Thus, to evaluate the intervention’s effectiveness, a paired t-test was conducted to compare pre- and post-intervention OH knowledge scores, OH behavior scores, eating habit scores, DMFT/dmft scores, and plaque indices. A t-test was also used for comparing the same variables between the two communities.

Univariate and multivariable linear regression analyses were used for identifying associations between different independent variables and two outcome variables on children’s OH status: DMFT/dmft score and plaque index.

2.8 Study variables

The main variables for the intervention evaluation were OH knowledge score (ranging 0-9), OH behavior score (ranging 0-6), eating habits score (0-9), DMFT/dmft score and plaque index. The

first three scores were calculated based on the sum of right/ desirable answers of relevant questions (table 1).

For the identification of factors related to the extent of plaque and DMFT/ dmft indices, we examined the association between these two dependent variables and the following independent variables: the above-mentioned three scores, some parental characteristics (age, sex, education, marital status), family's socioeconomic status (family size, perceived living standards, and monthly expenditures), and child's characteristics (age, sex, birth order, perceived health status, nutritional status). The majority of variables were either dichotomous or dichotomized (child's birth order, perceived general health of the child, parental education, marital status). For those variables having more than two categories (child's nutritional status, perceived teeth/gum health of the child, family's living standards, and monthly expenditures), dummy variables were created for each category before entering them into the linear regression analysis. Continuous variables (child's and parent's age, OH knowledge score, OH behavior score, eating habit score) were entered into regression analysis as such after checking the linearity of their association with the outcome.

3 Results

3.1 Descriptive statistics

The descriptive statistics of baseline and follow-up evaluations are presented in Tables 2.1 and 2.2, respectively. The correct answers for items included in OH knowledge score at baseline and follow-up evaluations are presented in Table 3. The desired answers for items measuring OH behavior at baseline and follow-up evaluations are presented in Table 4. The desired answers for items included in eating habits score at baseline and follow-up evaluations are presented in Table 5.

A total of 400 parents participated in the baseline survey, with 229 from Mrgashat and 171 from Sardarapat. The overall response rate among parents was 74.6% (84.5% in Mrgashat and 64.5% in Sardarapat). The number of children who underwent examinations for the plaque and DMFT/dmft indices was 385 and 389, respectively.

Since the study used a census approach, we did not calculate a sample size. Instead, we calculated the study's power to ensure that the design was robust enough to detect meaningful differences in the outcome variable. With a sample size of 385 (the number of children with the plaque index measured), the study had a power of 97.6% to detect a 10.0% difference in the plaque index between two independent samples.

A total of 291 parents participated in the follow-up survey, with 168 from Mrgashat and 123 from Sardarapat. Therefore, the dropout rates were 26.6% and 28.0% in Mrgashat and Sardarapat, respectively. The number of children who underwent examinations for the plaque and DMFT/dmft indices in the follow-up stage was 239 and 231, respectively.

In the baseline study, the mean age of surveyed parents was 33.5 years (range: 23 to 51), while the average age of the children was 8.3 years (range: 6 to 10). The majority of parents were mothers (95.3%), and the sex distribution among the children was nearly equal. At the time of the interview, 96.0% of parents were married, and 4.0% were divorced. Just under half of the parents (47.5%) had education beyond secondary school. Twenty-seven percent of parents rated their children's dental health as good or excellent, while 73.0% rated it as fair (52.6%) or poor (20.4%). A significant proportion (43.7%) of respondents rated their family's general living standards as above average, while only 5.0% considered them below average (Table 1).

At the baseline assessment, the characteristics of the study participants were generally similar between the two communities. However, parents in Mrgashat rated their children's dental health as poor more frequently than those in Sardarapat, which was an unexpected finding, considering that the plaque index was higher among children in Sardarapat compared to those in Mrgashat.

Another notable difference was found in the children's mean eating habits score, which was higher in Sardarapat compared to Mrgashat at the baseline assessment. Parental sex distribution was also statistically significantly different in the two communities, with a higher proportion of fathers participating in Sardarapat, as compared to Mrgashat.

The baseline study revealed significant OH concerns among children, demonstrated in high plaque and DMFT/dmft indices. In the total sample, the mean plaque index was 3.06 and the mean DMFT/dmft index was 7.28. The communities were different only in terms of the mean plaque index, which was statistically significantly higher in Sardarapat community.

The average OH knowledge score of parents was relatively high, at 6.9 out of 9.0 (76.7%) at the baseline. However, the percentage of correct answers to the knowledge questions varied widely, ranging from 34.8% to 97.0% (Table 3). The lowest percentages of correct answers were for statements about the benefits of fluoride-added toothpaste and water, as well as the usefulness of dental flossing. The percentage of parents who reported using fluoride-containing toothpaste was only 9.4% (Table 4). Additionally, at the baseline, only 70.3% of parents believed that caries is preventable, and only 15.9% took their children for preventive dental checkups at least once a year (Table 4). The remaining knowledge questions, such as those on the benefits of tooth brushing and the dangers of consuming sweetened foods and drinks, had very high percentages of correct answers (Table 3). Despite this, nearly 38.9% of parents reported introducing sweetened beverages during infancy, and more than half introduced confectionery or other sweets into their child's diet before the age of 2 (Table 5). In approximately 53.4% of these cases, sweetened beverages were given to the infant using a bottle with a nipple. According to parental reports, only 70.4% of children regularly had breakfast at home at the baseline assessment (Table 5).

3.2 Factors associated with the presence and severity of plaque and DMFT/dmft indices

The baseline evaluation data was used for this objective. Simple and multiple linear regression analysis were utilized with the outcome variables of plaque and DMFT/dmft indices to explore the factors associated with them. The first step was conducting simple linear regression analysis between the given outcome and each independent variable. Those variables which were found to have statistically significant relationship ($p < 0.05$) with the outcome variables were used to construct the multivariable linear regression models.

Child's and parent's age, parental education, teeth and gum health and knowledge score were statistically significantly associated with the plaque index in the univariate analysis at the significance level of 0.05. In the final linear regression model (Table 6.1), each one-year increase in the child's age was associated with a 0.22 unit increase in the plaque index. Compared to children of parents with secondary or less education, those of parents with more than secondary education had a 0.16 unit lower plaque index. Compared to the children of those parents reporting their child's teeth and gum health as poor, children of those who reported it as good or excellent had a 0.22 unit lower plaque index. One unit increase in the parent's OH knowledge score was associated with a 0.06 unit decrease in the child's plaque index.

Child's and parent's age, birth order of the child, teeth and gum health were statistically significantly associated with the plaque index in univariate analysis at the significance level of 0.05. In the final linear regression model (Table 6.2), each one-year increase in the child's age was associated with a 0.77 unit decrease in DMFT/dmft score. Compared to children of those parents reporting their child's teeth and gum health as poor, children of those who reported it as good or excellent had a 1.85 unit lower DMFT/dmft score.

3.3 Intervention evaluation

The results of paired and simple t-test analyses are summarized in Table 7.

Compared to the baseline, at the follow-up assessment, the mean plaque index among children in Mrgashat community increased slightly, but statistically significantly – from 2.84 (SD=0.70) to

3.05 (SD=0.50), $p=0.009$). In contrast, in Sardarapat community, the mean plaque index among children decreased from 3.25 (SD=0.51) to 2.91 (SD=0.49), $p<0.001$. The mean change in the plaque index was 0.21 (SD=0.90) in Mrgashat and -0.34 (SD=0.72) in Sardarapat, with a statistically significant difference in the changes in the two communities.

Between the baseline and follow-up assessments, the mean DMFT/dmft index decreased statistically significantly in both communities, with less decrease in Mrgashat (from 7.19 (SD=3.26) to 4.66 (SD=2.33), $p<0.001$) compared to Sardarapat (from 7.95 (SD=3.10) to 4.00 (SD=1.75), $p<0.001$). The mean change between baseline and follow-up indices was significantly lower in Mrgashat (-2.53 (SD=3.63)) compared to Sardarapat (-3.95(SD=3.23)).

The parental mean OH knowledge score in Mrgashat statistically significantly increased between the baseline and follow-up assessments from 6.90 (SD=1.25) to 7.15 (SD=1.15), ($p=0.015$). In comparison, in Sardarapat, the mean OH knowledge score of the parents slightly decreased from 6.93 (SD=1.42) at the baseline to 6.73 (SD=1.29) at the follow-up ($p=0.148$). The mean change in the OH knowledge score was 0.26 (SD=1.34) in Mrgashat and -0.20 (SD=1.55) in Sardarapat, with statistically significant difference between the communities ($p=0.009$).

