

## HEALTH EDUCATION ROLE IN IMPROVING PERIODONTAL HEALTH STATUS AMONG PRIMARY SCHOOL STUDENTS IN DUHOK GOVERNORATE, KURDISTAN REGION, IRAQ

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### ABSTRACT

**Background:** Data from numerous epidemiological studies revealed that the prevalence and severity of periodontal disease is wide spread in children and adolescents, with approximately 50% to 100% of 12-years-old children having the signs of gum inflammation.

**Aim:** This study was designed to assess the role of health education program in improving periodontal health status among primary school students in Duhok governorate.

**Participants and methods:** The study investigated students 11-15 years old selected from 12 schools out of (892) primary public schools in Duhok governorate. For better socio demographic representation, the schools were purposely categorized into three equal groups representing rural, suburban and urban sectors. Four schools were randomly selected from each of the three sub-counties, two schools were randomly assigned for health education programs with the other two schools regarded as controls. All students of the first 6th grade class from the selected schools were enrolled. Thus a total of 615 students were assigned to intervention and controls (304 and 311 students respectively). A questionnaire was used to obtain information on age, gender, medical diseases and drug history. Utilizing a variety of learning and teaching methods a specially constructed health education program was administered to the intervention group by the researcher. The program included lectures, discussions, practical experiments, group work, problem-solving exercises, debates and role-play with appropriate stimulating visual aids and posters, accompanied by distribution of brushes and paste to the students. This was followed by clinical dental examination for each student. The effects of health education have been evaluated by using two outcome variables namely; Plaque index and gingival index.

**Results:** The results revealed high scores of plaque and gingival indices at the baseline pre-intervention assessment among the participants. These scores have been reduced significantly at post intervention assessment in the intervention group compared to the controls  $p \leq 0.05$ . This improvement in the intervention group was maintained at follow up assessment six weeks after the intervention.

Females in the intervention and the control groups exhibited lower mean plaque and gingival scores than males. Both gingival and plaque scores in this study were consistently higher in rural than in urban communities  $p \leq 0.05$  (Significant).

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**Keywords:** *Gingival index, Health education, Periodontal health, Plaque index, Primary school students*

According to data out of several epidemiological studies, periodontal disease affects the majority of children and adolescents worldwide<sup>1,2</sup>. Gingivitis is quite prevalent among older children and adolescents, with 150 % to 1100 % of 112-year-olds showing indications of gum inflammation<sup>3</sup>. It's virtually universal

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among adults<sup>4</sup>.

Periodontal health is particularly important during adolescence. The periodontium alters throughout puberty, and inflammation arises; however, this could generally be controlled by proper oral health and consistent dental care 5, 6. The aetiology of oral diseases have been well recognized, and the disorders are mostly preventable<sup>7</sup>.

Gingival and periodontal diseases are of the most wide spread diseases in the world<sup>8</sup> and are more prevalent in developing countries<sup>9</sup> including Iraqi population<sup>10, 11, 12</sup> and affecting the younger age groups<sup>13, 14, 15</sup>. During adolescence, young people are able to assume responsibility for learning and maintaining health-related attitudes and behaviours that carry over into adulthood<sup>16</sup>. The school system is the logical environment in which to teach preventive dental health practices<sup>4, 6</sup>.

School curriculum in Iraq is devoid from oral health education that resulted in poor knowledge among the students regarding oral health<sup>17, 18, 19</sup>. Dental health education intends to improve oral health utilizing educational means, namely the dissemination of information to enhance oral health knowledge and awareness in order to encourage people to adopt a healthier lifestyle, influence their attitudes, and engaged in desired behaviours<sup>7</sup>.

The study has been designed to assess the role of health education program in improving periodontal health status among primary school students in Duhok.

## **PARTICIPANTS & METHODS**

**Study sample:** The study was carried out in Duhok governorate, during the period from the first of February 2009 until the mid of May 2009. According to the Directorate of Education there are (892) primary public

schools in Duhok governorate. For better sociodemographic representation the schools were purposely categorized into three equal groups representing rural suburban and urban sectors.

Multistage cluster sampling procedure was adopted to enroll the study sample as follows: In the first stage: Four schools were randomly selected from each of the three sub-counties (rural, suburban and urban). In the second stage: All students of the first 6th grade class from the selected schools were enrolled. In each of the three categorized school groups (rural, suburban and urban) two schools were randomly assigned for health education program with the other two schools regarded as controls. Thus a total of 615 students aged 11-15 years were assigned to intervention and controls (304 and 311 students respectively).

