

Periodontitis Knowledge, Attitudes, and Practices
Among Patients with Diabetes Mellitus (DM) Type-2 in Yerevan, Armenia

(A cross-sectional study)

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by

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ABBREVIATION LIST

- AUC** - Area under the curve
- CI** - Confidence interval
- CHD** - Coronary heart disease
- DM** - Diabetes Mellitus
- KAP** - Knowledge, Attitude, Practice
- MPH** - Master of Public Health
- NPV** - Negative Predictive Value
- OR** - Odds ratio
- PPV** - Positive Predictive Value
- SD** - Standard deviation
- SES** - Social economic status
- IRB** - Institutional Review Board
- IDF** - International Diabetes Federation
- VIF** - Variance inflation factor
- WHO** - World Health Organization

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ABSTRACT

Background: Periodontitis is one of the diseases which affects human population worldwide at high prevalence rates. It is the major cause of tooth loss in middle aged and elderly people. Severe periodontitis is found in 5-20% of population worldwide, whereas moderate periodontitis is more common and affects 40-50% of adults. Diabetes mellitus is a major risk factor for chronic periodontal disease.

Aim: This study aimed to assess the current knowledge, attitude, and practice (KAP) about periodontitis among patients with Diabetes Mellitus (DM) Type-2 in Yerevan, and to identify the relation between self-reported periodontitis and several potential risk factors among them. In addition, by comparing subject's self assessment of their own periodontal health with the results of his/her actual dental examination, we established the validity of the oral health self-report tool among Armenian patients.

Methods: A cross-sectional telephone-based KAP study design was applied to look into general knowledge, attitudes, and practices related to periodontitis and its risk factors among patients with DM Type-2, between the ages of 18-65 years residing in Yerevan. To assess the validity of the patients' self-report of their oral condition, we conducted a validation study of the Armenian translation of the oral health self-report scale among a small sample (n~60) of dental patients. These patients answered questions included in the oral health self-report tool, and then underwent a dental examination by a specialist (periodontist) in one of the dental clinics in Yerevan. The sample size for the KAP study was 184 and we did cluster sampling. The study team used the Armenian-language oral health self-report scale. Descriptive statistics were used for describing socio demographic, health, KAP and other characteristics of the study sample and comparing the groups with and without periodontitis. This was followed by simple binary logistic regression analyses with the outcome of periodontitis status and independent and control variables, after which multiple logistic regression analyses were performed to test the associations between the main variables, while adjusting for confounders.

Results: The validation study of the oral health self-report scale resulted in area under the ROC Curve of 0.991 (95% CI 0.829-0.993) when using a three cut-off level, which is in the highest range and indicates excellent ability of the scale to differentiate between those with and without periodontitis. The best cutoff value for the scale score (ranging from 0 to 6) was three, which resulted in the highest sensitivity, specificity, and diagnostic efficiency (Youden index) to detect periodontal disease. The prevalence rate of periodontitis in the study population using this scale with the recommended cut-off level was 65.8%. Out of 184 participants 63 (34.2%) were men and 121 (65.8%) were women. The mean age of the participants was 57.0 years. The results of the multiple logistic regression analyses showed statistically significant independent relationship between the frequency of cleaning teeth and periodontitis status with a dose-response relation, indicating that those who never clean teeth (OR=5.4) have over five times higher chance of developing periodontitis, and those who clean teeth once a day (OR=1.9) have almost two times higher chance of it compared to those who clean teeth twice a day or more frequently. Another factor marginally significantly associated with the periodontitis status was the number of self-reported chronic diseases other than diabetes mellitus, with each additional chronic disease increasing the chance of periodontitis by over 30%.

Conclusion: This is the first validation study of the oral health self-report scale conducted in Armenia, which indicated that it is a valid measure to diagnose periodontitis among Armenian population, when applying a cut off score of three. Also, in our knowledge, this is the first study conducted in Armenia to explore the determinants of periodontitis among patients with DM Type-2 in Yerevan, which showed statistically significant independent dose-response relation between the frequency of cleaning teeth and periodontitis status. The main recommendation that could be derived from this finding is cleaning teeth at least twice a day as a preventive measure against periodontitis. Prevention and timely treatment of other chronic health conditions could also be recommended to reduce the chance of developing periodontitis.

Literature review

Introduction

Periodontitis affects millions of people each year. This is one of the diseases which affects human population worldwide at high prevalence rates. (Darveau, 2010) Although there is great improvement in the oral health of population in several countries, global problem still remains unsolved. (Petersen, Bourgeois, Ogawa, Estupinan-day, & Ndiaye, 2005) The prevalence of oral diseases is especially high in disadvantaged and poor population groups in both developing and developed countries. (Petersen et al., 2005) Poor oral health influences general health and quality of life. Oral diseases such as periodontal disease, tooth loss, oral mucosal lesions and oropharyngeal cancers are major public health problem. (Preshaw et al., 2012) Severe periodontitis is found in 5-20% of population worldwide. (Petersen et al., 2005) Moderate periodontitis is more common and affects 40-50% of adults. (Preshaw et al., 2012)

According to the Marchetti et al., in the United States the prevalence of periodontitis varies from 30% to 50% among different population groups, whereas the prevalence of severe forms is only 10%. (Marchetti et al., 2012)

Periodontitis is associated with microbial composition found on the surface of the tooth root. (Darveau, 2010) Periodontitis is an induced inflammatory disease which involves the tissues surrounding and supporting the teeth. (Preshaw et al., 2012) It is caused by infections sustained by periodontal pathogens such as *Porphyromonas gingivalis*, *Prevotellaintermedia*, *Tannarella forsythia*, and *Aggregatibacter actinomycetemcomitans*, which lead to soft and hard tissue destruction, dental mobility, and the loss of dental elements. (Marchetti et al., 2012) The lesion begins as chronic gingivitis, an inflammation of gingival tissues, and may progress to periodontitis, a disease of the structures supporting the teeth including the gingiva, periodontal membrane and alveolar bone. (Petersen et al., 2005) The action of bacteria on food debris accumulated around the margins of the gingiva can cause the formation of plaque, which leads to the formation of the calculus. When plaque spreads to the underlying periodontal membrane and alveolar bone, the teeth become loosened and eventually fall out. (Darveau, 2010)

Risk factors of periodontitis

The main risk factors of periodontitis are poor oral hygiene, age, smoking or tobacco use, DM Type-2, female hormonal changes, illnesses such as diabetes or HIV/AIDS, medications used to treat some conditions, genetic factors, malnutrition, alcohol consumption, and stress. (Petersen & Ogawa, 2005) Periodontal disease is the major cause of tooth loss in middle aged and elderly people. (Al-Ghutaimel, Riba, Al-Kahtani, & Al-Duhaimi, 2014) A detailed study shows that periodontal disease with deep periodontal pockets (≥ 6 mm) affects from 10% to 15% of adults worldwide. (Petersen & Ogawa, 2005)

One of the most affected groups in the community is the population with lower socio-economic status (SES). (Borrell, Burt, Neighbors, & Taylor, 2008) According to Borrell et al., there is a strong relationship between low income levels and periodontitis. This study also observed a relationship between ethnicity and periodontitis. Individual income and education are important factors in periodontal health. (Borrell, Beck, & Heiss, 2006) Lalla et al. provide evidence that diabetes is an added risk for oral disease in low-income populations. (Lalla, Park, Papapanou, & Lamster, 2008)

Periodontitis can lead to many complications and can worsen the course of rheumatoid arthritis, atherosclerosis, coronary heart disease (CHD), diabetes, respiratory diseases and pregnancy. (Yamazaki et al., 2007) There is a confirmed association between periodontitis and CVD. (Loesche, 2007) According to Rutger Persson, there is a strong relationship between periodontal infection (P. Gingivalis) and the development of autoimmune antibodies associated with rheumatoid arthritis. (Rutger Persson, 2012) Another study shows that cardiovascular disease and periodontitis are related to a common factor known as oxidative stress. (Marchetti et al., 2012)

Relationship between Diabetes Mellitus type-2 and periodontitis

There is a strong relationship between hyperglycemia and periodontitis. (Preshaw et al., 2012) Diabetes mellitus is a major risk factor for chronic periodontal disease. (Zhou et al., 2013) According to Zhou et al., the bacterial composition in the subgingival plaque could be changed due to DM type-2.

It is well known that periodontal diseases are more common and more severe in persons with diabetes compared to nondiabetic persons. ("Periodontal Disease," 1993) The symptoms of periodontal disease are considered the "sixth complication" of diabetes. ("Periodontal Disease," 1993) According to results of the study conducted among Pima Indians, the prevalence of periodontal disease was much higher among patients with DM type-2 than among nondiabetic patients. The study also showed that loss of periodontal attachment and alveolar bone started much earlier among patients with diabetes and these patients were 15 times more likely to be totally toothless compared to nondiabetic persons. ("Periodontal Disease," 1993) It is shown that periodontal disease can increase the risk of insulin resistance and can influence glycemic control. (Mealey & Oates, 2006). There is a mutual relationship between periodontal disease and DM type-2. (Preshaw et al., 2012) Diabetes increases the risk of developing periodontitis, whereas periodontitis can negatively influence glycemic control. In addition, people with poor glycemic control are more at risk for periodontitis and alveolar bone loss. (Preshaw et al., 2012)

According to a study conducted in Jordan among 164 doctors, 70% were aware of the relationship between diabetes and oral health, but only half of them advised their diabetic patients to consult a dentist for their oral health. (Al-Habashneh, Barghout, Humbert, Khader, & Alwaeli, 2010)

Situation in Armenia

While periodontitis is a public health problem in other countries, we do not have official data about the prevalence of periodontitis in Armenia. One study provides data about the tendency of increasing periodontal tissue lesions in Tavush region. This study reports that there have been a significant number of diagnosed cases of periodontal pockets with the depth of 4-5mm among the teenagers. (Manrikian Me. et al., 2012)

According to the World Health Organization (WHO), diabetes is a growing public health concern in Armenia. Moreover, according to the International Diabetes Federation (IDF) estimates, the diabetes morbidity rate is projected to increase by 0.9% annually in Armenia from 2010 to 2030.

Study Aims

This study aimed to assess the current knowledge, attitude, and practice (KAP) about periodontitis among patients with DM Type-2 in Yerevan, and to identify the relation between self-reported periodontitis and several potential risk factors among them. In addition, by comparing subject's self assessment of their own periodontal health with the results of his/her actual dental examination, we established the validity of the periodontitis Armenian-language oral health self-report tool.