The mean OH behavior score in Mrgashat increased significantly since the baseline assessment from 2.98 (SD=0.99) to 3.52 (SD=1.10), ($p<0.001$). In comparison, in Sardarapat, the mean OH behavior score did not change significantly (3.13 (SD=1.02) at the baseline and 3.28 (SD=1.05) at the follow-up ($p = 0.207$)). The mean change was 0.55 (SD=1.22) in Mrgashat and 0.14 (SD=1.11) in Sardarapat, with statistically significant difference between the two ($p=0.011$).

The mean eating habit score decreased statistically significantly in both communities: from 4.34 (SD=1.63) to 4.11 (SD=1.66) in Mrgashat and from 4.92 (SD=1.83) to 4.51 (SD=1.82) in Sardarapat. The mean change was -0.22 (SD=1.06) in Mrgashat and -0.42 (SD=1.04) in Sardarapat, and the difference between these changes was not statistically significant.

4 Main findings

- Overall, children's oral health was not satisfactory in the studied rural sample, as expressed by high DMFT and plaque indices.
- In adjusted linear regression analysis, child's higher age, lower parental education, reported poorer oral health, and lower parental oral health knowledge were significantly associated with higher plaque index in children.
- In adjusted linear regression analysis, child's higher age and reported better teeth and gum health were significantly associated with lower DMFT/dmft scores in children.
- The following changes were observed in the primary and secondary outcome variables of the study between the baseline and follow-up assessments:
 - Plaque index worsened significantly in Mrgashat and improved significantly in Sardarapat. The difference in the amount of change was statistically significant between the two communities.
 - DMFT/dmft score decreased significantly in both communities, with more difference in Sardarapat. The difference in the amount of change between the communities was statistically significant.
 - Both parental OH knowledge and OH behavior scores improved significantly in Mrgashat community, while there were no significant changes in those scores in Sardarapat community. The change in both scores was statistically higher in Mrgashat compared to Sardarapat.
 - Eating habits scores decreased significantly in both communities, and the communities did not differ in the amount of change observed.

5 Discussion

The assessment of OH health status among primary school children in rural Armenia revealed a notably high prevalence of dental caries among them, as reflected in the high mean DMFT/dmft index. The values found in this study were substantially higher than those reported in comparable studies conducted in India, several African countries, and Croatia.⁴⁷⁻⁵⁰ In contrast, the mean plaque index in our study population was similar to or slightly lower than figures reported elsewhere.^{51, 52} These findings highlight a widespread burden of untreated dental caries in this study population despite the relatively moderate levels of visible plaque. The established link between poor oral hygiene and increased prevalence of caries and plaque in the literature,⁵³ combined with our findings, indicates the need for preventive interventions aimed at improving daily oral hygiene behaviors in this population.

The study demonstrated the protective influence of both parental education and their OH knowledge on their children's OH as measured by plaque index, which is well supported by literature and highlights the importance of involving parents in the OH awareness-raising interventions conducted among children.^{54, 55}

The negative association between the child's age and DMFT/dmft index and the positive association between it and plaque index found in this study are also shown in the literature.^{56, 57} The study also found that children whose parents rated their oral health as good or excellent, had significantly lower plaque and DMFT scores, demonstrating the accuracy of parental assessment in reflecting their child's OH. This finding is also consistent with the literature.⁵⁸

Despite the implementation of both educational and evidence-based caries prevention measures²⁸⁻³⁴ among children in Mrgashat, at the follow-up assessment, the clinical outcomes measured by DMFT/dmft scores worsened in both communities, with a greater decline in Mrgashat than in the comparison community – Sardarapat, where only educational activities were conducted. The changes in the plaque index were even more paradoxical – indicating worsening in Mrgashat and improvement in Sardarapat. In contrast, parental OH knowledge and OH behavior scores improved significantly in Mrgashat, while there were no changes in these scores in Sardarapat.

Possible reasons leading to these findings could be inherent differences in the two communities, which decreased their comparability. The main intervention community was chosen based on the availability of EIH-supported pediatric dental service there. Considerable efforts were made in the planning stage to identify the most comparable community, based on several characteristics, such as location in the same region, similar distance from the nearby big city, similar population size, and so on. The characteristics measured at the baseline assessment have demonstrated rather similar distribution across both communities, with a few notable exceptions that are important to consider in this discussion. Namely, at the baseline assessment, parents in Mrgashat rated their children's dental health as poor significantly more frequently than those in Sardarapat. This finding may suggest genuinely better teeth health among Sardarapat children, which could partially explain better clinical outcomes among them. On the other hand, several unmeasured factors can underlie the differences between the communities, such as different societal norms, parental motivation, health-seeking behavior and other factors. Another possible explanation could be contamination bias as related to the dental services received. Despite the fact that these are different communities, they are still in the same region and may have possible shared resources. Also, the gift cards given to both communities were for using services of the same dental clinic located in one of them, which could contribute to the inter-group contamination. Some external contamination in the form of other public health educational and/or preventive campaigns in Sardarapat can also have a role in the differences in reality and expectations.

The age group selected for this study could be inappropriate for the main outcome variable – DMFT/dmft index, as primary school-age children are in the process of replacement of their primary molars with permanent teeth, and some of the loss in the DMFT/dmft index occurs as a result of this natural process, which is difficult to control. Nevertheless, important methodological considerations were made when selecting this age group. Field experts advised conducting the intervention among relatively young children in order to have a lower prevalence of already formed cavities (particularly on permanent teeth) and better chances of establishing good life-long OH habits through early prevention. Also, children at this age are more prone to parental influence, therefore, educational interventions among parents could be more effective. However, as stated above, this age group is in the stage of mixed dentition, which makes it hard to have plausible conclusions on the results of the study as related to DMFT/dmft index. Furthermore, the relatively short period of follow-up may not have allowed sufficient time to evaluate long-term results of the

preventive interventions that were carried out. Different dropout rates from the study with somewhat greater loss to follow-up in Mrgashat than in Sardarapat could also influence the findings to some extent. However, we cannot exclude the possibility that, for some reason, the clinical interventions applied to children's teeth in the target community – semiannual fluoridation and sealant application as indicated – were not effective among our sample for some reason, and this issue needs further investigation.

6 Conclusion and Recommendations

We found a high prevalence of dental plaque and caries among primary schoolchildren in rural communities of Armenia that serves as a signal for a preventive action. The factors associated with children's OH can be used for planning targeted interventions, including educational activities starting from younger age groups and conducted with involvement of parents. The study demonstrated a mixed picture of changes in various characteristics following the intervention: while, as expected, knowledge of the participants improved in both communities with a greater increase in the Intervention 1 community (Mrgashat), the clinical outcomes had unexpectedly better dynamics in the Intervention 2 community (Sardarapat). Based on the lessons learned from this study, we recommend that future OH interventional studies ensure better comparability of the study sites, minimize potential contamination between them, as well as extend the follow-up duration. It is recommended to repeat the intervention evaluation among the same children later on for measuring longer-term effects of the preventive intervention. Using more rigorous study designs in further studies will ensure the validity of the findings and accurate attribution of outcomes to the intervention and control groups over possible confounding variables. This includes adding randomization to the evaluation method, as well as incorporating both quantitative and qualitative assessments to capture unmeasured factors that may influence the outcomes.