The study compared students who received a health education program with those who didn't receive the program, regarding pre-specified outcome variables to assess the program role in improving periodontal health status. The outcome variables were measured sequentially on three occasions:

Pre-intervention baseline assessment of periodontal health.

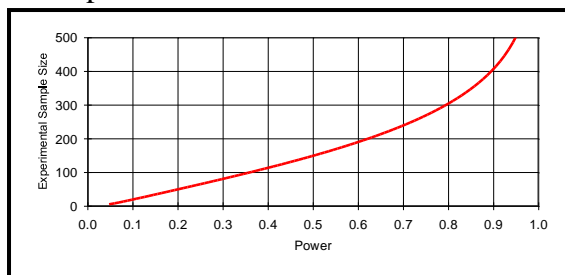
Post-intervention assessment after administration of health education program to the intervention group, and is conducted two weeks after the baseline assessment.

Follow up assessment conducted six weeks after the baseline assessment.

**Sample size:**

The Power and Sample Size Calculations software (PS version 3.0.12) was used to calculate the required sample size. Below is a graph displaying the computer output showing that 305 students in each group were required to have an 80% chance of

detecting a difference in means of 0.1 (SD 0.44) at a 5% level of significance using the unpaired t test.



**Figure (1): Sample size**

**Ethical issues:**

After being approved by the Research Ethics Committee at Duhok University, permission was obtained from the directorate of education in Duhok Governorate, and the school authorities of the selected schools have been contacted for explaining the purpose of the study and the procedures that would be followed during its conduct. The students gave their informed written consent to participate in the study.

**Questionnaire:**

In addition to general information the questionnaire includes an assessment of respondents' oral health and dental care knowledge, attitudes, and behavior. At the beginning, each participant completed a sociodemographic and health-related questionnaire. Then students were unaware of the impending intervention or the dates for the three assessment stages; participation was completely voluntary, and all participants completed the questionnaire (Appendix 1).

**Clinical examination:**

The clinical dental examination was performed by one of the authors who is a specialist dentist under standardized conditions using a disposable mouth mirror, calibrated periodontal probes, masks, and gloves during school hours in the classroom on comfortable chair.

Electricity was not available in several of the schools, therefore, in order to maintain uniform lighting, all examinations were done without artificial lighting i.e. under natural daylight and in most proper position, a full-mouth periodontal examination was performed on each participant, who also answered a questionnaire about socio-demographic and health-related issues. The intra oral examination was performed for all students and the periodontal status of all teeth was assessed. The ultimate goal of clinical examination was to assess the main outcome measures namely; Plaque and Gingival Indices. A special case sheet has been designed to document and calculate the scores of the two indices for each student after clinical examination (Appendix 2).

**Outcome measures:**

**Plaque index (PI):** An index used to assess plaque accumulation according to the plaque index by Silness and Loe<sup>20</sup>.

**Gingival index (GI):** Used to assess gingival health, according to the gingival index by Loe and Silness<sup>21</sup>.

**Intervention (Health Education Program):**

Utilizing a variety of learning and teaching methods, a specially constructed health education program was administered to the intervention group by the researcher. The program involved lectures, conversations, practical experiments, group discussions, problem-solving activities, debates, and role-playing, as well as arousing posters and visual aids.

The basic program components were the following:

**Lectures:** Two lectures per week were given for each class. Each lecture lasts about one hour and includes a long list of educational themes regarding oral health

Posters on dental health: These included brief dental health messages in simple Kurdish language. They were distributed to the classes assigned for intervention.

Tooth brushing skills and effective use of dental floss: Proper brushing and flossing techniques were taught and demonstrated to students of the assigned classes using a tooth brush and large "dental mouth" model.

After completing oral examinations and interviews, all the study participants were given a tube of fluoridated tooth paste and a tooth brush and they were advised to brush at least twice a day.

The topics of both the lectures and the posters were based on the fundamental concepts of recommended oral health prevention<sup>1,3,5,7,33,34</sup>. Educational key messages to improve oral cleanliness and gingival health among the study participants were the same in both materials and included: Importance of oral health, role of microbial plaque, frequency and methods of proper tooth-brushing and flossing, importance of regular dental attendance, healthy diet, and proper use of fluorides. Both lectures and posters emphasized the immediate gains from good oral hygiene.

Statistical methods

Data were analysed using the statistical software SPSS, Windows version (16.0). The Chi square association test was used

to compare the proportions. Inferential statistics were used to analyze the results. The t-test was used for comparison of the mean scores of plaque and gingival indices between intervention and controls within each group at different stages and to compare gender differences. The paired (dependent) student t-test was used to compare the means of the same sample before and after the intervention.