The research questions for this study were:

- What are the prevalence and risk factors of periodontitis among patients with DM type-2 in Yerevan?
- What are the KAP of the patients with DM Type-2 residing in Yerevan about prevention of periodontitis?
- What is the relationship between SES and the risk of developing periodontitis among patients with DM Type-2 in Yerevan?
- Is the Armenian-language oral health self-report tool a valid measure to diagnose periodontitis?

Methods

Study design

A cross-sectional telephone-based knowledge, attitude, and practice study design was applied to look into general knowledge, attitudes, and practices related to periodontitis and its risk factors among patients with DM Type-2, between the ages of 18-65 years residing in Yerevan.

To assess the validity of the patients' self-report of their oral condition, we conducted a validation study of the oral self-assessment tool among a small sample (n~60) of patients. These

patients answered questions included in the self-assessment oral health self-report tool, and then underwent a dental examination by a specialist (periodontist) in one of the dental clinics in Yerevan.

Study Population

The target population included patients with DM Type-2, between the ages of 18-65 years living in Yerevan.

Participants of the dental examination were patients who visited the dentist in the study period.

Inclusion Criteria: Age from 18 to 65 years, living in Yerevan (registered in a Yerevan polyclinic), having DM Type-2, willing to participate, and being able to speak and understand Armenian.

Exclusion Criteria: Being edentulous.

Sampling strategy

We applied cluster sampling. At first we did clustering and we chose polyclinics from the different districts of the city. Our clusters were polyclinics. Then we randomly selected participants from each cluster applying random sampling technique, proportionate to the numbers of served patients in each polyclinic, and using the list of the patients with DM Type-2. The list of patients was taken from endocrinologists.

Each participant had his/her ID number, which was constructed according to the sequential phone interview number.

The participants of the sample for the dental examination were all the eligible patients who have visited the dentist in the study days. Each of them had sequential visit number.

Sample size calculation

The sample size was calculated by using the formula for two sample comparison of proportions:

$$n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2, \quad n = n_1 = n_2, \quad \text{and } N = n_1 + n_2$$

where n is the required sample size for one group (when the groups are equal), z is the level of significance, p_1 is the predicted percentage of periodontitis among diabetic patients with required oral hygiene knowledge and practices, and p_2 is the percentage of periodontitis among diabetic patients with inappropriate oral hygiene knowledge and practices. For a confidence level of 95%, when α is 0.05 (and the $Z_{1-\alpha/2}$ is 1.96), and the power ($1 - \beta$) is 0.8 (and $Z_{1-\beta}$ is 0.84), and when p_1 is 0.47 (The prevalence of periodontitis among patients with DM Type-2 (“Periodontal Disease,” 1993)) and p_2 is 0.67, as we intend to detect at least 20% difference in proportions of periodontitis between the groups of diabetic patients with and without appropriate oral hygiene knowledge and practices, the required sample size for one group will be:

$$n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

$$n = (1.96 + 0.84)^2 * (0.67(1-0.67) + 0.47(1-0.47)) / (0.67 - 0.47)^2 = 7.84 * 0.47 / 0.04 = 92$$

$$N = 2 * 92 = 184$$

Data collection

Data were collected through interviewer-administered telephone interviews. The interviewer used a structured questionnaire. Contact information about patients with DM Type-2, were taken from medical records of Yerevan polyclinics. The interviews were conducted during evening hours (from 6pm until 9pm) on weekdays and at any time (from 12pm until 9pm) on weekends.

Data for the validation part was collected through self-administered questionnaires. Participants completed questionnaires before undergoing dental examination by a specialist (periodontist) in one of

the dental clinics in Yerevan. The specialist was blind to the results of the completion of oral health self-report tool.

Study instruments

A questionnaire was constructed to address the research questions posed in this study. The questionnaire contained Armenian language oral health self-report scale (six yes/no items), questions on demographic characteristics, socioeconomic status, knowledge of prevention of periodontitis, knowledge regarding risk factors of periodontitis and practice in periodontitis prevention. The questionnaire included 50 questions (Appendix 1). To estimate the validity of the oral health self-report scale for Armenian population, we did a small-scale validation study. The tool for this was the Armenian translation of the oral health self-report scale, which is a validated instrument among large population groups. (Khader et al., 2014) The validation study instrument gathered also information regarding age and gender of the participants (Appendix 2).

Variables

The dependent variable for the validation study was the cut-off level for the Armenian-language Oral health self-report scale. The independent variable was the periodontal status of patients (presence or absence of the disease) diagnosed by a specialist and used as a gold-standard. The study also collected data on patient's age, gender, number of natural teeth, and diabetic status.

The dependent variable for the KAP survey was the periodontal status of patients (presence or absence of the disease). The primary independent variables of this study were the KAP score of patients with DM Type-2 concerning risk and preventive factors of periodontitis and their SES score.

The SES score included questions regarding PAROS registration, health insurance, family's general standard of living, and monthly spending. The weighting of responses to each of these items to generate the SES score is presented in Appendix 3.

Oral hygiene knowledge score included questions measuring respondents' practice (frequency of cleaning teeth, frequency of changing tooth brush) and attitude (to the possibility of prevention of

periodontitis through oral hygiene and whether smoking is harmful for dental health). The weighting of responses to each of these items to generate a knowledge score is presented in Appendix 4.

The control variables were grouped into socio-demographic characteristics (including age, gender, education level, marital status, and employment); characteristics related to respondent's health status and chronic health problems (including smell from mouth, number of natural teeth, self-rated health, family history of periodontitis and self-reported chronic health problems), diabetes-related characteristics (including duration of having diabetes, regularity and frequency of measuring blood glucose level, complications connected with diabetes and frequency of preventative check-ups to endocrinologist), and smoking-related characteristics (including current smoking, ever smoking, duration of smoking, number of cigarettes smoked per day, and receiving doctor's advice to quit smoking). All the variables included in the logistic regression analysis were treated either as dichotomous or continuous, except the frequency of cleaning teeth, for which three-level dummy variables were created (Table 8).

Data Analysis

Data for the validation study were analyzed using SPSS 21 software. Descriptive analysis described the main characteristics of the participants and compared these between those with and without DM using t-test for continuous and Chi-square test for categorical variables. Using the specialist's diagnosis of periodontitis as a gold standard to compare with, we calculated the following diagnostic properties for each possible cut-off level of the Armenian-language Oral health self report scale: sensitivity (proportion of those with the periodontitis correctly identified by the test), specificity (proportion of those without the periodontitis correctly identified by the test), positive predictive value (proportion of those having the periodontitis of those testing positive), negative predictive value (proportion of those not having the periodontitis from those testing negative), the Youden index J of diagnostic efficiency (estimated as [Sensitivity + Specificity - 1] at any observed score), and kappa coefficient (K (0.5)) with its p-value. A Receiver Operating Characteristic (ROC) curve analysis

was conducted to determine the area under the ROC curve (AUC) for the cut-off level resulting in the highest diagnostic efficiency.

During the analysis of the KAP survey data, we did descriptive analysis to compare the differences between the groups of those with and without probable periodontitis. Means and standard deviations were used for continuous variables, while frequency analyses were performed for categorical variables. T-test and chi-square tests were used for comparisons. The dependent variable was dichotomous, so that binary logistic regression analysis was used to identify the risk factors for developing periodontitis in the target population. We did binary logistic regression analysis to identify variables significantly associated with periodontitis status and we used the same variables which were statistically significant during comparison of groups with and without periodontitis. Multiple logistic regression analysis was performed to detect associations between the dependent and independent variables while adjusting for confounders. Covariates that were not statistically significant were removed from the final model. The Hosmer-Lemeshow goodness-of-fit test was used to determine the fit of all logistic regression models. Independent variables were tested for collinearity using the VIF (Variance Inflation Factor) statistic.

Ethical considerations

The study received approval from the American University of Armenia's Institutional Review Board within the College of Health Sciences. Oral consent was provided by each respondent (Appendix5, 6). The interviewer informed respondents that they can skip any question and/or withdraw from the study at any time. Participation in this survey was voluntary and the collected data were confidential.

Results

Descriptive statistics, Validation study

To assess the validity of the oral health self-report tool (Khader et al., 2014) used in the study, overall 60 study participants completed the questionnaires (containing the scale) and were examined by a specialist to confirm or reject the diagnosis of periodontitis. The refusal rate was 7.7% (5 participants). No incomplete questionnaires were collected.

Of the 60 participants, 37 (61.3%) were men and 23 (38.3%) were women. The mean age of the participants was 46.0 years. The majority of the sample (51.7%, n=31) had more than 20 teeth. Over half (51.7%, n=31) reported that they were diagnosed with diabetes. According to the doctor's diagnoses, 31 (51.7%) of the participants did not have periodontitis, whereas 14 (23.3%) had severe periodontitis, 11 (18.3%) had moderate periodontitis and 4 (6.7%) had mild periodontitis. All participants having the diagnosis regardless of its severity were considered as diseased.

Statistically significant differences were observed between the groups with and without periodontitis. Participants with periodontitis had a mean age of 57.1 (SD=6.6), which was statistically significantly ($p=0.000$) higher than the mean age of 51.2 (SD=7.4) of participants without periodontitis. Moreover, participants with periodontitis were more likely to have diabetes than those without periodontitis (71.4% vs. 28.1%, respectively, $p=0.002$).

The characteristics of the study participants are presented in Table 1.

Diagnostic accuracy of the Oral condition self-report scale

During the analyses, six cutoff values were tested (1 through 6). Table 2 presents sensitivity, specificity, Kappa coefficient and its p-value, Youden J index, PPV, and NPV at the each cutoff value. The sensitivity ranged from 0.21 to 0.96, whereas specificity ranged from 0.34 to 1.00. According to the results presented in Table 2, the best cutoff value for the scale score (ranging from 0 to 6) was 3, which had the highest sensitivity (0.82) and specificity (0.97) to detect periodontal disease. At the same time, the cutoff score of 3 corresponded to the point of the highest Youden J index ($J= 0.79$) and the highest agreement after adjusting for chance agreement ($K(0.5) = 0.60$), whereas PPV at this point was 0.96, and NPV 0.83.

ROC curve analysis was used to compare the diagnostic value of the self assessment scale with the diagnoses of the dentist, which showed that the oral health self-report tool is an excellent one to determine periodontitis. For the cutoff score of 3, the area under the ROC curve was 0.991 (95% CI 0.829-0.993) which is in the highest range, and indicates excellent ability of the scale to distinguish between those with and without periodontitis.

The ROC Curve for the cutoff score of 3 for the oral condition self-report scale is presented in the Figure 1.