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7 Tables

Table 1. Calculations of OH knowledge score, OH behavior score and eating habits score

OH Knowledge Score			
	Question	Answer options	Points allocation
Q10	The health of teeth and mouth does not affect one's general health.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1; 99 = 0 2 = 1
Q11	Brushing teeth at least twice a day helps to maintain good oral health.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1 = 1 2, 99 = 0
Q12	Dental flossing is not an important measure for proper oral hygiene.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1; 99 = 0 2 = 1
Q13	Irregular tooth brushing can cause gum disease.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1 = 1 2, 99 = 0
Q14	Irregular tooth brushing can cause decay.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1 = 1 2, 99 = 0
Q15	Plaque removal procedure once every 6 months is important measure for proper oral hygiene.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1 = 1 2, 99 = 0
Q16	Fluoride added in water or toothpaste does not help preventing caries.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1; 99 = 0 2 = 1
Q17	Consumption of sugar in food or beverages can cause teeth decay.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1 = 1 2, 99 = 0
Q18	Caries is usually not preventable.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know	1; 99 = 0 2 = 1
OH Behavior Score			
Q20	How often does your child brush his/her teeth?	1. <input type="checkbox"/> S/he doesn't brush or rarely brush his/her teeth 2. <input type="checkbox"/> Few times a week 3. <input type="checkbox"/> Once a day 4. <input type="checkbox"/> Two or more times a day	4 = 2 3 = 1 1; 2 = 0

Q21	At what age did your child started brushing his/her teeth regularly?	_____ years	$7 \leq = 0$ $<7 = 1$
Q22	What kind of toothpaste does your child currently use for brushing his/her teeth?	1. <input type="checkbox"/> Fluoride containing 2. <input type="checkbox"/> Fluoride-free 99. <input type="checkbox"/> I don't know	1 = 1 2; 99 = 0
Q23	How often do you take your child to the dentist for preventive purposes, such as regular check-up, plaque removal, carries preventive measures?	1. <input type="checkbox"/> Once a 6 months 2. <input type="checkbox"/> Once a year 3. <input type="checkbox"/> Less frequently than once a year 88. <input type="checkbox"/> Never 5. <input type="checkbox"/> Other _____	1; 2, more frequently = 1 3; 88 = 0
Q25	What else do you use for your child's dental care?	1. <input type="checkbox"/> Dental pick or interdental brush 2. <input type="checkbox"/> Dental floss, a) how many days during a week? _____ 3. <input type="checkbox"/> Mouth rinsing with water 4. <input type="checkbox"/> Other (<i>specify</i>) _____ 5. <input type="checkbox"/> None of these	One point given if the participant chose floss and/or rinse with water
Eating Habits Score			
Q27	How long did your child receive breastfeeding?	1. _____ months	$12 \leq = 1$ $<12 = 0$
Q28	At what age your child was given sweetened beverages	1. _____ months 88. <input type="checkbox"/> Never	$<12 = 0$ $12 \leq = 0.5$ Never = 1
Q29	Was your child given sweet tea/beverages using a bottle with a nipple?	1. <input type="checkbox"/> Yes, a) at what age? _____ months 2. <input type="checkbox"/> No	Yes = 0 No = 1
Q30	At what age your child was given confectionary/other sweets?	1. _____ years 88. <input type="checkbox"/> Never	$2 \leq = 1$ $<2 = 0$

Q31	At what age your child was given carbonated sweet beverages?	1. _____ years 88. <input type="checkbox"/> Never	$3 \leq = 1$ $<3 = 0$
Q32	How often does your child consume sweetened/carbonated beverages (soft drinks, lemonade, Coca Cola, Fanta, Sprite etc.) currently?	1. <input type="checkbox"/> Two or more times a day 2. <input type="checkbox"/> Once a day 3. <input type="checkbox"/> Several times a week 4. <input type="checkbox"/> Once a week or less frequently 88. <input type="checkbox"/> Rarely/never	$88 = 1$ $4 = 0.5$ $1; 2; 3 = 0$
Q33	Does your child typically have breakfast at home regularly?	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	Yes = 1 No = 0
Q34	How many meals does your child have during a typical day?	_____	$3 \leq = 1$ $<3 = 0$
Q35	What are the food types/items typically consumed by your child during a usual day? Please list most frequently consumed 4 types of food	_____ _____ _____ _____	0, if confectionary/sweets among most common foods 1, if dairy among most common foods 0.5, for all others

Table 2.1. Demographic characteristics of the study participants by their place of residence, baseline assessment, Armavir province, Armenia, 2022.

Characteristics	N*	Community			Total sample (n=400)	
		Mrgashat (n=229)	Sardarapat (n=171)	<i>p-value</i>		
<i>Child's characteristics</i>						
Age in years, mean (SD)	394	8.32 (1.25)	8.31 (1.19)	0.933	8.31 (1.23)	
Sex:	Male, %	400	55.0	49.7	0.292	52.8
	Female, %		45.0	50.3		47.3
Under/overweight:	Normal weight, %	323	68.9	76.4	0.318	72.1
	Underweight, %		20.2	15.7		18.3
	Overweight, %		10.9	7.9		9.6
Child's order:	First/second, %	400	80.8	74.9	0.155	78.3
	Third/higher order, %		19.2	25.1		21.8
<i>Parent-reported child's health</i>						
General health:	Good to excellent, %	398	81.5	76.0	0.183	79.1
	Fair/poor, %		18.5	24.0		20.9
Teeth and gum health:	Poor, %	397	24.7	14.7	0.005	20.4
	Fair, %		53.7	51.2		52.6
	Good to excellent, %		21.6	34.1		27.0
OH behavior score, mean (SD)	400	2.95 (0.97)	3.12 (0.97)	0.129	3.02 (0.97)	
Eating habit score, mean (SD)	399	4.29 (1.66)	4.82 (1.77)	0.002	4.52 (1.72)	
<i>Objective measures of child's teeth health</i>						
DMFT/dmft score, mean (SD)	389	7.01 (3.21)	7.64 (3.48)	0.065	7.28 (3.34)	
Plaque index, mean (SD)	385	2.94 (0.72)	3.22 (0.53)	<0.001	3.06 (0.66)	
<i>Parent's characteristics</i>						
Age in years, mean (SD)	399	33.28 (4.97)	34.06 (5.33)	0.134	33.61 (5.13)	
Sex:	Male, %	400	2.6	7.6	0.020	4.8
	Female, %		97.4	92.4		95.3
Education:	Secondary or less, %	400	55.0	49.1	0.242	52.5
	More than secondary, %		45.0	50.9		47.5
Marital status:	Married, %	400	95.2	97.1	0.343	96.0
	Divorced/Widowed, %		4.8	2.9		4.0
OH knowledge score, mean (SD)	400	6.88 (1.37)	6.95 (1.43)	0.621	6.91 (1.39)	
<i>Family's socioeconomic status</i>						
Number of family members, mean (SD)	397	6.11 (1.65)	6.20 (1.85)	0.646	6.15 (1.74)	
Living standards:	Below average, %	398	4.8	5.3	0.952	5.0
	Average, %		50.9	51.8		51.3
	Above average, %		44.3	42.9		43.7
Monthly expenditures:	Below 100,000 AMD, %	346	22.0	30.7	0.059	25.4
	101,000-300,000 AMD, %		64.1	62.0		63.3
	301,000 AMD or more, %		13.9	7.3		11.3

*Number of valid responses.

Table 2.2. Demographic characteristics of the study participants by their place of residence, follow-up assessment, Armavir province, Armenia, 2024.

Characteristics	N*	Community		<i>p-value</i>	Total sample (n=291)
		Mrgashat (n=168)	Sardarapat (n=123)		
<i>Child's characteristics</i>					
Age in years, mean (SD)	284	10.39 (1.21)	10.35 (1.14)	0.798	10.37 (1.18)
Sex:					
Male, %	291	55.4	44.7	0.073	50.9
Female, %		44.6	55.3		49.1
<i>Parent-reported child's health</i>					
General health:					
Good to excellent, %	290	71.4	83.6	0.016	76.6
Fair/poor, %		28.6	16.4		23.4
Teeth and gum health:					
Poor, %	290	16.1	10.7	0.409	13.8
Fair, %		40.5	44.3		42.1
Good to excellent, %		43.5	45.1		44.1
OH behavior score, mean (SD)	222	3.53 (1.06)	3.29 (1.06)	0.101	3.42 (1.06)
Eating habit score, mean (SD)	286	4.11 (1.65)	4.51 (1.82)	0.057	4.28 (1.73)
<i>Objective measures of child's teeth health</i>					
DMFT/dmft score, mean (SD)	231	4.64 (2.33)	4.00 (1.75)	0.022	4.35 (2.11)
Plaque index, mean (SD)	239	3.05 (0.50)	2.90 (0.49)	0.023	2.98 (0.50)
<i>Parent's characteristics</i>					
Age in years, mean (SD)	290	35.62 (4.55)	36.59 (5.06)	0.091	36.03 (4.79)
Education:					
Secondary or less, %	291	42.9	47.2	0.466	44.7
More than secondary, %		57.1	52.8		55.3
Marital status:					
Married, %	291	95.8	96.7	0.686	96.2
Divorced/Widowed, %		4.2	3.3		3.8
OH knowledge score, mean (SD)	284	7.15 (1.15)	6.73 (1.29)	0.003	6.97 (1.23)
<i>Family's socioeconomic status</i>					
Number of family members, mean (SD)	291	5.91 (1.51)	6.21 (1.88)	0.132	6.04 (1.68)
Living standards:					
Below average, %	291	6.5	3.3	0.028	5.2
Average, %		46.4	61.8		52.9
Above average, %		47.0	35.0		41.9
Monthly expenditures:					
Below 100,000 AMD, %	225	15.5	16.7	0.971	16.0
101,000-300,000 AMD, %		72.1	70.8		71.6
301,000 AMD or more, %		12.4	12.5		12.4

*Number of valid responses.