One-way Analysis of Variance (ANOVA) was used to compare differences in the mean scores of plaque and gingival indices between the three groups. A p value of  $\leq 0.05$  was considered to be statistically significant.

## RESULTS

Baseline sociodemographic characteristics: A total of 615 students, including 307 females (49.9%) and 308 males (50.1%), were assigned to two groups; Intervention group comprising 304 students (49.4%) and control group comprising 311 students (50.6%). Participants drawn from urban, suburban and rural areas constituted 197 (32.0%), 198 (32.2%) and 220 (35.8%) respectively. The age of the students ranged between 11-15 years. Students aged 12 years formed the main bulk of the participants (52.20%) followed by those aged 13 years (18.54%), 11 years (17.56%), 14 years (7.48%) and 15 years (4.23%) Table (1)

**Table (1): Distribution of the study groups by gender and assignment status**

Gender	Assignment status	Study groups No. (%)		
		Rural	Suburban	Urban
Female	Control	50 (33.8)	44 (29.7)	54 (36.5)
	Intervention	67 (42.1)	51 (32.1)	41 (25.8)
Male	Control	59 (36.2)	50 (30.7)	54 (33.1)
	Intervention	44 (30.3)	54 (37.2)	47 (32.4)

\* By Chi square test.

Clinical Assessment:

A-Plaque Index: Table 2 displays that at the pre-intervention assessment, the differences in the mean plaque score of the three groups (rural, suburban and urban)

proved statistically significant ( $p=0.01$ ) unlike comparisons at the post-intervention and follow up assessments ( $p= 0.17$  and  $0.06$  respectively).

**Table (2) Plaque index of the study participants comparing rural, suburban and urban groups by assessment stages**

Stage of Assessment	Comparison	df	F	p-value*
Pre- intervention assessment	Between Groups	2	4.473	.012
	Within Groups	301		
	Total	303		
Post -intervention assessment	Between Groups	2	1.751	.175
	Within Groups	301		
	Total	303		
Follow up assessment	Between Groups	2	2.833	.060
	Within Groups	301		
	Total	303		

\* $p \leq 0.05$  (Significant), \*\*Based on One-way Analysis of Variance

B-Gingival Index: Table 3 shows that at the pre-intervention assessment, the differences in the mean plaque score of the three groups (rural, suburban and urban)

proved statistically significant ( $p=0.02$ ) unlike comparisons at the post-intervention and follow up assessments ( $p= 0.16$  and  $0.12$  respectively).

**Table (3) Gingival index of the study participants comparing rural, suburban and urban groups by assessment stages**

Stage of Assessment	Comparison	df	F	p-value*
Pre-intervention assessment	Between Groups	2	3.812	.023
	Within Groups	301		
	Total	303		
Post-intervention assessment	Between Groups	2	1.790	.169
	Within Groups	301		
	Total	303		
Follow up assessment	Between Groups	2	2.122	.122
	Within Groups	301		
	Total	303		

\* $p \leq 0.05$  (Significant), \*\*Based on One-way Analysis of Variance

C-Gender Differences: Females in the intervention and control groups exhibited lower mean plaque and gingival scores than males and maintained the difference

for both scores at all assessment stages ( $p < 0.001$ ). Table (4 &5)

**Table (4): Plaque index of the study participants comparing gender differences by assessment stage**

Stage of assessment	Gender	No.	Mean	SD	p-value*
Pre-intervention assessment	Female	307	1.4448	.44464	< 0.001
	Male	308	1.6316	.45503	
Post-intervention assessment	Female	307	1.0899	.48417	< 0.001
	Male	308	1.3154	.51396	
Follow up assessment	Female	307	1.1300	.48933	< 0.001
	Male	308	1.3436	.51687	

\*p ≤ 0.05 (Significant), \*\* Based on paired student t-test

**Table (5): Gingival index of the study participants comparing gender differences by assessment stage**

Stage of assessment	Gender	No.	Mean	SD	p-value*
Pre-intervention assessment	Female	307	1.2899	.45630	< 0.001
	Male	308	1.4642	.47127	
Post-intervention assessment	Female	307	.97221	.49203	< 0.001
	Male	308	1.1868	.51060	
Follow up assessment	Female	307	1.0114	.49478	< 0.001
	Male	308	1.2201	.51494	

\*p ≤ 0.05 (Significant), \*\*Based on paired student t- test

## DISCUSSION

The current study evaluated periodontal health status, oral health behaviours, and the consequence of an educational intervention on oral hygiene and periodontium health among primary school students in Duhok Governorate, Kurdistan Region, Iraq.