Descriptive statistics, KAP Survey

A total of 326 telephone calls were made to reach the required number of complete interviews, which yielded 184 (56.4%) complete interviews. Of the remaining, 79 (24.2%) phone numbers were incorrect, 13 (3.9%) patients refused to participate, one had died before being contacted and 49 (15.0%) were toothless and ineligible to participate in the study (Figure 2). The refusal rate was 6.7% (13 participants).

The prevalence rate of periodontitis in the study population was 121 (65.8%). We came up with this percentage by considering as diseased those participants who had a score of 3 or more at the Oral condition self-report scale.

The majority of the sample was female. Out of 184 participants 63 (34.2%) were men and 121 (65.8%) were women. The mean age of the participants was 57.0 years. Among participants of the survey, 142 (77.2%) were married, 57 (31.0%) had a university education, 75 (40.7%) completed school and 52 (28.3%) received professional technical education (Table 3). Among participants of the study, 46 (25.0%) had more than 20 teeth, whereas 135 (75%) had less than 20 teeth. Fifty participants (27.2%) reported that their family members had periodontitis (Table 4). About 89 (48.4%) of the participants reported that they had high blood pressure, 52 (28.3%) had heart disease, 73 (39.7%) had eye/vision problems, and 42 (22.8%) reported no chronic health problems other than diabetes (Table 4). The majority of the participants (178 or 96.7%) controlled their blood glucose level regularly, and 51 (27.7%) participants reported having complications of diabetes (Table 5). The majority (121 participants or

65.8%) did not use interdental aids, 57 (31%) rinsed their mouth after eating, 68 (37%) used a mouthwash, 150 (81.5%) did not make preventative visits to dentist, 108 (58.7%) agreed that smoking is harmful for dental health, 119 (64.7%) agreed that oral hygiene can prevent gum problems (Table 6). Among the participants, 63 (34.2%) ever smoked tobacco, whereas 24 (13 %) were current smokers (Table 7). Fifty (27.2%) of the study participants were employed, 19 (10.3%) had health insurance, 42 (22.8%) rated their general standard of living as substantially below average, 38 (20.7%) as a little below average, 98 (53.3%) as average and only 6 (3.2%) as above average (Table 3).

In our study population, between the groups with and without periodontitis we did not find any relation between the SES score and the risk of developing periodontitis.

The KAP score was also not different between the groups with and without periodontitis (1.56 vs. 1.75, respectively, $p=0.171$).

Statistically significant differences between the groups with and without periodontitis were observed in the mean number of chronic health problems (other than diabetes). Participants with periodontitis were more likely to have chronic health problems (other than diabetes) than those without periodontitis (2.31 vs. 1.58, respectively, $p=0.002$). Participants with periodontitis were more likely to have smell from mouth than those without (55.9 % vs. 22.2 %, respectively, $p=0.000$), also participants with periodontitis were more likely to have heart disease than those without (33.9% vs. 17.5 %, respectively, $p=0.019$). Participants with periodontitis reported cleaning teeth more frequently than those without the disease (34.0% in the periodontitis group reported cleaning teeth twice a day or more frequently, while 54.3% in the group without periodontitis, $p=0.016$).

There were statistically significant differences in using of mouthwash (45.5 % in the group with periodontitis vs. 20.6 % in the group without periodontitis, $p=0.001$) and in making preventive visits to dentist (73.6 % in the group with periodontitis vs. 50.8 % in the group without periodontitis, $p=0.003$). Participants with and without periodontitis were different in not having chronic health problems (17.4 % vs. 33.3 %, respectively, $p=0.014$).

Marginally significant difference was observed between the groups with and without periodontitis in cleaning of teeth (83.5 % cleaned teeth in the group with periodontitis vs. 93.7 % in the group without periodontitis, $p < 0.052$). Also, there was marginally significant difference in the use of interdental aids (30.1 % used interdental aids in the group with periodontitis vs. 16.9 % in the group without periodontitis, $p = 0.064$). Participants with periodontitis were more likely to have complications connected with diabetes than those without (32.2 % vs. 19.0 %, respectively, $p = 0.058$).

Regression Analysis

The results of binary logistic regression analysis between periodontal status and selected independent variables are presented in Table 8 using odds ratios (OR) and p-values. Binary logistic regression was used to identify the risk factors for developing periodontitis in the target population.

We included in the regression analyses all the variables that were different between the groups with and without periodontitis at the significance level of $p \leq 0.25$. All these variables maintained the extent of the significance and the direction of their relation to the outcome of periodontitis status during the bivariate logistic regression analyses.

Multivariate logistic regression analysis was performed to detect the associations between the dependent and independent variables while adjusting for confounders. During the process of model fitting, covariates that lost their significance in the multivariate analysis were gradually removed from the model. After trying a number of different combinations of variables, the preference was given to two final models. Both models revealed statistically significant independent relationship between cleaning teeth and periodontitis status with dose-response relation – more frequent cleaning of teeth was associated with better protection against periodontitis (Table 9). The first model included also the number of reported chronic conditions a respondent suffers from and the presence of diabetic complications (marginally significant), both positively associated with the periodontitis status. The model indicated that those who never clean teeth have over 5 times higher chance of developing

periodontitis, and those who clean teeth once a day have almost two times higher chance of it compared to those who clean teeth twice a day or more frequently.

The second model provided in Appendix 7 contained two more variables that were omitted from the first model (having smell from mouth and using mouth wash), as having smell from mouth was considered to be a possible sign of periodontitis, while using mouth wash– a treatment of it, thus these variables could not be treated as risk factors. Nevertheless, in the model containing these variables, cleaning teeth still remained significantly related to the periodontitis status with dose-response association. The number of chronic diseases also remained significant in this model, with each additional chronic disease increasing the chance of periodontitis by over 30%. The variables of having the smell from mouth and using mouthwash were highly positively associated with the outcome. The analysis found no multicollinearity within our covariates.

Discussion

The findings in this study support that oral condition self-report tool is a valid measure to diagnose periodontitis using a scale score three or more as indicative for the disease. This finding is consistent with the results presented by the Khaddar and colleagues. (Khader et al., 2014) In the validation study sample, those diagnosed with periodontitis were older and suffered from diabetes more frequently in terms of age and diabetes status. Other studies have shown similar findings, Zhou and colleagues have shown that DM is a major risk factor for chronic periodontal disease. (Zhou and et al., 2013) Petersen and colleagues have shown that one of the risk factors of the periodontitis is age. (Petersen & Ogawa, 2005)

The cross-sectional study found that the prevalence of periodontitis among the study participants with DM Type-2 is 65.8%. According to the Marchetti et al., in the United States the prevalence of periodontitis varies from 30% to 50% among different population groups. (Marchetti et al., 2012)

Another finding of this study is the dose-response relationship between cleaning teeth and periodontitis. This finding is consistent with the study indicating that the lack of oral hygiene is one of the major risk factors for developing periodontitis. (Petersen & Ogawa, 2005)

Another finding of this study is the association between the number of chronic diseases and the risk of developing periodontitis. This finding is consistent with the results discussed by Yamazaki et al. (2007).

Although several studies suggested that SES is one of the risk factors for developing periodontitis (Borrell, Burt, Neighbors, & Taylor, 2008), we did not find a relation between SES and periodontitis status among our study population. A probable explanation for this could be that the population we studied was similarly poor and, therefore, there was no considerable variability in the SES score in our sample.

According to our findings, although there was association between the frequency of cleaning teeth and the risk of developing periodontitis, there was lack of association between the knowledge score on oral hygiene and the risk of developing periodontitis.

Strengths and limitations of the study

To our knowledge, this is the first study, which explored the prevalence of periodontitis among DM patients in Yerevan and studied its possible risk factors, including the relation between oral hygiene practice and knowledge and oral health status. Also, this study validated the Armenian-language oral hygiene self-assessment tool among Armenian population using medical diagnosis as a gold standard. The study had enough power to identify some independent determinants of the periodontitis status among the study population, with important practical implications.

The study, however, had limited generalizability for the entire country and other population groups, because our study population was specific - patients with DM Type-2 residing in Yerevan. Another limitation of the study was the possible underestimation of the prevalence of the periodontitis in our sample, because we excluded those who were teeth less, whereas the reason of being teeth less

could be periodontitis. There were 49 (15.0%) participants among 326 contacted who were not eligible to participate in the study due to being teeth less.

Conclusion and Recommendations

This study explored the relation between the KAP on oral hygiene and periodontitis status among patients with Diabetes Mellitus Type-2 residing in Yerevan. The most important finding of the study was that it found independent dose-response relation between the frequency of cleaning teeth and oral health, a phenomenon which has broad practical implications. The main recommendation that could be derived from this finding is cleaning teeth at least twice a day as a preventive measure against periodontitis. This practice was shown to be effective even in the group of population at a higher risk for this condition because of suffering from DM. Based on this study, prevention and timely treatment of other chronic health conditions could also be recommended to reduce the chance of developing periodontitis.

Finally, this is the first validation study of the Armenian-language oral hygiene self-assessment tool conducted in Armenia, which demonstrated that this tool could be a good instrument to screen the periodontitis status in our population using a cut off score of three.

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TABLES

Table1. Characteristics of participants of the oral condition self-report scale validation study (n=60)

Variables	With Periodon- titis	Without periodontitis	p-value*	Total %, mean
Gender: Male,%	67.9	56.3	.430	61.3
Female,%	32.1	43.8		38.3
Age, mean(SD)	51.2 (7.4)	41.4 (11.8)	.000	46.0 (11.1)
Number of natural teeth:			.234	
Less than 10,%	32.1	28.1		30.0
From 10 to 20,%	28.6	9.4		18.3
More than 20,%	39.3	62.5		51.7
Diabetic status, %	71.4	28.1	.002	48.3

* Exact sig. (2-sided)

Table2. Diagnostic characteristics of the periodontitis self- assessment tool at different cutoff scores (with clinical diagnosis of periodontitis taken as gold standard)

Cutoff score	Sensitivity	Specificity	Youden J	Kappa (0.5)	P-value	Predictive Positive Value (PPV)	Predictive Negative Value (NPV)
1	0.96	0.34	0.30	0.29	.003	0.57	0.92
2	0.86	0.69	0.55	0.54	.000	0.71	0.85
3	0.82	0.97	0.79	0.80	.000	0.96	0.86
4	0.71	1.0	0.71	0.73	.000	1.0	0.80
5	0.43	1.0	0.43	0.44	.000	1.0	0.67
6	0.21	1.0	0.21	0.26	.006	1.0	0.59

Table3. Distribution of socio-demographic characteristics among respondents with and without periodontitis among patients with type 2 diabetes served by Yerevan clinics, 2015