Table 3. Percentages of correct answers to OH knowledge questions by parents of primary schoolchildren in Mrgashat and Sardarapat communities at baseline and follow-up assessments, Armavir province, Armenia

Items	Baseline		Follow-up	
	N	%	N	%
1. The health of teeth and mouth affects one's general health.	330	82.5	291	88.0
2. Brushing teeth at least twice a day helps to maintain good oral health.	388	97.0	291	97.3
3. Dental flossing is an important measure for proper oral hygiene.	200	50.0	289	56.4
4. Irregular tooth brushing can cause gum disease.	354	88.5	291	94.2
5. Irregular tooth brushing can cause decay.	382	95.5	291	97.3
6. Plaque removal procedure once every 6 months is important measure for proper oral hygiene.	318	79.5	291	71.1
7. Fluoride added in water or toothpaste helps preventing caries.	139	34.8	289	25.6
8. Consumption of sugar in food or beverages can cause teeth decay.	371	92.8	291	94.5
9. Caries is usually preventable.	281	70.3	288	72.2

Table 4. OH behavior of primary schoolchildren in Mrgashat and Sardarapat communities at baseline and follow-up assessments, Armavir province, Armenia

Items	Total study population n (%)	
	Baseline	Follow-up
Frequency of brushing teeth (parent):		
<i>Less frequently than once a day</i>	35(8.8)	19(6.5)
<i>Once a day</i>	156 (39.0)	96 (33.0)
<i>Two or more times a day</i>	209 (52.3)	176 (60.5)
Frequency of brushing teeth (child):		
<i>Less frequently than once a day</i>	92.0 (23.0)	36.0 (12.4)
<i>Once a day</i>	156 (39.0)	116 (39.9)
<i>Two or more times a day</i>	152 (38.0)	139 (47.8)
Child's age at starting brushing teeth regularly:		
<i>7 years old and more</i>	21 (6.8)	17 (7.5)
<i>Less than 7 years old</i>	268 (93.2)	209 (92.5)
Toothpaste currently used by child:		
<i>Fluoride containing</i>	35 (9.4)	49 (17.3)
<i>Fluoride free; don't know</i>	339 (90.6)	235 (82.7)
Frequency of child's preventive visits to dentist:		
<i>Less frequently than once a year; never</i>	334 (84.1)	209 (72.8)
<i>At least once a year or more frequent</i>	63 (15.9)	78 (27.2)
Frequency of child's curative visits to dentist:		
<i>At least once a year</i>	156 (39.2)	166 (27.0)
<i>Less frequently than once a year</i>	242 (60.8)	125 (43.0)
Usage of additional measures		
<i>Dental floss</i>	8.0 (2.0)	26 (8.9)
<i>Mouth rinsing with water</i>	141 (35.3)	119 (40.9)
<i>Antiseptic mouthwash over the past 3 months</i>	36 (9.0)	46 (15.8)

Table 5. Eating habits of primary schoolchildren in Mrgashat and Sardarapat communities at baseline and follow-up assessments, Armavir province, Armenia

Items	Total study population	Total study population
	n (%)	n (%)
	Baseline	Follow-up
Duration (months) of child's breastfeeding in months:		
<i>Less than 12 months</i>	196 (49.1)	139 (47.9)
<i>12 months and more</i>	203 (50.9)	151 (52.1)
Age of introduction of sweetened beverages into the child's diet:		
<i>Never</i>	74 (18.6)	53 (18.2)
<i>0-12 months</i>	155 (38.9)	108 (37.1)
<i>12 months and more</i>	169 (42.5)	130 (44.7)
Giving the child sweet tea/beverages using a bottle with nipple:		
<i>Yes</i>	213 (53.4)	141 (48.5)
<i>No</i>	186 (46.6)	150 (51.5)
Age of introduction of confectionary/other sweets into the child's diet:		
<i>Earlier than 2 years old</i>	246 (62.0)	179 (61.7)
<i>More or equal to 2 years</i>	151 (38.0)	110 (37.9)
Age of introduction of carbonated sweetened beverages into the child's diet:		
<i>Never</i>	26 (6.5)	18 (6.2)
<i>Earlier than 3 years old</i>	188 (47.4)	142 (48.8)
<i>More or equal to 3 years</i>	183 (46.1)	131 (45.0)
Current frequency of child's consumption of sweetened/carbonated beverages:		
<i>More frequently than once a week</i>	227 (57.2)	217 (75.1)
<i>Once a week or less frequently</i>	78 (19.6)	39 (13.5)
<i>Rarely/ never</i>	92 (23.2)	33 (11.4)
Child having regular breakfasts at home:		

Items	Total study population n (%)	Total study population n (%)
	Baseline	Follow-up
<i>Yes</i>	281 (70.4)	166 (57.4)
<i>No</i>	118 (29.6)	123 (42.6)
Number of child's meals per day:		
<i>Less than 3 times per day</i>	103 (25.8)	84 (29.1)
<i>3 and more times per day</i>	296 (74.2)	205 (70.9)

Table 6.1 Linear regression model of factors associated with Plaque Index at the baseline assessment

Characteristics	B	95% CI for B	<i>p</i> -value
Child's age	0.22	0.17; 0.28	0.000
Parent's age	0.01	-0.01; 0.02	0.227
Parent's education:			
Secondary or less	ref		
More than secondary	-0.16	-0.28; -0.03	0.015
Teeth and gum health	-0.10	-0.19; -0.02	0.021
Poor	ref		
Fair	-0.15	-0.31; 0.004	0.057
Good to excellent	-0.22	-0.39; -0.38	0.018
Knowledge score	-0.06	-0.10; -0.01	0.013

B, unstandardized regression coefficient; CI, confidence interval.

Table 6.2 Linear Regression model of factors associated with DMFT/dmft Index in baseline assessment

Characteristics	B	95% CI for B	<i>p</i> -value
Child's age	-0.77	-1.05; -0.49	<0.001
Parent age	-0.04	-0.11; 0.03	0.296
Child's order			
First/ second	ref		
Third/ more	-0.61	-1.46; 0.24	0.159
Teeth and gum health			
Poor	ref		
Fair	-0.75	-1.59; 0.09	0.078
Good to excellent–	-1.85	-2.80; -0.90	<0.001

B, unstandardized regression coefficient; CI, confidence interval.

Table 7. In-group dynamics of the primary and secondary outcomes between the baseline and follow-up assessments in the two communities and between-group comparisons of the observed changes

Variable	Mrgashat		Sardarapat		p-value (Dif)
	Mean (SD)	p-value (BL, FU)	Mean (SD)	p-value (BL, FU)	
Plaque index					
Baseline	2.84 (0.70)		3.25 (0.51)		
Follow-up	3.05 (0.50)	0.014	2.91 (0.49)	<0.001	
Difference	0.21 (0.90)		-0.34 (0.72)		<0.001
DMFT/dmft index					
Baseline	7.19 (3.16)		7.95 (3.10)		
Follow-up	4.66 (2.33)	<0.001	4.00 (1.75)	<0.001	
Difference	-2.53 (3.63)		-3.95 (3.23)		0.002
Knowledge score					
Baseline	6.90 (1.25)		6.93 (1.42)		
Follow-up	7.15 (1.15)	0.014	6.73 (1.29)	0.148	
Difference	0.26 (1.34)		-0.20 (1.55)		0.009
OH behavior score					
Baseline	2.98 (0.10)		3.13 (1.02)		
Follow-up	3.52 (1.10)	<0.001	3.28 (1.05)	0.207	
Difference	0.55 (1.22)		0.14 (1.11)		0.011
Eating habit score					
Baseline	4.34 (1.63)		4.92 (1.83)		
Follow-up	4.11 (1.66)	0.007	4.51 (1.82)	<0.001	
Difference	-0.22 (1.06)		-0.42 (1.04)		0.125

Appendix 1

American University of Armenia

Institutional Review Board #2

Written consent form for the parents of primary schoolchildren in Mrgashat village

Study title: Evaluation of oral health intervention among primary schoolchildren living in Mrgashat and Sardarapat Communities

The Avedisian Onanian Center for Health Services Research and Development (CHSR) at the American University of Armenia is conducting a study aiming to assess the oral health knowledge and practice among parents of primary schoolchildren living in Mrgashat community, as well as to assess the oral health status of primary schoolchildren of the same community. This study is funded by Turpanjian Family Educational foundation, and is implemented by the American University of Armenia Fund.