The target population consisted of students aged 11 to 15, who have been chosen throughout a multi-stage random sampling procedure from a list of schools provided by the General Directorate of Education. The high response rate and low percentage of unanswered questions indicate the representativeness of the study sample and the prospect of reliable results. It is believed that the studied sample size and the inclusion of 12 different schools, drawn from an economically dissimilar region made the study sample reasonably representative of the various regions of Duhok.

The effects of health education has been studied by using two indices PI 20 and GI 21 which were used to assess the oral cleanliness, gingival health status and to provide precise evidence of relationship between the amount of plaque and gingival inflammation among the study participants. PI has been demonstrated to be an effective metric for determining the outcome of mechanical anti-plaque methods and the level of oral hygiene in educational oral health interventions in earlier researches<sup>22</sup>. Numerous analyses have shown plaque as the leading etiological factor in the pathogenesis of periodontal disorders<sup>5,23</sup>. Oral hygiene represents the quantity of plaque on teeth, thus it is reasonable to hypothesize that the prevalence and severity of periodontal diseases are inversely proportional to the extent of oral cleanliness in the population<sup>5,23</sup>.

Plaque and gingival indices with high scores at the preintervention assessment



among the participants confirm the results of studies carried out on Iraqi school students<sup>14, 15, 24, 25</sup>. The findings of poor oral hygiene and gingivitis are consistent with studies from other developing countries<sup>26, 27, 28</sup>. These scores have been very highly significantly reduced for the intervention group following the health education program which is in accordance with other studies<sup>19, 24, 29</sup> and validates Kay and Locker's<sup>30</sup> observations that educational interventions aimed at reducing plaque levels and increasing dental health might be effective<sup>31, 32, 33</sup> and review findings<sup>30, 34, 35</sup>. In this study, improvements in oral hygiene and periodontal health were more apparent. The students' poor oral hygiene at the beginning of the study, as well as the fact that they were undergoing an educational intervention for the first time in their lives, may have contributed to this marked improvement. However, depending on the latest findings, it implies that educational intervention can have positive short-term impacts among adolescents. Adolescents in Duhok could benefit from a school-based educational intervention to improve their dental hygiene.

The ability of the participants to maintain the improved level of plaque and gingival health at the follow up assessment after cessation of the educational program indicated that the study participants have kept on daily oral home care practice. This was in agreement with another study<sup>24</sup>.

The control group showed slight improvements in oral cleanliness and periodontal health. It has been observed that subjecting students to a dental examination and a questionnaire can promote their oral hygiene.<sup>24, 36</sup>. Confirms the finding that clinical examination can act as motivation and stimulate the

students to take home care practices, extensive improvements in the intervention groups tend to speak for the actual efficacy of the intervention in the current study.

Both gingival and plaque scores in this study are consistently higher in rural than in urban communities, and appear to account for the difference in severity of periodontal disease that has been reported between rural and urban populations. Those findings in line with previous studies<sup>37, 38</sup>.

People living in urban areas had less gingivitis than those living in rural areas; these differences between urban and rural areas were attributed to differences in oral hygiene, dental care and nutritional condition. Residents of rural counties are at high risk of having poor oral health outcomes for several reasons. They are likely to be of lower socioeconomic status than those living in urban areas, which can make it very difficult to access care. Residents of rural counties are also more likely to be less educated and to have more behavioural risk factors<sup>25, 39, 40</sup>.

Females in the intervention and the control groups exhibited lower mean plaque and gingival scores than males. Generally females have been found to have a lower severity of periodontal disease, this might be attributed to that females had better oral hygiene than males'. These findings in line with previous studies<sup>10, 15, 38</sup>

Prior to the educational program, there was poor gingival health reflecting poor dental health knowledge, attitude and home care behavior. Urban group exhibited a better gingival health status followed by suburban and rural groups.

For all the three groups (rural, suburban and urban), both plaque and gingival scores showed marked reduction at two weeks post intervention, most of which

was sustained at follow up assessment. The improved performance in the intervention groups obviously demonstrates the true impact of the intervention.

Females in the intervention and control groups had significantly lower mean plaque and gingival scores than males. Those in the intervention group not only improved after the intervention as males did but at the same time maintained the difference between them.