Characteristics	N	With Periodon- titis (n=92)	Without Periodon- titis (n= 92)	p- valu e*	Total %, mean
Gender: Male,%	184	34.7	33.3	.852	65.8
Female,%		65.3	66.7		34.2
Age, mean (SD)	184	56.92 (5.96)	57.17 (6.64)	.790	57.01
Marital status: Married,%	184	77.7	76.2	.479	77.2
Separated/Divorced,%		4.1	9.5		6.0
Widowed,%		13.2	11.1		12.5
Single,%		5.0	3.2		4.3
Level of education:					
School (less than 10 years),%	184	5.0	6.3	.477	5.4
School (10 years),%		37.2	31.7		35.3
Professional technical education (10-13years),%		24.8	34.9		28.3
Institute/University,%		33.1	27.0		31.0
Number of people living in family, mean (SD)	184	4.12 (1.96)	4.10 (1.59)	.943	4.11
Number of children, mean(SD)	183	2.18 (1.08)	2.25 (0.97)	.627	2.20
Employment, %	184	28.1	25.4	.730	27.2
Number of employed in household, mean (SD)	183	1.31 (1.01)	1.39 (1.08)	.651	1.34
PAROS registration,%	184	12.4	7.9	.458	10.9
Family's general standard of living:					
Substantially below average,%	184	23.1	22.2	.501	22.8
A little below average,%		19.8	22.2		20.7
Average,%		52.1	55.6		53.3
Little above average,%		4.1	0.0		2.7
Substantially above average,%		0.8	0.0		0.5
Monthly spending:					
Less than 50,000 AMD ,%	149	8.1	12.0	.151	9.4
From 51,000 to 100,000 AMD,%		32.3	16.0		26.8
From 101,000 to 200,000 AMD,%		33.3	50.0		38.9
From 201,000 to 300,000 AMD,%		23.2	18.0		21.5
Above 301,000 AMD,%		3.0	4.0		3.4
Health insurance, %	180	8.3	14.3	.203	10.3
Socio- economic status score SES ^s mean,(SD)**	147	8.45 (3.26)	8.44 (2.91)	.976	8.45

* Exact sig. (2-sided), ^sSES score includes questions regarding PAROS registration, health insurance, family's general standard of living, and monthly spending.

Table 4. Distribution of characteristics related to health status and chronic health problems among respondents with and without periodontitis among patients with type 2 diabetes served by Yerevan clinics, 2015

Characteristics	N	Periodontitis (n=92)	Without Periodon- titis (n=92)	p- value *	Total %, mean
Health status:					
Excellent,%	184	0.8	3.2	.135	1.6
Very good,%		2.5	1.6		2.2
Good,%		37.2	54.0		42.9
Fair,%		28.1	17.5		24.5
Poor, %		31.4	23.8		28.8
Smell from mouth,%	184	55.9	22.2	.000	44.2
Number of natural teeth:					
Less than 10,%	183	41.7	22.2	.030	35.0
From 10 to 20,%		36.7	46.0		39.9
More than 20,%		21.7	31.7		25.1
Family history of periodontitis,%	184	31.4	19.0	.074	27.2
High blood pressure,%	184	52.1	41.3	.164	48.4
Heart disease,%	184	33.9	17.5	.019	28.3
Lung disease(including asthma),%	184	5.0	1.6	.257	3.8
Stomach/intestine disease,%	184	8.3	4.8	.379	7.1
Cancer, %	184	0.8	1.6	.637	1.1
Eye/vision problems,%	184	43.8	31.7	.113	39.7
Kidney problems,%	184	9.9	7.9	.660	9.2
Problem with joints/bones,%	184	38.8	31.7	.342	36.4
Thyroid enlargement,%	184	89.3	95.2	.172	8.7
Do not have chronic health problems, %	184	17.4	33.3	.014	22.8
Number of chronic health problems (other than diabetes), mean (SD)	184	2.31 (1.46)	1.58 (1.42)	.002	2.06

* Exact sig. (2-sided)

Table 5. Distribution of diabetes-related characteristics among respondents with and without periodontitis among patients with type 2 diabetes served by Yerevan clinics, 2015

Characteristics	N	Periodontitis (n=92)	Without Periodon- titis (n=92)	p- value *	Total %, mean
Duration of having diabetes(years), mean (SD)	184	6.55 (4.25)	5.83 (3.63)	.253	6.31
Regularly measuring blood glucose,%	184	96.7	96.8	.962	96.7
Frequency of measuring blood glucose:					
Once a week or less,%	184	42.2	35.0	.748	39.7
More than once a week,%		57.8	65.0		60.3
Complications connected with diabetes,%	184	32.2	19.0	.058	27.7
Frequency of preventative check-ups to endocrinologist:					
Once in 3 months or more frequently,%	184	81.0	73.0	.13	78.3
Once in 3-6 months,%		2.5	3.2	3	2.7
Once in 6-12 months,%		1.7	6.3		3.3
Once a year or rarely,%		0.0	3.2		1.1
Never,%		14.9	14.3		14.7

* Exact sig. (2-sided)

Table 6. Knowledge about prevention of periodontitis and oral hygiene

Characteristics	N	Periodontitis (n=92)	Without Periodon- titis (n=92)	p- value *	Total %, mean
Cleaning of teeth,%	184	83.5	93.7	.052	88.0
Frequency of cleaning teeth:					
Occasionally,%	162	6.8	0.0	.016	15.8
Once daily,%		59.2	45.8		47.8
Twice daily,%		22.3	42.4		26.1
More than twice daily,%		11.7	11.9		10.3
Frequency of changing tooth brush:					
Once in 3 months or more frequently,%	162	21.4	23.7	.961	19.6
Once in 3-6 months,%		15.5	18.6		14.7
Once in 6-12 months,%		11.7	11.9		10.3
Once a year or rarely,%		10.7	8.5		8.7
When useless/Never,%		40.8	37.3		46.7
Use of interdental aids,%	162	30.1	16.9	.064	25.3
Cleaning of tongue,%	184	24.8	20.6	.527	23.4
Rinsing mouth after eating,%	184	33.9	25.4	.237	31.0
Using of mouth- wash,%	184	45.5	20.6	.001	37.0
Don't make preventative visits to dentist,%	184	73.6	50.8	.003	63.0
“Oral hygiene prevents periodontitis”:					
Agree, %	184	62.0	69.8	.290	64.7
Disagree, %		38.0	30.2		35.3
“Smoking is harmful for dental health”:					
Strongly agree,%	184	36.4	44.4	.730	39.1
Agree,%		19.8	19.0		19.6
Neither agree nor disagree,%		37.2	30.2		34.8
Disagree,%		6.6	5.3		6.5
Strongly disagree,%					
Oral hygiene knowledge score, mean (SD) ^k	162	1.56 (0.83)	1.75 (0.85)	.171	1.6

* Exact sig. (2-sided)

^k Oral hygiene knowledge score combines responses to the following items: frequency of cleaning teeth, frequency of changing tooth brush, attitude to the prevention of periodontitis through oral hygiene and harmful effect of smoking for dental health.

Table 7. Distribution of smoking status -related characteristics among respondents with and without periodontitis among patients with type 2 diabetes in Yerevan, 2015

Characteristics	N	Periodontitis (n=92)	Without Periodontitis (n= 92)	p- value *	Total
Current smoker,%	59	43.9	33.3	.447	40.7
Ever smoked, %	184	35.5	31.7	.607	34.2
Duration of smoking daily(years), mean(SD)	59	26.98 (12.12)	24.28 (12.9)	.443	26.2
Number of cigarettes per day, mean(SD)	25	21.47 (11.91)	17.83 (8.49)	.497	20.6
Doctor advised to quit smoking,%	25	89.5	83.3	.687	88.0
Endocrinologist advised to pay more attention on dental and/or gum health:	184	22.3	23.8	.819	22.8

Table8. Binary logistic regression between dependent variable -periodontitis status and selected independent variables

Variables	Odds Ratio	P-value Exact Sig.
Perceived poor/fair health versus good health	0.48	.020
Number of teeth: less than 10	2.75	.017
from 10-20	1.17	.686
more than 20	1	
Family history of diabetes	1.95	.077
High blood pressure	1.55	.165
Heart disease	2.42	.021
Lung disease(including asthma)	3.24	.282
Eye/vision problems	1.67	.114
Duration of having diabetes (years)	1.05	.253
Number of chronic diseases (other than diabetes)	0.42	.016
Complications of diabetes	2.02	.061
Thyroid enlargement	1.92	.000
Usually cleaning teeth	0.42	.016
Cleaning of teeth: Never	5.72	.003
Once a day	2.06	.031
Twice a day or more	1	
Use of interdental aids	2.11	.067
Rinsing of mouth after eating	1.50	.239
Using of mouth- wash	3.20	.001
Smell from mouth	4.44	.000
Health insurance	0.54	.208
Don't making preventative visits to dentist	1.92	.000
Preventative check-ups to endocrinologist:	1.57	.215
Once in 3 months or less		
Once in 3-6 months or more	1	
Oral health knowledge score	0.77	.172

Tabl9. Logistic regression model of determinants of periodontitis among Yerevan residents with type 2 diabetes mellitus, 2015

(Pseudo R²=0.102, Hosmer & Lemeshow test p=0.126)

	OR	95.0% CI for OR		p-value
		Lower	Upper	
Number of chronic diseases*	1.3	1.1	1.7	.018
Diabetic Complications	1.9	0.9	4.2	.097
Cleaning teeth: Never	5.4	1.6	17.6	.006
Once a day	1.9	0.9	3.8	.063
Twice a day or more	1.0			