One of the CHSR projects, “Entrepreneurs in Health”, is organizing training-sessions on oral health and dental hygiene among all primary schoolchildren living in Mrgashat community. After the training, the dentist will conduct a free oral health assessment of children and perform free caries-preventive procedures.

We would like to ask for permission to perform your child’s oral health assessment and performance of caries-preventive procedures.

The examination will take up to 10 minutes and will be performed by a trained dentist examiner, at school. The results will be recorded in special forms which will not contain any identifiable information about you or your child. The examination will start of observing teeth of your child and identifying how many decayed, missing and filled teeth your child has. During the examination the dentist will drop 2-3 drops of special coloring liquid, which will help the examiner to measure the level of plaque at various surfaces of the teeth. This disclosing liquid is a safe and widely used method to detect plaque on teeth surfaces. It poses no health risks under normal conditions of use. During the examination, the teeth will receive pink color which will wear off after a mouthwash and tooth brush. You can be present during the examination, if you want.

After the assessment, we will also perform caries-preventive procedures. The first type of caries-preventive procedure is application of fluoride varnish, which is a fluoridated solution rubbed with a brush to the teeth. For the assurance of best results, it should be repeated every 6 months, which also will be assured by the study team, either by visiting schools, or by inviting you to the Mrgashat dental clinic (during the school holidays).

Second type of caries-preventive procedure is sealant application, which hermetizes the normal physiological cavities of the molars preventing decay. In case of your child has teeth eligible for the latter, s/he will be invited to the dental clinic in Mrgashat to perform the procedure for free.

In case if you agree to perform the above mentioned procedures, we will also verbally ask your child to participate, and in case of oral assent from him/her- perform the assessment at school. Your child can stop the clinical examination at any point if s/he feels discomfort.

The oral health-related information of your child can be provided to you as per your request. You are welcome to also participate in the training planned in the class of your child. The study team will inform you about the date of the training.

We would also ask you to take the telephone anonymous survey on oral health knowledge and habits of you and your child, which will take up to 15 minutes. The questionnaire contains the following sections: 1) demographic information; 2) oral health knowledge; 3) oral health behavior, 4) eating habits, 5) self-reported health and 6) socio-economic status.

In case you agree to include your child in the study, we might also approach you with the same request in two years. The oral health of your child as well as the information provided by you will stay confidential and will be used only for research purposes, your name will not be mentioned anywhere. Only the research team will have access to the information provided by you or about your child. The summary of the data from all interviews and assessment will be presented in the final report. Your and your child's participation in this study is entirely voluntary, you may refuse to answer any question in the interview or stop the interview at any time, as well as refuse to participate in any component(s) of the study.

There are no known risks to you resulting from your and your child's participation in the study. If you and your child participate in the study, caries-preventive procedures described above will drastically decrease the probability of caries occurrence on your child's teeth in future. You will also be given a gift card in the amount of 5000 AMDs for dental services for your child in the _____ (EIH beneficiaries local clinic name) clinic, that can be used within 1 year period.

If you have any questions regarding this study, you can contact the coordinator of this study Astghik Atanyan at 055 050 164. If you feel you have not been treated fairly or think you have been hurt by joining the study you can contact Varduhi Hayrumyan (374-60) 61 25 61, the Human Protections Administrator of Institutional Review Boards of the American University of Armenia.

If you agree to participate in this study, please sign this document by marking cells with sign, showing which components of the study you agree to be performed. You are asked to keep one of the copies with you, and send the other one to school teacher with the help of your child. If you do not agree to participate, there is no need to sign the document.

- Telephone survey
- Oral Health Assessment of the child
- Caries-preventive procedures for the child

Date: _____

Parent's name and surname: _____

Child's name and surname _____

Parent's phone number: _____

Parent's signature: _____

Research team member's name and surname: Astghik Atanyan

Research team member's signature: _____

Date: _____

American University of Armenia

Institutional Review Board #2

Written consent form for the parents of primary schoolchildren in Sardarapat community

Study title: Evaluation of oral health intervention among primary schoolchildren living in Mrgashat and Sardarapat Communities

The Avedisian Onanian Center for Health Services Research and Development(CHSR) at the American University of Armenia is conducting a study aiming to assess the oral health knowledge and practice among parents of primary schoolchildren living in Sardarapat community, as well as to assess the oral health status of primary schoolchildren of the same community. This study is funded by Turpanjian Family Educational foundation, and is implemented by the American University of Armenia Fund.

One of the CHSR projects, “Entrepreneurs in health”, is organizing training-sessions on oral health and dental hygiene among primary schoolchildren living in Sardarapat community. After the training, the dentist will conduct a free oral health assessment of children.

We would like to ask for permission to perform your child’s oral health assessment. The examination will take up to 10 minutes and will be performed by a trained dentist examiner, at school. The results will be recorded in special forms which will not contain any identifiable information about you or your child. The examination will start of observing teeth of your child and identifying how many decayed, missing and filled teeth your child has. During the examination the dentist will drop 2-3 drops of special coloring liquid, which will help the examiner to measure the level of plaque at various surfaces of the teeth. This disclosing liquid is a safe and widely used method to detect plaque on teeth surfaces. It poses no health risks under normal conditions of use. During the examination, the teeth will receive pink color which will wear off after a mouthwash and tooth brush. You can be present during the examination, if you want.

In case if you agree to perform the above mentioned procedures, we will also verbally ask your child to participate, and in case of oral assent from him/her- perform the assessment at school. Your child can stop the clinical examination at any point if s/he feels discomfort.

We would also ask you to take the telephone anonymous survey on oral health knowledge and habits of you and your child, which will take up to 15 minutes. The questionnaire contains the following sections: 1) demographic information; 2) oral health knowledge; 3) oral health behavior, 4) eating habits, 5) self-reported health and 6) socio-economic status.

The oral health-related information of your child can be provided to you as per your request. You are welcome to also participate in the training planned in the class of your child. The study team will inform you about the date of the training. In case you agree to participate, we might also approach you with the same request in two years.

The oral health of your child as well as the information provided by you will stay confidential and will be used only for research purposes, your name will not be mentioned anywhere. Only the research team will have access to the information provided by you or about your child. The summary of the data from all interviews and assessment will be presented in the final report. Your and your child's participation in this study is entirely voluntary, you may refuse to answer any question in the interview or stop the interview at any time, as well as refuse to participate in any component(s) of the study.

There are no known risks to you resulting from your and your child's participation in the study. If you and your child participate in the study, you will be given a gift card in the amount of 5000 AMDs for dental services for your child in the Mrgashat dental clinic, that can be used within 1 year period.

If you have any questions regarding this study, you can contact the coordinator of this study Astghik Atanyan at 055 050 164. If you feel you have not been treated fairly or think you have been hurt by joining the study you can contact Varduhi Hayrumyan (374-60) 61 25 61, the Human Protections Administrator of Institutional Review Boards of the American University of Armenia.

If you agree to participate in this study, please sign this document marking cells with ✓ sign, showing which components of the study you agree to be performed. You are asked to keep one of the copies with you, and send the other one to school teacher with the help of your child.

If you do not agree to participate, there is no need to sign the document.

Telephone survey Oral Health Assessment of the child

Date: _____

Parent's name and surname: _____

Parent's phone number: _____

Parent's signature: _____

Research team member's name and surname: Astghik Atanyan

Research team member's signature: _____

Date: _____

Appendix 2

American University of Armenia

Institutional Review Board #2

Verbal assent form for the intervention group 1 child participants

**Study title: Evaluation of oral health intervention among primary schoolchildren
living in Mrgashat and Sardarapat Communities**

Hello dear _____,

I am _____. The American University of Armenia is conducting a study to help us improve the teeth health of children. You and your classmates are being asked to participate in this study because you are a X grade student in ... school.