Recommendations emphasized the importance of establishing school-based educational programs concentrating on oral self-care. The program should emphasize the immediate gains such as fresh breath, clean teeth, and attractive appearance as key aspects for motivating these adolescents. Further research is needed to evaluate the long-term benefits of the intervention. Those from low socioeconomic groups and boys should form a priority.

## REFERENCES

1. Petersen PE and Ogawa H. Strengthening the prevention of periodontal disease: The WHO approach. *J Periodontol* .2005; 76: 2187-2193.
2. World Health Organization. The Status of School Health. Report of the School Health Working Group and the WHO Expert Committee on Comprehensive School Health Education and Promotion. Geneva: WHO, 1996.
3. World Health Organization. Global Oral Health Data Bank. Geneva: WHO, 2001.
4. World Health Organization .The world oral health report. Geneva, 2003, World Health Organization (WHO/NMH/NPH/ORH/03.2), 2003
5. Loe H. Oral hygiene in the prevention of caries and periodontal disease. *Int Dent J*.2000; 50: 129-1.
6. U.S Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, Maryland, 2000.
7. Murray JJ, Nunn JH, Steele JG. Prevention of oral disease. 4th ed. Oxford: Oxford University press. 2003; pp: 7-34, 77-95, 123-144, 241-258.
8. Al-Beiruti N. Oral health behaviour among a sample of school teachers, physicians and nurses in the Syrian Arab Republic, East Meditt Health *J*.1997;3:258-262
9. Baelum V, Fejerskov O, Monji F. Periodontal diseases in adult kenyans. *J Clin Periodontal*.1988; 15(7):455-2.
10. Al-Sayyab M, Al-Alousi W, and Al-Dujaili D. Periodontal treatment needs among 15 years old Iraqi school children in the city of Baghdad, 1991.
11. Khamrco TY, Abdal AK, Salman KA. Dental health status in - Kasa Fakra and Shamsiat Village. *J College of Dentistry*.2000; 7:5-18.
12. Makani LA. Oral hygiene and gingival health among adolescents and adult population(15-44)years in Sharkhan village, Al-Rafidain Dental *J*.2001;1(1):1-7
13. Al-Mufti NA (1996): Prevalence of gingivitis in adolescent and its relation to socioeconomic status in Baghdad.AI-Buhooth Al-TachaniyaJ. 1996;9(32): 16-27
14. Al-Naimi RJ. Oral health status and treatment needs in 13-15 year old



- students in Mosul city Iraq. M. Sc. Thesis, University of Mosul, 1998.
15. Khamrco TY. A comparative study of dental health status between urban and rural school students in Nineveh, Iraq. *Al-Rafidain Dent J*.2001; 1(1): 7-15.
  16. Åstrøm AN and Samdal O. Time trends in oral health behaviours among Norwegian adolescents. *Acta Odontol Scand*. 2001;59:193- 200
  17. Mutar TA. Evaluation of WHO dental health education program for primary schools in Dyala Governorate-Iraq. M.Sc. Thesis, University of Baghdad, 1998.
  18. Khamrco TY. Assessment of periodontal disease using the CPITN index in a rural population in Ninevah, Iraq. *East Meditt Health J*.1999; 5(3): 549-555.
  19. Makani LA, Al-Dabbagh SA, Khamrco TY. Evaluation of three methods of dental health education in changing dental knowledge, attitude, behaviour and improving gingival health. *J College of Dentistry*.1999; 5:45-54
  20. Silness J and Löe H. Periodontal Disease in Pregnancy II. Correlation between oral hygiene and periodontal condition. *Acta Odontol Scand*.1964; 22:1, 121-135.
  21. Löe H and Silness J. Periodontal disease in pregnancy. I. Prevalence and severity. *Acta Odontol Scand*.1963; 21:533-551.
  22. Vanobbergen J, Martens L, Lesaffre E, Declerck D. Parental occupational status related to dental caries experiences in 7-year-old in Flanders (Belgium). *Community Dent Health*.2001; 18: 256-262.
  23. Albandar JM. Global risk factors and risk indicators for periodontal diseases. *Periodontol 2000*.2002; 29: 177-206.
  24. Makani LA. Evaluation of trials of dental health education in improving gingival health. M.Sc. Thesis, University of Mosul, 1998.
  25. Ali DN. Oral health status and treatment needs among 12 years old school children in urban and rural areas of Baghdad, Iraq. M.Sc. Thesis, 2001, University of Baghdad, College of Dentistry.
  26. Albandar JM and Tinoco EM (2002). Global epidemiology of periodontal diseases in children and young persons. *Periodontol 2000*.2002; 29: 153-176.
  27. Corbet EF, Zee KY, Lo ECM (2002). Periodontal diseases in Asia and Oceania. *Periodontol 2000*. 2002; 29: 122-152.
  28. WHO Oral Health Country/Area Profile. Geneva, World Health Organization, 2005. <http://www.whocollab.od.mah.se/index.html/>.
  29. Yazdani R. Dental health and school-based health education among 15-year-olds in Tehran, Iran, University of Helsinki Finland, 15 May, 2009.
  30. Kay E and Locker D. Is dental health education effective? A systematic review of current evidence. *Community Dent Oral Epidemiol*.1996; 24: 231-235.
  31. Sri Wendari AH, Lambri SE, van Palenstein Helderman WH. Effectiveness of primary school-based oral health education in West Java,