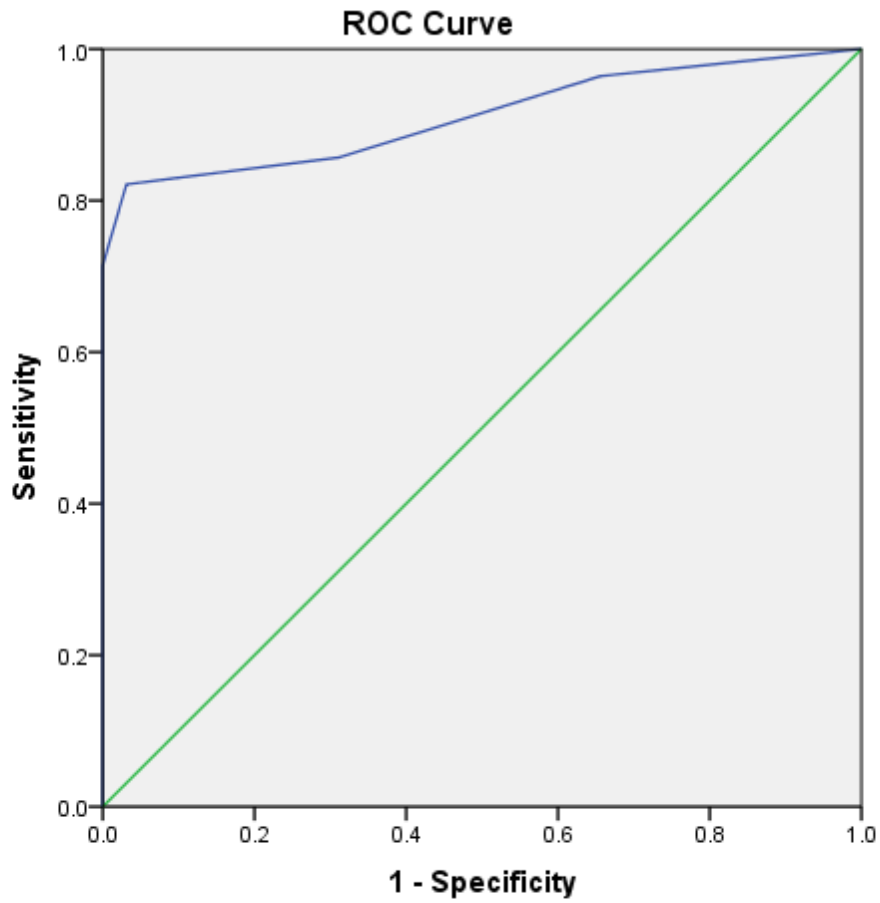
*Other than diabetes

OR, Odds Ratio

CI, Confidence interval

FIGURES

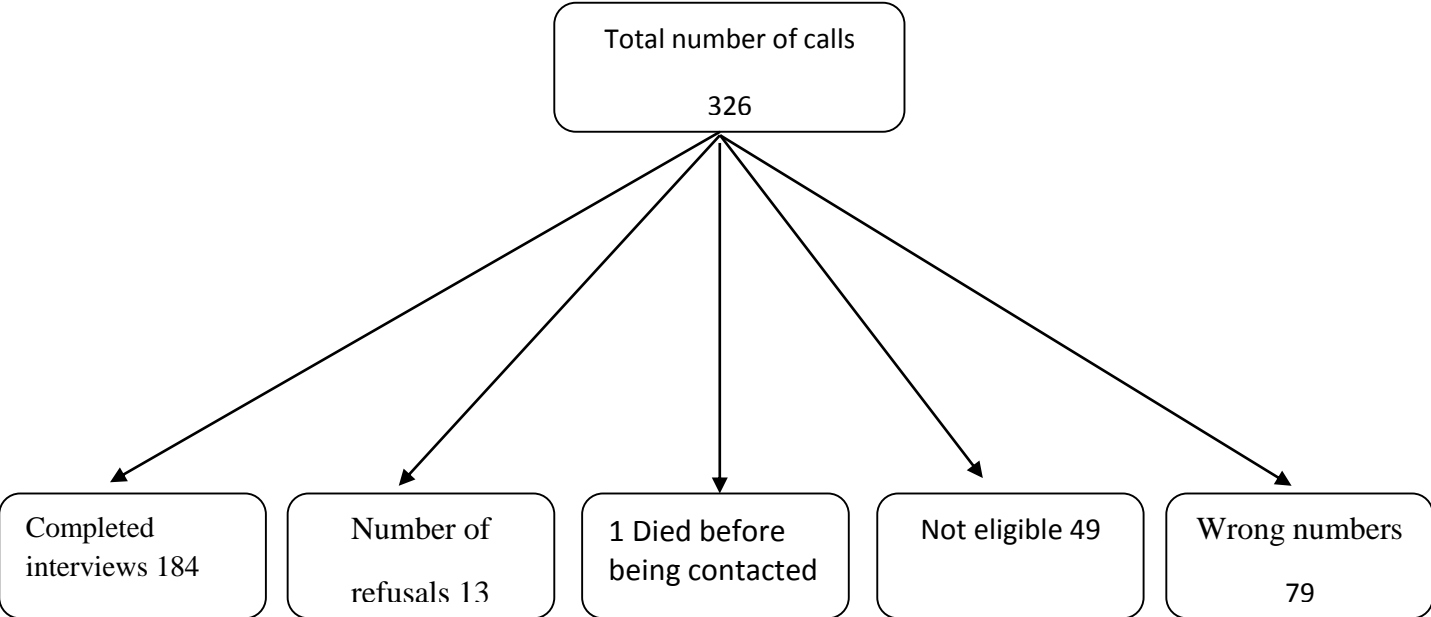
Figur.1 ROC Curve for self-reported validation scale



Diagonal segments are produced by ties.

Area Under the ROC Curve = 0.991 (95% CI: 0.829; 0.993)

Figure.2 Flowchart of participants



APPENDICES

Appendix 1 Questionnaire for the survey: English and Armenian versions American University of Armenia

Periodontitis Knowledge, Attitudes, and Practices

Among Patients with Diabetes Mellitus (DM) Type-2, in Yerevan, Armenia

Questionnaire

Demographic Information

ID _____

Date ____/____/____

Starting time_____:_____

1. Gender: 1. Male

2. Female

2. How old are you (*completed years*)? _____

3. How would you describe your health in the last 30 days?

1. Excellent

2. Very good

3. Good

4. Fair

5. Poor

4. How many of your natural teeth are remaining?

1. None

2. Less than 10

3. From 10 to 20

4. More than 20

88. Not sure/refused

Self-reported periodontal status

Please, answer the following questions about your gums' health:

5. In your opinion do you have periodontal disease or gum disease?	<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No
--	---------------------------------	--------------------------------

6. Have you ever been told by a dentist that you have periodontal / gum disease with loss of bone mass?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2. No
7. Do you find any area of your gums redder than normal?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2. No
8. Do any of your teeth feel loose?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2. No
9. Does food get caught in your teeth?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2. No
10. Do you notice that your teeth getting longer?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2.No

11. Do your family members have periodontal disease?

- 1.Yes
2.No

12. Please indicate any chronic health problem(s) that you presently have (other than diabetes).
(Mention all that apply)

- a) High blood pressure
- b) Heart disease
- c) Lung disease(including asthma)
- d) Stomach/intestine disease
- e) Cancer
- f) Eye/vision problems
- g) Kidney problems
- h) Problem with joints/bones
- i) Other problems(describe) _____
- j) No chronic health problems

Questions related with diabetes status

13. When were you told you had diabetes?	____ / _____ Month Year
14. Do you currently receive insulin?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
15. Do you control your blood glucose level regularly?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
16. If yes, how often?	<input type="checkbox"/> 1.One/more times per day <input type="checkbox"/> 2.Several times a week <input type="checkbox"/> 3 .Once a week <input type="checkbox"/> 4 .Several times a month <input type="checkbox"/> 5.Once a month <input type="checkbox"/> 6 .Once in several months <input type="checkbox"/> 7 .Once a year <input type="checkbox"/> 8 .Less than once a year

<p>17. Have you ever had any complications of diabetes?</p>	<p><input type="checkbox"/>1.Yes <input type="checkbox"/>2.No</p>
<p>18. If yes, please, specify what complications:</p>	<p>_____</p>
<p>19. How often do you make any preventative check-ups to endocrinologist?</p>	<p><input type="checkbox"/>1.Once in 3 months or more frequently→ <i>Go to question21</i> <input type="checkbox"/>2 .Once in 3-6 months→ <i>Go to question21</i> <input type="checkbox"/>3 .Once in 6-12 months→ <i>Go to question21</i> <input type="checkbox"/>4 .Once a year or rarely→ <i>Go to question21</i> <input type="checkbox"/>5 .Never</p>
<p>20. Why you do not go to endocrinologist? (<i>Mark all that apply</i>)</p>	<p><input type="checkbox"/>1. I cannot afford it <input type="checkbox"/>2.I do not have time <input type="checkbox"/>3 .I do not trust endocrinologists <input type="checkbox"/>4.Other reasons _____</p>

Knowledge about prevention of periodontitis and oral hygiene

<p>21. Do you clean your teeth?</p>	<p><input type="checkbox"/>1.Yes <input type="checkbox"/>2. No→ <i>Go to question25</i></p>
<p>22. How often do you clean your teeth?</p>	<p><input type="checkbox"/>1.Occasionally <input type="checkbox"/>2.Once daily <input type="checkbox"/>3.Twice daily <input type="checkbox"/>4.More than twice daily</p>
<p>23. How often do you change your tooth brush?</p>	<p><input type="checkbox"/>1.Once in 3 months or more frequently <input type="checkbox"/>2.Once in 3-6 months <input type="checkbox"/>3.Once in 6-12 months <input type="checkbox"/>4.Once a year or rarely <input type="checkbox"/>5.When useless/Never</p>
<p>24. Do you use any of these interdental aids?</p>	<p><input type="checkbox"/>1.Floss <input type="checkbox"/>2.Interdental brush <input type="checkbox"/>3.Wooden toothpick</p>
<p>25. Do you clean your tongue?</p>	<p><input type="checkbox"/>1.Yes <input type="checkbox"/>2.No</p>

26. Do you rinse your mouth after eating?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
27. Do you use a mouth-wash?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
28. Have you or your family members ever noticed smell from your mouth?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No <input type="checkbox"/> 3.Don't know/not sure

Smoking status

29. Have you ever smoked tobacco daily?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No→Go to question 35
30. Do you currently smoke tobacco?	<input type="checkbox"/> 1.Yes→ Go to question 32 <input type="checkbox"/> 2.No
31. How much time has passed since you have quit smoking?	_____, _____ Months Years→Go to question 34
32. How many cigarettes on average do you smoke per day?	_____
33. During any visit to a doctor in the past 6 months, were you advised to quit smoking?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
34. Overall how many years have you smoked daily?	_____
35. Please tell if you agree that smoking is harmful for dental health?	<input type="checkbox"/> 1.Strongly agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Neither agree nor disagree <input type="checkbox"/> 4.Disagree <input type="checkbox"/> 5. Strongly disagree

Dental accessibility

36. Has your endocrinologist ever told you that you have to pay more attention to your dental and/or gum health?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
37. How often do you make any preventive visits to dentist?	<input type="checkbox"/> 1.Once in 3 months or more frequently→ Go to question39 <input type="checkbox"/> 2.Once in 3-6 months→ Go to question39 <input type="checkbox"/> 3. Once in 6-12 months→ Go to question39