Your mother/ father has given us permission to examine you, but it is your choice whether you want us to do it. You can say "yes" or you can say "no". Nobody will be upset if you say "no". If you say "yes", you can always change your mind later at any time, and we will stop.

Once you say "yes", simply and quickly the dentist will drop a couple of drops into your mouth and will take a look inside your mouth to examine your teeth. And afterward, they will apply a strengthening paste on your teeth, to keep them stronger and healthier. You will not feel any pain during the process.

Do you agree to participate?

Do you have any questions for me?

American University of Armenia

Institutional Review Board #2

Verbal assent form for the intervention group 2 child participants

Study title: Evaluation of oral health intervention among primary schoolchildren living in Mrgashat and Sardarapat Communities

Hello dear _____,

I am _____. The American University of Armenia is conducting a study to help us improve the teeth health of children. You are being asked to be in this because you are a X grade student in Sardarapat school.

Your parents have given us permission to examine you, but it is your choice whether you want us to do it. You can say "yes" or you can say "no". Nobody will be upset if you say "no". If you say "yes", you can always change your mind later at any time, and we will stop.

Once you say "yes", simply and quickly the dentist will drop a couple of drops into your mouth and will take a look inside your mouth to examine your teeth. You will not feel any pain during the process.

Do you agree to participate?

Do you have any questions for me?

Appendix 3: Brochure for children participants

AUA

American University of Armenia
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Ամեն օր, առնվազն՝

3 անգամ առողջ սնվիր,

2 անգամ խոզանակիր ատամներդ,

1 անգամ մաքրիր ատամներդ ատամնաթելով:

Ինչպե՞ս առողջ սնվեմ:

Ափսեհիդ պարունակության կեսը պետք է կազմեն միրգը և/կամ բանջարեղենը:
Ափսեհիդ պարունակության քառորդ մասը պետք է կազմեն կաթնամթերքը, ձուն, ձուկը, միսը, լոբիև կամ ոսպը: Մյուս քառորդը՝ հնդկաձավարը, վարսակը, հացը, կամ այլ ձավարեղեն:

Այն, ինչ քաղցր է՝ վնասում է ատամներդ: Փորձիր սահմանափակել կոնֆետները, շոկոլադը, ատամներին կաշոջ քաղցրավենիքը, քաղցր հյութերն ու քաղցր թեյը:

Ինչպե՞ս ճիշտ մաքրեմ ատամներս:

1. Խոզանակիր ատամների ավելի շարժումներով բոլոր կողմերից:
2. Հետո փայլեցրո՛ւ պտույտներով խոզանակելով:
3. Ամբողջը միասին պետք է տևի 2 րոպե: Եթե եղբայր կամ քույր ունես՝ միցեք, թե ո՛վ կկարողանա ավելի երկար ու ճիշտ խոզանակել ատամները:
4. Չմոռանաս զգուշորեն մաքրել նաև լեզուդ:

Իսկ ատամնաթելն ի՞նչ է:

Ատամնաթելը հատուկ ատամների համար ստեղծված թել է, որն օգնում է ատամների արանքից հեռացնել սննդի մնացորդները, որոնք խոզանակը բաց է թողել:

Կարևոր է ատամնաթելը ճիշտ օգտագործել լսիները չվնասելու համար: Հաջորդ անգամ, երբ ծնողների քեզ կտանեն ատամնաթույժի մոտ՝ խնդրիր նրան սովորեցնել, թե ինչպե՞ս պետք է օգտագործես ատամնաթելը:

Ինչպե՞ս պահովել երեխայի բերանի խոռոչի առողջությունը և կանխարգելել կարիեսը

- Երեխայի մոտ ձևավորեք պատշաճ հիգիենիկ և սննդային սովորույթներ:
- Ձեր երեխային տարեք ատամնաբույժի մոտ տարին առնվազն երկու անգամ:
- Պարբերաբար ինքնուրույն զննեք երեխայի ատամները: Դրանց վրա հայտնված սև կետիկը անմիջապես ատամնաբույժի դիմելու անհրաժեշտության նշան է:
- Չնարավորության դեպքում դիմեք կարիեսի կանխարգելման լայնորեն կիրառվող միջոցներին՝ ատամների ֆտորացմանը և ծամիչ ատամների փոսիկների հերմետիկացմանը:

Ի՞նչ է ատամների ֆտորացումը

- Ատամների ֆտորացումը ֆտորով հարուստ հեղուկի կիրառումն է ատամների վրա:
- Ֆտորը ամրացնում է ատամի էմալը և որոշ չափով պաշտպանում է կարիեսից:
- Ատամների ֆտորացումը երեխաների մոտ կարիեսի կանխարգելման լայնորեն տարածված միջոց է:
- Ատամների ֆտորացումը ցանկալի է կրկնել առնվազն 6 ամիսը մեկ անգամ:



Ատամների ֆտորացում՝ ֆտորային լաքի միջոցով

Ի՞նչ է ծամիչ ատամների փոսիկների հերմետիկացումը

- Ծամիչ ատամների կարիեսը հիմնականում սկսում է ախտահարել դրանց ֆիզիոլոգիական գոգավորությունները՝ փոսիկները:
- Եթե ծամիչ ատամը դեռևս առողջ է, ապա, որպես կարիեսի կանխարգելման տեսակետից ազդող միջոց, լայնորեն կիրառվում է փոսիկների հերմետիկացումը՝ ինչն առաջացնում է պաշտպանիչ թաղանթ և այդպիսով կանխում մանրէների և սննդի ներթափանցումը ատամի հյուսվածք և, հետևապես, կարիեսի առաջացումը:



Մինչև Գերմետիկացումից հետո

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ԹՐՓԱՆՃԵԱՆ ԱՌԹՂՏԱՊԵՏԱԳԱՐ ԳԻՏՈՒԹՅՈՒՆՆԵՐԻ ՖԱԿՈՒԼՏԵՏ

Ինչպե՞ս պահպանել Ձեր երեխայի բերանի խոռոչի առողջությունը



Կաթնատամները կարևոր են

- Կաթնատամները նույնքան կարևոր են, որքան մշտական ատամները: Դրանք սովորաբար սկսում են ի հայտ գալ երբ երեխան մոտ 6 ամսական է:
- Այդ ատամներն օգնում են Ձեր երեխային՝ ծամել սնունդը և արտասանել խոսելու համար անհրաժեշտ հնչյունները:
- Կաթնատամները Ձեր երեխայի ծնոտի վրա տարածություն են պահում մշտական ատամների համար:
- Զարկավոր է երեխային առաջին անգամ տանել ատամնաբույժի մոտ՝ առաջին իսկ ատամի ծկծումից սկսած, սակայն ամենաուշը՝ 1 տարեկանում:

Չիզե՞ք

Երեխայի բերանի խոռոչի հիգիենայի սովորույթները սկսում են ձևավորվել վաղ մանկական հասակից, և ծնողները կարևոր դեր ունեն երեխայի՝ առողջ սովորույթների ձևավորման հարցում:

Ինչպե՞ս հետևել երեխայի բերանի խոռոչի հիգիենային

- Դեռևս նորածնային տարիքում՝ յուրաքանչյուր կերակրումից հետո, մաքրեք նորածնի լնդերը մաքուր, փափուկ գործվածքով:
- Առաջին իսկ ատամի ծկծումից սկսած խոզանակեք Ձեր երեխայի ատամ(ներ)ը օրվա մեջ երկու անգամ՝ նույն ձևով, ինչ մեծահասակների դեպքում:
- Երեխան պետք է սկսի ինքնուրույն խոզանակել իր ատամները՝ 7 տարեկան հասակից:
- Երեխայի համար օգտագործեք փափուկ կամ միջին կոշտության ատամի խոզանակ (ըստ բժշկի խորհրդի) և ֆտոր պարունակող ատամի մածուկ:
- Գիշերը երեխայի ատամները լվանալուց հետո սնունդ կամ ըմպելիք (բացի ջրից) մի տվեք նրան:



Առողջ սնունդը կարևոր է երեխայի ատամների առողջության համար

- Երեխայի համար առողջ սնունդը պետք է ներառի.
- Միզ, բանջարեղեն
- Սպիտակուցով և կալցիումով հարուստ սնունդ (միս, ձուկ, կաթնամթերք, ձու և այլն)
- Ճիշտ ածխաջրեր (վարակ, հնդկաձավար, ամբողջահատիկ հացահատիկների (ցորեն, գարի, տարեկան) այլորից պատրաստված կերակրատեսակներ)
- Լոբազգիներ (լոբի, ոսպ, սիսեռ)
- Ընկուզեղեն

Չիզե՞ք

Օրինակ ծառայե՛ք Ձեր երեխայի համար, ընտանիքում ներդրե՛ք ճիշտ սննդային սովորույթներ:

- Խուսափե՛ք երեխային քաղցրավենիք և քաղցր ըմպելիքներ տալուց, այդ թվում՝ կոնֆետներ, շոկոլադներ և այլ՝ հատկապես ատամներին կաշող քաղցրավենիք, գազավորված ըմպելիքներ, քաղցր թեյեր, քաղցր կոմպոս և հյութեր:

Ինչպե՞ս պահպանել բերանի խոռոչի առողջությունը

- Դետենք բերանի խոռոչի պատշաճ հիգիենային:
- Տարին 2 անգամ անցեք ատամների մասնագիտացված մաքրում՝ ատամնաքարերի հեռացում:
- Յուրաքանչյուր տարի անցեք բժշկական զննում՝ տարբեր առողջական խնդիրներ ժամանակին հայտնաբերելու և բուժելու համար:
- Մի՛ ծխեք:
- Փոխեք ատամի խոզանակը յուրաքանչյուր 2-3 ամիսը 1 անգամ:

- Մննդակարգի մեջ մեծ տեղ հատկացրեք սպիտակուցներին, կալցիումով և վիտամիններով հարուստ սննդին:
- Մի՛ չարաչափեք քաղցրավենիքի, քաղցր գազավորված ըմպելիքների և ատամներին կաշոջ քաղցրավենիքի (օրինակ՝ չրեր, կարամել, իրիս) օգտագործումը:

Արդյո՞ք ատամնաբուժական ծառայությունները կարող են տրամադրվել անվճար

Հայաստանում այնպիսի ատամնաբուժական ծառայություններ, ինչպիսիք են կարիեսի, պուլպիտի, պերիոդոնտիտի բուժումը, ինչպես նաև՝ ցուցման դեպքում, ատամի հեռացումը և պրոթեզավորման որոշ տեսակներ ներառված են պոլիկլինիկաներում պետության կողմից վճարվող ծառայությունների ցանկում:

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ԹՐԹՄՆԱԾԵՆ ԱՌՈՂՋԱՄԱՍՏՈՒՄ ԳԻՏՈՒԹՅՈՒՆՆԵՐԻ ՀԱՄԱՐԿԵՏ

Ինչպե՞ս ապահովել բերանի խոռոչի առողջությունը



Բերանի խոռոչի հիգիենա

Բերանի խոռոչի հիգիենան ենթադրում է՝

- ատամների կանոնավոր խոզանակում,
- միջատամնային ատամնափառի ու սննդի մնացորդների հեռացում (հիմնականում՝ ատամնաթելի օգնությամբ),
- ատամների մասնագիտացված մաքրում՝ ատամնաքարերի հեռացում:

Չի՞չեք

Բերանի խոռոչի պատշաճ հիգիենան վերջինիս առողջության պահպանման և հիվանդությունների կանխարգելման ամենակարևոր պայմանն է: Չիգիենայի կանոններին չհետևելը, և դրա հետևանքով առաջացած ատամնափառն ու ատամնաքարերը կարող են հանգեցնել ատամնափուտի (կարիես) ու լնդաբորբի (գինգիվիտ) առաջացման:

Ինչպե՞ս ճիշտ խոզանակել ատամները

- Ավրոջ շարժումներով խոզանակեք ատամների բոլոր մակերեսները սկսելով լնդից և պահելով խոզանակը **45°** անկյան տակ:
- Այնուհետև՝ շարունակեք խոզանակել շրջանաձև շարժումներով:
- Զգուշորեն խոզանակեք նաև լեզուն, քանի որ վնասակար մանրէների մեծ մասը կուտակվում է դրա վրա:
- Օգտագործեք ֆտոր պարունակող ատամի մածուկ:



Չի՞չեք

Ատամներն անհրաժեշտ է խոզանակել **ամեն օր, 2 րոպե** տևողությամբ, օրվա մեջ **2 անգամ**՝ առավոտյան՝ Նախաճաշից հետո և երեկոյան՝ քնելուց առաջ:

Ինչպե՞ս ճիշտ օգտագործել ատամնաթելը

- Կտրեք մոտ 45 սմ երկարությամբ ատամնաթելի հատված:
- Փաթաթեք դրա երկու ծայրերը երկու ձեռքերի միջնամատերին այնպես, որ երկու ձեռքերի ցուցամատով և բութ մատով թելը երկու կողմից բռնելով՝ արանքում թողնեք մոտ 3 սմ երկարությամբ հատված:
- Տեղադրեք ատամնաթելը երկու ատամների արանքում՝ զգուշորեն շարժելով դեպի վերև և ներքև՝ հերթով սեղմելով երկու ատամներին:



Յուրաքանչյուր հաջորդ ատամին անցնելիս ազատեք ատամնաթելի մաքուր հատված և կրկնեք շարժումները:



Չի՞չեք

Չի կարելի ատամնաթելով սեղմել լնդը: Դա կարող է բերել լնդի վնասվածքի:

5.	Please indicate the date of birth of the child.	<p style="text-align: center;">/ /</p> <p style="text-align: center;"><i>dd mm yyyy</i></p>
6.	Please, indicate your child's gender.	<p>1. <input type="checkbox"/> Male</p> <p>2. <input type="checkbox"/> Female</p>
7.	Please, indicate your child's height in centimeters.	<p>1. _____ cm</p> <p>99. <input type="checkbox"/> I don't know</p>
8.	Please, indicate your child's weight in kilograms.	<p>1. _____ kg</p> <p>99. <input type="checkbox"/> I don't know</p>
9.	What is the order of the child in your family?	<p>_____</p>

2. Oral Health Knowledge

The next set of questions is related to your general knowledge about oral health.

Please indicate if you agree with the following statements.

10.	The health of teeth and mouth does not affect one's general health.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
11.	Brushing teeth at least twice a day helps to maintain good oral health.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
12.	Dental flossing is not an important measure for proper oral hygiene.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
13.	Irregular tooth brushing can cause gum disease.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
14.	Irregular tooth brushing can cause decay.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
15.	Plaque removal procedure once every 6 months is important measure for proper oral hygiene.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
16.	Fluoride added in water or toothpaste does not help preventing caries.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
17.	Consumption of sugar in food or beverages can cause teeth decay.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know
18.	Caries is usually not preventable.	1. <input type="checkbox"/> Agree 2. <input type="checkbox"/> Disagree 99. <input type="checkbox"/> I do not know

3. Oral Health Behavior

The next set of questions is related to oral health behavior of you and your child.

19.	How often do you brush your teeth? <i>Read all options and choose one.</i>	1. <input type="checkbox"/> I don't brush or rarely brush my teeth 2. <input type="checkbox"/> Few times a week 3. <input type="checkbox"/> Once a day 4. <input type="checkbox"/> Two or more times a day
20.	How often does your child brush his/her teeth? <i>Read all options and choose one</i>	1. <input type="checkbox"/> S/he doesn't brush or rarely brush his/her teeth (skip to Q23) 2. <input type="checkbox"/> Few times a week (skip to Q22) 3. <input type="checkbox"/> Once a day 4. <input type="checkbox"/> Two or more times a day
21.	At what age did your child started brushing his/her teeth regularly?	_____ years
22.	What kind of toothpaste does your child currently use for brushing his/her teeth? <i>Read the options (besides "don't know") and choose one.</i>	1. <input type="checkbox"/> Fluoride containing 2. <input type="checkbox"/> Fluoride-free 99. <input type="checkbox"/> I don't know
23.	How often do you take your child to the dentist for preventive purposes, such as regular check-up, plaque removal, carries preventive measures? <i>Read all options and choose one</i>	1. <input type="checkbox"/> Once a 6 months 2. <input type="checkbox"/> Once a year 3. <input type="checkbox"/> Less frequently than once a year 88. <input type="checkbox"/> Never 5. <input type="checkbox"/> Other _____
24.	On average, how frequently do you take your child to the dentist for treatment purposes (when s/he has complains)?	1. <input type="checkbox"/> Several times a year 2. <input type="checkbox"/> Once a year 3. <input type="checkbox"/> Once in two-three years 4. <input type="checkbox"/> Less frequently/never
25.	What else do you use for your child's dental care? <i>Read all options and choose more than one option, if needed</i>	1. <input type="checkbox"/> Dental pick or interdental brush 2. <input type="checkbox"/> Dental floss, a) how many days during a week? _____ 3. <input type="checkbox"/> Mouth rinsing with water