- Indonesia. *Int Dent J.*2002; 52: 137-143.
32. Biesbrock AR, Walters PA, Bartizek RD. Initial impact of a national dental education program on the oral health and dental knowledge of children. *J Contemp Dent Pract.*2003; 2: 1-10
  33. Petersen PE, Peng B, Tai B, Bian Z, and Fan M. Effect of a school-based oral health education program in Wuhan city, People's Republic of China. *Int Dent J.*2004 54: 33-41.
  34. Kay E and Locker D. A systematic review of the effectiveness of health promotion aimed at improving oral health. *Community Dent Health.* 1998; 15: 132-144.
  35. Hausen H. Oral health promotion reduces plaque and gingival bleeding in the short term. *Evid Based Dent.*2005; 6: 31.
  36. Baranowski T, Allen D, Masse C, and Wilson M. Does participation in an intervention affect responses on self-care questionnaires? *Health Educ Res.*2006; 21(1): 98-109.
  37. Al-Azawi LAB. Oral health status and treatment needs among Iraqi five-years old kindergarten children and fifteen -years old students(A national Survey) Ph.D. Thesis, University of Baghdad, College of Dentistry,2000.
  38. Ashraf-Sadat Sanei and Alireza Nikbakht-Nasrabadi. Periodontal health status and treatment needs in Iranian adolescent population.2005; 8 (4): 290-294.
  39. Macêdo TCN, Costa MCN, Gomes-Filho IS, Vianna MIP, and Santos CT. Factors related to periodontal disease in a rural population. *Braz Oral Res.*2006; 20(3):257-62.
  40. Department of Health and Environmental Control. South Carolina takes action: the burden of oral disease, 2007.

## Appendix1: Questionnaire

زنجهير: ..... مېژوو:..... نافي قوتاېخاني:.....

ځى ..... نافي:.....

جھ: 1- باژير 2- گوند

رڼگهز: 1- نير 2- مې

ځاستي ځانډني يې دهيك: نه ځاندهفان ☐ سهرهتايي ☐ ځامادهيي ☐ بكالوريوس ځانډنيټ بلند ☐

باب: نه ځاندهفان ☐ سهرهتايي ☐ ځامادهيي ☐ بكالوريوس ځانډنيټ بلند ☐

1- څيرئ تو ددانيت خو پافز دكه ي ب معجويڼي وفرجه ي؟ بهي ☐ نه ☐

څه گمر بهرسف بهي بيت:

ا. چهند جارا دروؤ دا؟ جارهكي ☐ دوو جارا ☐ سي جارا وپتر ☐

2- باشتيرين وخت بو پافزكرنا ددانا؟

ا- بهري نفستني ☐ ب- پستي نيشتي ☐ ج- پستي ههر څارنهكي ☐ د- نوزانم ☐

3- ژېدمري ته بو وركرتنا پېزانينا لدور ساخلميا ددانا چيه؟

ا- نوؤداري ددانا ☐ ب- څيزاني ☐ ج- څ ماموستايا ☐

د- دزگههين راگه هاندي ☐ ه- من جو پېزانين نه وركرتينه ☐

4- ژمارا ددانين شيري چهنده؟

ا- 10 ددان ☐ ب- 16 ددان ☐ ج- 20 ددان ☐ د- نوزانم ☐

5- ژمارا ددانين بهر ددهوام؟

ا- 20 ددان ☐ ب- 26 ددان ☐ ج- 32 ددان ☐ د- نوزانم ☐

6- كاري ددانا چيه؟ 1- هيرانا څارني ☐ 2- جواني يه ☐ 3- ځاخفتن ☐ 4- ههمي كاريڼ ل سهر ي د ☐ 5- نوز ☐

7- څه گمرين پافزكرنا ته بو ددانا؟

1- څه گمرين جوانكاري ☐

2- نه هيلانا نه ساخيڼ ددافي ☐

3- څ (ا و ب) ☐ 4- نوزانم ☐

8- نافي چهرمي گوشتي نه وي ل دهور ويهري ددانا چيه.