	<input type="checkbox"/> 4.Once a year or rarely months→ <i>Go to question39</i> <input type="checkbox"/> 5.Never
38. Why you do not go to a dentist? (<i>Mark all that apply</i>)	<input type="checkbox"/> 1. I cannot afford it <input type="checkbox"/> 2. I do not have time <input type="checkbox"/> 3. I do not trust dentists <input type="checkbox"/> 4.I afraid dentists <input type="checkbox"/> 5. Other reasons _____
39. Do you agree that oral hygiene can prevent gum problems?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
40. Do you have health insurance?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
41. If yes, does it cover dental care?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No

Socio-demographic questions

42. What is your marital status?	<input type="checkbox"/> 1.Married <input type="checkbox"/> 2.Separated/Divorced <input type="checkbox"/> 3.Widowed <input type="checkbox"/> 4.Single
43. Indicate the highest level of education that you have received?	<input type="checkbox"/> 1.School (less than 10 years) <input type="checkbox"/> 2.School (10 years) <input type="checkbox"/> 3.Professional technical education (10-13years) <input type="checkbox"/> 4.Institute/University
44. How many people live in your family? (include yourself)	_____
45. How many children do you have?	_____
46. Are you employed or student (Consider as employment also self-employment, farming, and seasonal/migrant work)?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
47. Is your family registered in a family poverty benefit program (e.g. PAROS)?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No
48. How many members of your household including yourself are currently employed, including self-employment, farming, and seasonal/migrant work?	_____
49. How would you rate your family's general standard of living?	<input type="checkbox"/> 1.Substantially below average <input type="checkbox"/> 2.A little below average

	<input type="checkbox"/> 3.Average <input type="checkbox"/> 4.Little above average <input type="checkbox"/> 5.Substantially above average
50. On average, how much money does your family spend monthly?	<input type="checkbox"/> 1.Less than 50,000 AMD <input type="checkbox"/> 2.From 51,000 to 100,000 AMD <input type="checkbox"/> 3.From 101,000 to 200,000 AMD <input type="checkbox"/> 4.From 201,000 to 300,000 AMD <input type="checkbox"/> 5.Above 301,000 AMD <input type="checkbox"/> 88. Don't know/ I refuse to respond

Thank you for your participation!!!

Interview end time ____:____

Հարցաթերթիկ II-տիպի շաքարային դիաբետով հիվանդների՝ պարոդոնտիտի կանխարգելման վերաբերյալ գիտելիքների, մոտեցումների և վարվելակերպի մասին

Ամսաթիվ ____/____/____

SZ _____

Հարցազրույցի սկիզբը _____ :_____

Ժողովրդագրական տվյալներ

Նշեք, ինդրեն, Ձեր.

1. Սեռը. 1.Արական
 2. Իգական

2. Տարիքը (*լրացած տարիները*). _____

3. Ինչպե՞ս կգնահատեիք Ձեր առողջական վիճակը վերջին 30 օրվա ընթացքում
- 1. Գերազանց
 - 2. Շատլավ
 - 3. Լավ
 - 4. Բավարար
 - 5. Վատ

4. Ձեր բնական ատամներից քանիսն՞ են պահպանվել
- 1. Ոչ մեկը
 - 2.10-ից քիչ
 - 3.10-ից 20
 - 4.20-ից ավելի
 - 88.Համոզվածչեմ

Ինքնագնահատման միջոցով պարոդոնտիտի ախտորոշումը.

Պատասխանեք, ինդրեն, Ձեր լնդերի առողջության վերաբերյալ հետևյալ հարցերին.

5. Ձեր կարծիքով, դուք ունե՞ք պարոդոնտիտ կամ լնդերի այլ հիվանդություն:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
6. Ատամնաբույժը Ձեզ երբևէ ասե՞լ է, որ Դուք ունեք պարոդոնտիտ կամ լնդերի այլ հիվանդություն՝ ոսկրային հյուսվածքի կորստով:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
7. Դուք նկատե՞լ եք, որ Ձեր լնդերի որոշ հատվածներ նորմալից ավելի կարմիր են:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
8. Ձեր ատամներից որևէ մեկը շարժվու՞մ է <input type="checkbox"/>	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
9. Սնունդը խցանվու՞մ է Ձեր ատամների արանքում <input type="checkbox"/>	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
10. Դուք նկատու՞մ եք, որ Ձեր ատամները երկարում են:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ

11. Ձեր ընտանիքի անդամներից որևիցե՞ մեկը ունի պարողոնտիս:

- 1.Այո 2 .Ոչ

12. Խնդրում եմ նշեք բոլոր այն քրոնիկ հիվանդությունները (բացի շաքարային դիաբետից), որոնք ներկայումս ունեք:

- 1. Բարձր զարկերակային ճնշում
- 2. Սրտի որևէ հիվանդություն
- 3. Թոքերի որևէ հիվանդություն (ներառյալ ասթման)
- 4. Ստամոքս/աղիքային համակարգի որևէ հիվանդություն
- 5. Քաղցկեղ
- 6. Տեսողական խնդիրներ
- 7. Երիկամների կամ միզուղիների որևէ հիվանդություն
- 8. Հոդերի/ոսկրերի հետ կապված խնդիրներ
- 9. Այլ խնդիրներ (*նկարագրեք*) _____
- 10. Չունեն քրոնիկ հիվանդություններ, բացի շաքարային դիաբետից

Հարցեր դիաբետի վերաբերյալ

13. Ե՞րբ եք իմացել, որ ունեք շաքարային դիաբետ:	_____ / _____ Ամիս Տարի
14. Ներկայումս Դուք ստանո՞ւ մ եք ինսուլին:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2 .Ոչ
15. Դուք պարբերաբար հսկո՞ւ մ եք Ձեր արյան մեջ գլյուկոզայի մակարդակը:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2 .Ոչ
16. Եթե այո, ապա ի՞նչ հաճախականությամբ:	<input type="checkbox"/> 1.Օրը մեկ կամ ավելի անգամ <input type="checkbox"/> 2.Շաբաթը մի քանի անգամ <input type="checkbox"/> 3 .Շաբաթը մեկ անգամ <input type="checkbox"/> 4 .Ամիսը մի քանի անգամ <input type="checkbox"/> 5.Ամիսը մեկ անգամ <input type="checkbox"/> 6 .Մի քանի ամիսը մեկ անգամ <input type="checkbox"/> 7 .Տարին մեկ անգամ <input type="checkbox"/> 8 .Ավելի հազվադեպ
17. Երբևէ ունեցե՞լ եք շաքարային դիաբետի հետ կապված բարդություններ <input type="checkbox"/>	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2. Ոչ
18. Եթե այո, խնդրում եմ նշեք՝ ինչպիսի՞ <input type="checkbox"/>	_____ _____
19. Ի՞նչ հաճախականությամբ եք այցելում էնդոկրինոլոգի:	<input type="checkbox"/> 1.3ամիսը մեկ անգամ կամ ավելի հաճախ→Հ.21 <input type="checkbox"/> 2.3-6ամիսը մեկ→Հ.21 <input type="checkbox"/> 3 .6-12 ամիսը մեկ →Հ.21 <input type="checkbox"/> 4 .Տարին մեկ →Հ.21 <input type="checkbox"/> 5 .Ավելի հազվադեպ կամ երբեք
20. Ինչո՞ւ չեք այցելում էնդոկրինոլոգի:(<i>Նշեք բոլոր հնարավոր տարբերակները</i>)	<input type="checkbox"/> 1.Չեմ կարող վճարել այցի համար <input type="checkbox"/> 2 .Ժամանակ չունեմ

	<input type="checkbox"/> 3. Չեմ վստահում էնդոկրինոլոգներին <input type="checkbox"/> 4.Այլ պատճառներ. _____
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Գիտելիքներ պարողոնտիտի կանխարգելման և բերանի խոռոչի հիգիենայի վերաբերյալ

21. Դուք մաքրո՞ւ մ եք ձեր ատամները:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2. Ոչ→Հ.25
22. Օրը քանի՞ անգամ եք մաքրում ձեր ատամները:	<input type="checkbox"/> 1.Մի քանի օրը մեկ անգամ/երբեմն <input type="checkbox"/> 2.Օրը մեկ անգամ <input type="checkbox"/> 3.Օրը երկուանգամ <input type="checkbox"/> 4.Օրը երկու անգամից հաճախ
23. Ի՞նչ հաճախականությամբ եք Դուք փոխում ձեր ատամի խոզանակը:	<input type="checkbox"/> 1. 3ամիսը մեկ կամ ավելի հաճախ <input type="checkbox"/> 2.3-6 ամիսը մեկ <input type="checkbox"/> 3.6-12 ամիսը մեկ <input type="checkbox"/> 4. Տարին մեկ կամ ավելի հազվադեպ <input type="checkbox"/> 5.Երբ այլևս պիտանի չէ/երբեք
24. Դուք օգտագործո՞ւ մ եք հետևյալ պարագաները՝ ատամների արանքը մաքրելու համար <input type="checkbox"/>	<input type="checkbox"/> 1. Թել <input type="checkbox"/> 2.Միջատամային խոզանակ <input type="checkbox"/> 3.Փայտիկ <input type="checkbox"/> 4. Ոչմեկը
25. Դուք մաքրո՞ւ մ եք Ձեր լեզուն:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ
26. Դուք ողողո՞ւ մ եք Ձեր բերանը՝ ուտելուց հետո:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ
27. Դուք օգտագործո՞ւ մ եք բերանի ողուման հեղուկ:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2 .Ոչ
28. Դուք կամ Ձեր ընտանիքի անդամները երբևէ զգացե՞լ են տհաճ հոտ՝ Ձեր բերանից <input type="checkbox"/>	<input type="checkbox"/> 1. Այո <input type="checkbox"/> 2. Ոչ <input type="checkbox"/> .88Չգիտեմ/հրաժարվում եմ պատասխանել

Ծխելը

29. Դուք երբևէ ծխե՞լ եք:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ→Հ.35
30. Դուք ներկայումս ծխո՞ւ մեք <input type="checkbox"/>	<input type="checkbox"/> 1.Այո→ Հ.32 <input type="checkbox"/> 2.Ոչ
31. Որքա՞ն ժամանակ է, որ դադարեցրել եք ծխելը:	_____, _____ →Հ.34 <i>Տարի ամիս</i>
32. Ներկայումս միջինում օրական քանի՞ ծխախոտ եք ծխում:	_____

33. Վերջին 6 ամսվա ընթացքում բժշկին կատարած որևէ այցի ընթացքում Ձեզ խորհուրդ տվե՞լ են դադարեցնել ծխելը:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ
34. Ընդհանուր առմամբ քանի՞ տարի է, որ ծխում եք/ծխել էք ամեն օր:	_____
35. Դուք համաձայն եք, որ ծխելը վնասակար է ատամների առողջության համար:	<input type="checkbox"/> 1.Լիովին համաձայնեմ <input type="checkbox"/> 2.Համաձայնեմ <input type="checkbox"/> 3.Ոչ համաձայն եմ, ոչ էլ՝ ոչ <input type="checkbox"/> 4. Համաձայնչեմ <input type="checkbox"/> 5.Ամենևին համաձայն չեմ