		4. <input type="checkbox"/> Other (<i>specify</i>) _____ 5. <input type="checkbox"/> None of these
26.	Did your child use any antiseptic mouthwash for therapeutic reasons over the past 3 months (e.g. Hexiloc)?	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No 99. <input type="checkbox"/> Don't remember
4. Eating habits <i>The next set of questions is related to your child's eating habits</i>		
27.	How long did your child receive breastfeeding?	1. _____ months
28.	At what age your child was given sweetened beverages	1. _____ months 88. <input type="checkbox"/> Never
29.	Was your child given sweet tea/beverages using a bottle with a nipple?	1. <input type="checkbox"/> Yes, a) at what age? _____ months 2. <input type="checkbox"/> No
30.	At what age your child was given confectionary/other sweets?	1. _____ years 88. <input type="checkbox"/> Never
31.	At what age your child was given carbonated sweet beverages?	1. _____ years 88. <input type="checkbox"/> Never
32.	How often does your child consume sweetened/carbonated beverages (soft drinks, lemonade, Coca Cola, Fanta, Sprite etc.) currently? <i>Read all options and choose one</i>	1. <input type="checkbox"/> Two or more times a day 2. <input type="checkbox"/> Once a day 3. <input type="checkbox"/> Several times a week 4. <input type="checkbox"/> Once a week or less frequently 88. <input type="checkbox"/> Rarely/never
33.	Does your child typically have breakfast at home regularly?	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
34.	How many meals does your child have during a typical day?	_____

35.	What are the food types/items typically consumed by your child during a usual day? (Please, list the most frequently consumed four types of food.)	1. _____ 2. _____ 3. _____ 4. _____
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5. Self-reported health
The next set of questions is related to your child's health status

36.	How would you describe your child's health in the last 30 days? <i>Read all options and choose one</i>	5. <input type="checkbox"/> Excellent 4. <input type="checkbox"/> Very good 3. <input type="checkbox"/> Good 2. <input type="checkbox"/> Fair 1. <input type="checkbox"/> Poor
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37.	In general how would you rate the health of your child's teeth and gums? <i>Read all options and choose one</i>	5. <input type="checkbox"/> Excellent 4. <input type="checkbox"/> Very good 3. <input type="checkbox"/> Good 2. <input type="checkbox"/> Fair 1. <input type="checkbox"/> Poor
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38.	Please indicate if your child has any chronic conditions:	1. <input type="checkbox"/> Yes a) <i>indicate the condition:</i> _____ 2. <input type="checkbox"/> No
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6. Socio-economic status
The last few questions are related to your family's socio-economic status

39.	How many family members live in your household?	_____
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40.	How would you rate your family's general standard of living? <i>Read all options and choose one</i>	1. <input type="checkbox"/> Substantially below average 2. <input type="checkbox"/> Below average
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		3. <input type="checkbox"/> Average 4. <input type="checkbox"/> Above average 5. <input type="checkbox"/> Substantially above average
41.	On average, how much money does your family spend monthly? <i>(Choose one option)</i> <i>Read all options and choose one</i>	1. <input type="checkbox"/> Less than 100,000 AMD 2. <input type="checkbox"/> From 101,000 to 200,000 AMD 3. <input type="checkbox"/> From 201,000 to 300,000 AMD 4. <input type="checkbox"/> From 301,000 to 400,000 AMD 5. <input type="checkbox"/> Above 400,000 AMD 99. <input type="checkbox"/> Don't know/ Refusal

End of the interview: _____ : _____
 hh mm

Thank you

Appendix 5

DMFT/dmft ինդեքսի հաշվարկման ձևաթուղթ

Մասնակցի ID _____

Վերին ատամներ																
աջ									ձախ							
Ատամի համար	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
				55	54	53	52	51	61	62	63	64	65			
Ստորին ատամներ																
աջ									ձախ							
Ատամի համար	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
				85	84	83	82	81	71	72	73	74	75			

Ձևաթուղթը լրացնելու ուղեցույց

- Սկսեք գնումը մասնակցի վերին աջ երկրորդ ծամիչ ատամից, որը համապատասխանում է աղյուսակի 17-րդ համարին: Եթե այդ ատամը դեռևս բացակայում է, սկսեք թվով հաջորդ ատամից:
- Կախված ատամի կարգավիճակից, նշեք համապատասխան տառը վանդակի մեջ՝ կարիեսով ախտահարված (D/d), բացակայող (M/m), կամ (F/f) պլոմբավորված:
Նշեք մեծատառով, եթե ատամը հիմնական է, և փոքրատառով, եթե այն կաթնատամ է: Հուշում. Աղյուսակում մշտական ատամները ներկայացված են 18-48 թվերով, իսկ կաթնատամները՝ 51 և բարձր թվերով:
- Կարևոր է. DMFT/dmft ինդեքսը հաշվարկելիս, ատամը համարվում է բացակայող (M/m), եթե այն հեռացվել է կարիեսի պատճառով: Ցանկացած այլ պարագայում բացակայող ատամի դեպքում վանդակում ոչինչ չի լրացվում:
- Կարևոր է. Եթե միևնույն ատամի վրա կա և՛ կարիես, և՛ պլոմբ, ապա տվյալ ատամը համարվում է կարիեսով ախտահարված (D/d):
- Նույն ձևով հերթականությամբ իրականացնեք հաջորդող ատամների գնահատումը
- Բոլոր ատամների գնահատումն իրականացնելուց հետո հաշվարկեք DMFT/dmft ինդեքսը հետևյալ բանաձևով՝

$$\text{DMFT} = \text{___}(\text{D}) + \text{___}(\text{M}) + \text{___}(\text{F}) = \text{_____} (\text{գումար})$$

$$\text{dmft} = \text{___}(\text{d}) + \text{___}(\text{m}) + \text{___}(\text{f}) = \text{_____} (\text{գումար})$$

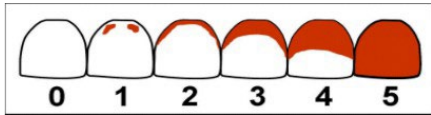
Appendix 5

Ատանափառի ինդեքսի հաշվարկման ձևաթուղթ

Մասնակցի ID _____

Վերին ատամներ																		
Ատամի համար		18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28	
					55	54	53	52	51	61	62	63	64	65				
Թշային	Դիստալ																	Մեզիալ
	Միջին																	Միջին
	Մեզիալ																	Դիստալ
Քմային	Դիստալ																	Մեզիալ
	Միջին																	Միջին
	Մեզիալ																	Դիստալ
Ստորին ատամներ																		
Ատամի համար		48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38	
					85	84	83	82	81	71	72	73	74	75				
Թշային	Դիստալ																	Մեզիալ
	Միջին																	Միջին
	Մեզիալ																	Դիստալ
Լեզվային	Դիստալ																	Մեզիալ
	Միջին																	Միջին
	Մեզիալ																	Դիստալ

$$\text{Միավոր} = \frac{\text{Քուր հատվածների միավորների գումար}}{\text{Դիտարկված հատվածների թիվ}} =$$



0= ատամնափառ չի հայտնաբերվել

1= ատամնափառի հատուկենտ բծեր՝ տեղակայված ատամի լնդային եզրին

2= ատամնափառի բարակ (մինչև 1 մմ) շարունակական թաղանթ՝ տեղակայված ատամի լնդային եզրին

3= ատամնափառի թաղանթ, որը ծածկում է ատամի

մակերեսի մինչև 1/3-ը 4= ատամնափառի թաղանթ, որը

ծածկում է ատամի մակերեսի 1/3-ից 2/3-ը 5=

ատամնափառի թաղանթ, որը ծածկում է ատամի

մակերեսի 2/3-ից ավել