1- ميناو ☐ 2- پدي ☐ 3- ههستيڼ ددافي ☐ 4- نوزانم ☐

8- چ رامانی ددعت دهمی خوین ژپدیان تیت دهمی پاقرکړنا ددانا؟

- 1- هه دانا پدی ☐ 2- گرمیوونا ددانا ☐ 3- نوزانم ☐

9- کیژ ژ فان خارنن ل خوارئ کارتیکرنهکا خراب دکهن ل سهر ددانا؟

- 1- فیتی و زمزهوات ☐ 2- گوشت ☐ 3- شیر و بهره مین وی ☐  
4- شریناهی و فیه خارنن گازی ☐ 5- نوزانم ☐  
10- بکارننانا کهرهستی فلوراید ددانا بهیز دخیخت؟ بهی ☐ نه ☐ نوزانم ☐  
11- تو شریناهی دخی؟ ☐ ☐

آه گهر بهرسف بهی بیت:

- ههر وخته کی کهنکی؟ ☐ دناقههرا داننن خارنن ☐ دگهل داننن خارنن یین سهرکی ☐

12- نوژدارئ ددانا کاردکته ل سهر:

- ا- چارسهه ریا داننن کرمی ونه ساخیین پدی ☐ ب- پاقرکړنا ددانا ☐  
ج- پاراستنا ددانا ژ کرمی بوونی ☐ د- ههمی کارنن ل سهر هاتین ☐ ه- نوزانم ☐

13- تو کهنکی سهرمدانا نوژدارئ ددانا دکهی؟

- ا. ل دهمی پیدی ☐  
ب- ب شیومکی بهردهوام (6 ههقی) ☐  
ج- ب شیومکی بهردهوام (سال جارمکی) ☐ د- ل دهمی پیدی وههروهسا چار جارا ☐

## Appendix 2: Oral examination form

ID#.....

School.....

Name.....

Baseline examination:

Date:

PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
P														
PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														

GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
p														
GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														

Plaque Index (PI)	Gingival Index (GI)
0 =No plaque 1 =Plaque is not seen by naked eye only by running the probe. 2 =Plaque is seen by naked eye. 3 =Abundance of plaque.	0 =Normal gingival. 1 = Change in color, texture, no bleeding on probing. 2 =Bleeding on probing. 3 = Spontaneous bleeding.

## HEALTH EDUCATION ROLE IN IMPROVING PERIODONTAL HEALTH

Post intervention examination:

Date:

PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
P														
PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														

GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
P														
GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														

Follow up examination:

Date:

PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
P														
PI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														

GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
P														
GI	7	6	5	4	3	2	1	1	2	3	4	5	6	7
D														
B														
M														
L														



## پوخته

رولێ رهوشهنبیریا ساخلهمی دباشترکرنا دوخی ساخلهمی یی نهخوشییین پیتیا بو قوتابییین قوتابخانهیان ل پارێزگهها دهوکی

**پیشهکی و نارمانج:** داتابیین گهلهک لیکولینین گرتدای پهبان ناشکرا کر کو بهلاقبون و گرانی نهخوشییین پیتیا دناف زاروک و سنیلیمان دا دبهلاقن، دگهل فی ژێ نیزیکی 50% تا 100% ژ زاروکان ل تهمهنی 12 سالیی نیشانیین ههردانا پیتیا ههنه.

**نارمانج:** ئەف لیکولینه هاتیه بجهنپان ژبو ههلسهنگاندنا رولێ پروگرامی رهوشهنبیریا ساخلهمی دباشترکرنا ساخلهمی پیتیان ل دهف زاروکین قوناغا سهرهتایی ل پارێزگهها دهوکی.

**بهشداریبووی و ریکین لیکهیریانی:** فەکولینێ ئەو قوتابی بخوفهگرتن ئەوین تهمهنی وان دناقبهرا 11 و 15 سالیی ل قوتابخانیین حکومی ل (دهوک)، هندمک میناکیین فرهقوناغی ب شیواز مکی ههرمهکی (عشوائی) ژبو تومارکرنا 12 قوتابخانیین حکومی بکارنیان.