Ատամնաբուժական օգնության մատչելիություն

36. Երբևէ Ձեր էնդոկրինոլոգը ասե՞լ է Ձեզ, որ Դուք պետք է ավելի մեծ ուշադրություն դարձնեք Ձեր լնդերի առողջությանը:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ
37. Ի՞նչ հաճախականությամբ եք կատարում կանխարգելիչ այցեր ատամնաբույժին <input type="checkbox"/>	<input type="checkbox"/> 1. 3ամիսը մեկ/ավելի հաճախ →Հ.39 <input type="checkbox"/> 2.3-6 ամիսը մեկ →Հ.39 <input type="checkbox"/> 3.6-12 ամիսը մեկ →Հ.39 <input type="checkbox"/> 4. Տարին մեկ անգամ →Հ.39 <input type="checkbox"/> 5. Ավելի հազվադեպ կամ երբեք
38. Ինչու՞ չեք այցելում ատամնաբույժին <input type="checkbox"/> (Նշեք բոլոր հնարավոր տարբերակները)	<input type="checkbox"/> 1.Չեմ կարող վճարել այցի համար <input type="checkbox"/> 2 .Ժամանակ չունեմ <input type="checkbox"/> 3. Չեմ վստահում ատամնաբույժներին <input type="checkbox"/> 4.Այլ պատճառներ. _____ _____
39. Դուք համաձայն եք, որ բերանի խոռոչի հիգիենան կարող է կանխարգելել լնդերի հիվանդությունները:	<input type="checkbox"/> 1. Այո <input type="checkbox"/> 2.Ոչ
40. Դուք ունե՞ք բժշկական ապահովագրություն <input type="checkbox"/>	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ
41. Եթե այո, ապա դա ընդգրկու՞մ է ատամնաբուժական ծառայությունները:	<input type="checkbox"/> 1.Այո <input type="checkbox"/> 2.Ոչ

Սոցիալ-ժողովրդագրական հարցեր

42. Նշեք Ձեր ամուսնական վիճակը:	<input type="checkbox"/> 1.Ամուսնացած <input type="checkbox"/> 2.Բաժանված <input type="checkbox"/> 3.Այրի <input type="checkbox"/> 4.Չամուսնացած
43. Նշեք ամենաբարձր կրթությունը, որ ստացել եք:	<input type="checkbox"/> 1. Թերի միջնակարգ (10 տարուց պակաս) <input type="checkbox"/> 2. Միջնակարգ(10 տարի) <input type="checkbox"/> 3.Միջինմասնագիտական (10-13 տարի)

	<input type="checkbox"/> 4.Բարձրագույն (ինստիտուտ/համալսարան) կամ հետ դիպլոմային
44. Քանի՞ հոգի է ապրում Ձեր տանը (հաշվեք նաև Ձեզ):	_____
45. Քանի՞ երեխա ունեք <input type="checkbox"/>	_____
46. Դուք ներկայումս աշխատո՞ւմ եք: Աշխատանք համարեք նաև տանը աշխատելը, հողագործությունը և արտագնա աշխատանքը (խոպանը):	<input type="checkbox"/> 1. Այո <input type="checkbox"/> 2. Ոչ
47. Ձեր ընտանիքը գրանցվա՞ծ է ՓԱԲՈՍ ծրագրում:	<input type="checkbox"/> 1. Այո <input type="checkbox"/> 2. Ոչ
48. Ձեր ընտանիքում ներկայումս քանի՞ հոգի է աշխատում (հաշվեք նաև Ձեզ և նրանց, ովքեր աշխատում են տանը, զբաղվում են հողագործությամբ, կամ արտագնա աշխատանքի են գնում):	_____
49. Ընդհանուր առմամբ, ինչպե՞ս կգնահատեք Ձեր ընտանիքի նյութական վիճակը:	<input type="checkbox"/> 1. Միջինից բավականին ցածր <input type="checkbox"/> 2. Միջինից մի փոքր ցածր <input type="checkbox"/> 3. Միջին <input type="checkbox"/> 4. Միջինից մի փոքր բարձր <input type="checkbox"/> 5. Միջինից բավականին բարձր
50. Միջինում, ամսական որքա՞ն գումար է ծախսում Ձեր ընտանիքը:	<input type="checkbox"/> 1. 50 000 դրամից քիչ <input type="checkbox"/> 2 . 51 000 –100 000 դրամ <input type="checkbox"/> 3. 101 000 –200 000 դրամ <input type="checkbox"/> 4. 201 000 –300 000 դրամ <input type="checkbox"/> 5. 301 000 դրամից ավելի <input type="checkbox"/> 88. Չգիտեմ/հրաժարվում եմ պատասխանել

Շնորհակալություն մասնակցության համար:

Հարցազրույցի ավարտը _____:_____

Appendix 2

Questionnaire for the validation: English and Armenian versions American University of Armenia

Periodontal status: Self-administered

Date ____/____/____

Visit number _ _ _

The AUA School of Public Health is conducting a study to validate a self-assessment tool for oral health condition. Please, complete this short form before undergoing oral examination. Your participation is voluntary and the information you will provide will be confidential.

Thanks a lot for your help!

Please, carefully read each question and the possible responses. Choose the option that best represents your response and check (✓) the box next to the option number.

1. Your gender: 1. Male
2. Female

2. How old are you (completed years)? _____

3. How many of your natural teeth are remaining?
1. None
2. Less than 10
3. From 10 to 20
4. More than 20
5. Not sure/refused

4. Please indicate if you were diagnosed with diabetes? 1. Yes
2. No

5. Please, answer the following questions about your gums' health:

1. In your opinion do you have periodontal disease or gum disease?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No
--	--------------------------------	-------------------------------

2. Have you ever been told by a dentist that you have periodontal / gum disease with loss of bone mass?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No
3. Do you find any area of your gums redder than normal?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No
4. Do any of your teeth feel loose?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No
5. Does food get caught in your teeth?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No
6. Do you notice that your teeth getting longer?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 2 No

Thank you for your time!

The clinical diagnosis of the presence of periodontitis

(To be filled in by the doctor)

1. Is there periodontitis ? 1. Yes
2. No
2. If yes, the severity of it _____

Հարցաթերթիկ (պատասխանողի կողմից ինքնուրույն լրացվող)

Հայաստանի ամերիկյան համալսարանի հանրային առողջապահության ֆակուլտետն իրականացնում է հետազոտություն, որի նպատակն է պարզել լնդերի առողջության ինքնագնահատման հարցաշարի պիտանիությունը:

Ձեր մասնակցությունն այս հետազոտությանը կամավոր է և Ձեր տրամադրած տվյալները գաղտնի կպահվեն:

Ուշադիր կարդացեք հարցերը նպատասխանների հնարավոր տարբերակները: Ընտրեք պատասխանի այն տարբերակը, որն ավելի մոտ է Ձեր կարծիքին նշելով(✓) դրա համարին կից վանդակում

Ամսաթիվ _____/_____/_____

Նշեք, խնդրեմ, Ձեր.

1. Սեռը. 1.Արական 2. Իգական
2. Տարիքը(լրացրած տարիների թիվը). _____
3. Ձեր բնական ատամներից քանի՞սն են պահպանվել
 1. Ոչ մեկը
 - 2.10-ից քիչ
 - 3.10-ից 20
 - 4.20-ից ավելի
 - 88.Համոզվածչեմ
4. Ձեզ մոտ երբևէ ախտորոշվե՞լ է շաքարային դիաբետ: 1.Այո 2.Ոչ
5. Պատասխանեք, խնդրեմ, Ձեր լնդերի առողջության վերաբերյալ հետևյալ հարցերին.

1. Ձեր կարծիքով, դուք ունե՞ք պարողոնտիտ կամ լնդերի այլ հիվանդություն:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
2. Ատամնաբույժը Ձեզ երբևէ ասե՞լ է, որ Դուք ունեք պարողոնտիտ կամ լնդերի այլ հիվանդություն՝ ոսկրային հյուսվածքի կորստով:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
3. Դուք նկատե՞լ եք, որ Ձեր լնդերի որոշ հատվածներ նորմալից ավելի կարմիր են:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
4. Ձեր ատամներից որևէ մեկը շարժվու՞մ է <input type="checkbox"/>	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
5. Սնունդը խցանվու՞մ է Ձեր ատամների արանքում <input type="checkbox"/>	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ
6. Դուք նկատու՞մ եք, որ Ձեր ատամները երկարում են:	<input type="checkbox"/> 1. Այո	<input type="checkbox"/> 2.Ոչ

Շնորհակալություն:

Կլինիկական ախտորոշում պարոդոնտիտի առկայության մասին
(լրացվում է բժշկի կողմից).

1. Պարոդոնտիտ. 1. Առկա է 2. Առկա չէ

2. Եթե առկա է, ծանրության աստիճանը. _____

Appendix 3: Socio- economic status score with the values 0 through 4 for the ordinal response scale

PAROS registration: Yes	0
No	3
Health insurance: Yes	3
No	0
Family’s general standard of living:	
Substantially below average	0
A little below average	1
Average	2
Little above average	3
Substantially above average	4
Monthly spending:	
Less than 50,000 AMD	0
From 51,000 to 100,000 AMD	1
From 101,000 to 200,000 AMD	2
From 201,000 to 300,000 AMD	3
Above 301,000 AMD	4

Appendix 4: Oral hygiene knowledge score, with the values 0 through 1 for the ordinal response scale

Frequency of cleaning teeth:	
Occasionally	0
Once daily	0.5
Twice daily	1
More than twice daily	0.5
Frequency of changing tooth brush:	
Once in 3 months or more frequently	1
Once in 3-6 months	0
Once in 6-12 months	0
Once a year or rarely	0
When useless/Never	
“Oral hygiene prevents periodontitis”:	
Agree	1
Disagree	0
“Smoking is harmful for dental health”:	
Strongly agree	1
Agree	1
Neither agree nor disagree	0
Disagree	0
Strongly disagree	0

Appendix 5
Consent form for the survey: English and Armenian versions

American University of Armenia
School of Public Health
Institutional Review Board #1/Committee on Human Research

Consent form

**Periodontitis Knowledge, Attitudes, and Practices among Patients with Diabetes Mellitus (DM)
Type-2 in Yerevan, Armenia**

Hello, my name is Margarita Khachatryan. I am a pharmacist and a graduate student in the School of Public Health at the American University of Armenia. The AUA School of Public Health is conducting a study to investigate knowledge, attitudes and practices regarding periodontitis among patients with Diabetes Mellitus (DM) Type-2. The research is being conducted among patients who are registered in Yerevan outpatient clinics.

You have been selected to participate in this study randomly, among the patients with diabetes who are registered in your clinic.

If you are willing to participate, I will ask you several questions regarding your health, periodontitis, and oral hygiene. The interview will last no more than 15 minutes.

Your participation in the study is voluntary. You may refuse to answer any question you think is inappropriate and even stop the interview at any moment you want.

You can ask any questions you may have about this research study.

Your participation in the study poses no risk for you. The information obtained from you is important for the study. There is no direct benefit from the participation in this interview, but your participation in this study will help to understand how to improve medical care for periodontal disease.

The information you provide is fully confidential and will be used only for the study. Your name will not appear on the questionnaire. Only general findings will be presented in the report. Your contact information will be destroyed upon completion of data collection. If you have more questions about this study, you can contact Dr. Varduhi Petrosyan, the Associate Dean of the School of Public Health at AUA calling 060 612592 or you can contact the co-Investigator Dr. Anahit Demirchyan at 060612562.

If you feel you have not been treated fairly or think you have been hurt by joining this study, please contact Dr. Kristina Akopyan, AUA Human Subjects Administrator at 060 61 25 61.

If you consent to participate, we can start.

Հայաստանի Ամերիկյան Համալսարան

Հանրային առողջապահության բաժին
Գիտահետազոտական էթիկայիթիվ 1 հանձնաժողով
Իրազեկ համաձայնագիր

II-տիպի շաքարային դիաբետով հիվանդների՝ պարոդոնտիտի կանխարգելման վերաբերյալ գիտելիքների, մոտեցումների և վարվելակերպի մասին

Բարև Ձեզ, ես Մարգարիտա Խաչատրյանն եմ: Ես դեղագետ եմ և Հայաստանի ամերիկյան համալսարանի առողջապահության մագիստրատուրայի ավարտական կուրսի ուսանող: Հայաստանի ամերիկյան համալսարանի հանրային առողջապահության ֆակուլտետն իրականացնում է հետազոտություն, որի նպատակն է բացահայտել 2-րդ տիպի շաքարային դիաբետով հիվանդների գիտելիքները, վարվելակերպը և մոտեցումները պարոդոնտիտ հիվանդության վերաբերյալ: Հետազոտությունը անցկացվում է Երևանի ամբուլատոր կլինիկաներում գրանցված հիվանդների շրջանում: Դուք ընտրվել եք մասնակցելու այս հետազոտությանը պատահականորեն՝ Ձեր պոլիկլինիկայում գրանցված շաքարային դիաբետով հիվանդների ցուցակից: Եթե Դուք համաձայն եք մասնակցել այս հետազոտությանը, կխնդրեի պատասխանել մի քանի հարցերի պարոդոնտիտ հիվանդության և բերանի խոռոչի հիգիենայի վերաբերյալ: Հարցազրույցը կտևի ոչավելի քան 15րոպե:

Ձեր մասնակցությունն այս հետազոտությանը կամավոր է: Դուք իրավունք ունեք չպատասխանել որևէ հարցի, եթե չեք ցանկանում, կամ ցանկացած պահի դադարեցնել հարցազրույցը: Դուք կարող եք հարցեր տալ հետազոտության վերաբերյալ: Ձեր մասնակցությունն այս հետազոտությանը որևէ վտանգ չի ներկայացնում Ձեզ համար:

Ձեր տրամադրած տվյալները կարևոր են հետազոտության համար: Այս հարցազրույցին Ձեր մասնակցությունը չի ենթադրում որևէ ուղղակի օգուտ Ձեր համար, բայց Ձեր պատասխանները կօգնեն հասկանալ, թե ինչպես կարելի է բարելավել պարոդոնտիտի կանխարգելումն ու բուժումը Հայաստանում: Ձեր տրամադրած տեղեկությունները գաղտնի կպահվեն կօգտագործվեն միայն հետազոտության նպատակով: Այս հարցումն անանուն է՝ Ձեր անունը չի երևալու հարցաթերթիկի վրա կամ որևէ այլտեղ: Միայն ընդհանրացված արդյունքներեն ներկայացվելու հետազոտության զեկույցում: Ձեր հեռախոսահամարը կոչնչացվի տվյալների հավաքագրումից անմիջապես հետո: Հետազոտության հետ կապված հարցեր ունենալու դեպքում Դուք կարող եք զանգահարել Հայաստանի ամերիկյան համալսարանի հանրային առողջապահության ֆակուլտետի փոխդեկան Վարդուհի Պետրոսյանին 060 612592 հեռախոսահամարով կամ կարող եք կապ հաստատել հետազոտության համակարգողի՝ Անահիտ Դեմիրճյանի հետ, 060612562 հեռախոսահամարով: Եթե գտնումեք, որ Ձեզ հետ անարդարացի են վարվել կամ մտածումեք, որ հետազոտությանը մասնակցությունը վնաս է հասցրել Ձեզ, կարող եք զանգահարել ՀԱՀ էթիկայի հանձնաժողովի քարտուղար Քրիստինա Հակոբյանին 060 612561 հեռախոսահամարով: Եթե համաձայն եք, կարող եմք սկսել:

Appendix 6

Consent form for the validation: English and Armenian versions

**American University of Armenia
School of Public Health
Institutional Review Board #1/Committee on Human Research**

Consent form

Periodontal status

The AUA School of Public Health is conducting a study to validate a self-assessment tool for oral health condition. The research is being conducting among patients who are visiting this dental clinic during study days.

You have been selected to participate in this study randomly, among the patients of this clinic.

If you are willing to participate, please, complete this short form before undergoing oral examination. It will take from you no more than 15 minutes.

Your participation in the study is voluntary. You may refuse to answer any question you think is inappropriate and even stopat any moment you want.

You can ask any questions you may have about this research study.

Your participation in the study poses no risk for you. The information obtained from you is Important for the study. There is no direct benefit from the participation in this study, but Your participation in this study will help to understand how to improve medical care for periodontal disease.

The information you provide is fully confidential and will be used only for the study. Your name will not appear on the questionnaire. Only general findings will be presented in the report.

If you have more questions about this study, you can contact Dr. Varduhi Petrosyan, the Associate Dean of the School of Public Health at AUA calling 060 612592 or you can contact the co-Investigator Dr. Anahit Demirchyan at 060612562.

If you feel you have not been treated fairly or think you have been hurt by joining this study, please contact Dr. Kristina Akopyan, AUA Human Subjects Administrator at 060 61 25 61.

If you consent to participate, we can start.

Հայաստանի Ամերիկյան Համալսարան
Հանրային առողջապահության բաժին
Գիտահետազոտական էթիկայի թիվ 1 հանձնաժողով
Իրազեկ համաձայնագիր

Պարողոնտիտի ախտորոշում

Հայաստանի ամերիկյան համալսարանի հանրային առողջապահության ֆակուլտետն իրականացնում է հետազոտություն, որի նպատակն է պարզել լնդերի առողջության ինքնագնահատման հարցաշարի պիտանիությունը:

Հետազոտությունը անցկացվում է տվյալ ատամնաբույժարան այցելող հիվանդների շրջանում: Դուք ընտրվել եք մասնակցելու այս հետազոտությանը պատահականորեն՝ տվյալ ատամնաբույժարան այցելող հիվանդների շրջանում: Եթե Դուք համաձայն եք մասնակցել այս հետազոտությանը, կխնդրեի պատասխանել մի քանի հարցերի նախքան ատամնաբույժական հետազոտության գնալը: Այն ձեզանից կխլի ոչավելի քան 15 րոպե:

Ձեր մասնակցությունն այս հետազոտությանը կամավոր է: Դուք իրավունք ունեք չպատասխանել որևէ հարցի, եթե չեք ցանկանում, կամ ցանկացած պահի դադարեցնել լրացնելը: Դուք կարող եք հարցեր տալ հետազոտության վերաբերյալ: Ձեր մասնակցությունն այս հետազոտությանը որևէ վտանգ չի ներկայացնում Ձեզ համար:

Ձեր տրամադրած տվյալները կարևոր են հետազոտության համար: Այս հարցազրույցին Ձեր մասնակցությունը չի ենթադրում որևէ ուղղակի օգուտ Ձեր համար, բայց Ձեր պատասխանները կօգնեն հասկանալ, թե ինչպես կարելի է բարելավել պարողոնտիտի կանխարգելումն ու բուժումը Հայաստանում: Ձեր տրամադրած տեղեկությունները գաղտնի կպահվեն կօգտագործվեն միայն հետազոտության նպատակով: Այս հարցումն անանուն է՝ Ձեր անունը չի երևալու հարցաթերթիկի վրա կամ որևէ այլ տեղ: Միայն ընդհանրացված արդյունքներ են ներկայացվելու հետազոտության զեկույցում:

Հետազոտության հետ կապված հարցերի ունենալու դեպքում Դուք կարող եք զանգահարել Հայաստանի ամերիկյան համալսարանի հանրային առողջապահության ֆակուլտետի փոխդեկան Վարդուհի Պետրոսյանին 060 612592 հեռախոսահամարով կամ կարող եք կապ հաստատել հետազոտության համակարգողի՝ Անահիտ Դեմիրճյանի հետ, 060612562 հեռախոսահամարով: Եթե գտնում եք, որ Ձեզ հետ անարդարացի են վարվել կամ մտածում եք, որ հետազոտությանը մասնակցությունը վնաս է հասցրել Ձեզ, կարող եք զանգահարել ՀԱՀ էթիկայի հանձնաժողովի քարտուղար Քրիստինա Հակոբյանին 060 612561 հեռախոսահամարով:

Եթե համաձայն եք, կարող ենք սկսել:

APPENDIX 7

Alternative Logistic regression model of determinants of periodontitis among Yerevan residents with type 2 diabetes mellitus, 2015

(Valid n=181, Pseudo R2=0.220, Hosmer & Lemeshow test p=0.972)

	OR	95.0% CI for OR		p-value
		Lower	Upper	
Number of chronic diseases*	1.3	1.0	1.7	.021
Cleaning teeth: Never	4.8	1.4	16.7	.014
Once a day	1.6	0.8	3.5	.183
Twice a day or more	1.0			
Using mouthwash	3.1	1.4	6.6	.005
Having smell from mouth	4.2	2.0	8.9	.000

*Other than diabetes

OR, Odds Ratio

CI, Confidence interval