بو بدهستفەئینانا نوینهراتیهکا دیموگرافی جفاکی یا باشتر، قوتابخانه هاتنه پولینکران بو سی گروپین ومکهف کو نینهراتیا سهکتەری: گوندشین، گهرهک و دهردور و سهکتەری باژیری.

د ههر ئێک ژ وان ههرسی گروپین قوتابخانا یین پولینکری، دوو قوتابخانه برهنگهکی ههرمهکی (عشوائی) هاتنه ههلبژارتن بو بهرنامی رهوشهنبیریا ساخلهمی، دگهل هژمارتنا ههردوو قوتابخانیین دی ومک رهگهزین کونترولکرنی. و هوسا ئەو گروپ قوتابیا ئەوئ پێک دهات ژ 615 قوتابیا هاته دهستنیشانکران بو دهستتومردان و کونترولکرنی (305 و 311 قوتابی ل دویف ئێکدا).

پسیارنامهک (استییان) هاته بکارنیان بو بدهستفەئینانا زانیاریا ل دور تهمهنی و جینهدهری ونهخوشییین نوشداری. ل دویفا پشکینا کلینیکی بو ددانن ههر قوتابیهکی/قوتابیهکی هاته کران. کاریگهیری رهوشهنبیریا ساخلهمی هاتنه ههلسهنگاندن بریکا بکارنیانا دوو گوهرینهریت ئەنجاما ئەوژی؛ پیههیری پلاک و پیههیری پیتیی.

**ئههجام:** ئەنجامان نهرهیین بلند یین پیههیری پلاک و پیتیا دههلسهنگاندنا ئێکی یا بهشداریبویان دا ناشکراکران کو یین بهری رهوشهنبیریا ساخلهمی بون. ئەف نهره ب شیویهکی بهرچاف هاتنه کیمکران دههلسهنگاندنا دهستتومردانی ل گروپین رهوشهنبیرکرنا ساخلهمی ههقبهر دگهل گروپین کونترولکرنی. ئەف باشتربوونه ل گرههپی دهستتومردانی هاته پاراستن ژبو دویفچونا ههلسهنگاندنی پشتی شەش ههفتیا ژ دهستتومردانی.

مییان ل گروپین دهستتومردان و کونترولکرنی، نهرین کیمتر ژ تیکرای پلاک و پیتی ههقبهر دگهل کوران نیشادان. نهرهیین ههر ئێک ژ پیتی و پلاکی دفی لیکولین دا ب بهردهوامی ل دهقهرین گوندشین بلندتر بو ژ جفاکین باژیرا.

## الخلاصة

**دور التنقيف الصحي في تحسين الوضع الصحي لأمراض اللثة لدى طلبة المدارس الابتدائية في محافظة دهوك**

**الخلفية والأهداف:** كشفت بيانات من العديد من الدراسات الوبائية أن انتشار وشدة أمراض اللثة منتشر على نطاق واسع بين الأطفال والمراهقين ، مع ما يقرب من 50 ٪ إلى 100 ٪ من الأطفال بعمر 12 سنة لديهم علامات التهاب اللثة.

**الهدف:** صممت هذه الدراسة لتقييم دور برنامج التنقيف الصحي في تحسين الحالة الصحية اللثوية لدى طلاب المرحلة الابتدائية في محافظة دهوك. المشاركون وطرق البحث: استقصت الدراسة طلاب تتراوح أعمارهم بين 11 و 15 سنة من مدارس حكومية في (دهوك). تم استخدام عينات عشوائية متعددة المراحل لتسجيل 12 مدرسة حكومية .

للحصول على تمثيل ديموغرافي اجتماعي أفضل ، تم تصنيف المدارس عشوائياً إلى ثلاث مجموعات متساوية تمثل القطاعات الريفية، الضواحي والقطاعات الحضرية. في كل من المجموعات المدرسية الثلاث المصنفة ، تم تخصيص مدرستين بشكل عشوائي لبرنامج التنقيف الصحي مع اعتبار المدرستين الأخريين بمثابة ضوابط. وهكذا تم تعيين ما مجموعه 615 طالباً للتدخل والضوابط (304 و 311 طالباً على التوالي). تم استخدام استبيان للحصول على معلومات عن العمر والجنس والأمراض الطبية. تبع ذلك فحص أسنان سريري لكل طالب/طالبة. تم تقييم آثار التنقيف الصحي باستخدام متغيرين للنتائج وهما ؛ مؤشر البلاك ومؤشر اللثة.

**النتائج:** كشفت النتائج عن درجات عالية من مؤشرات البلاك واللثة في التقييم الأولي قبل التنقيف الصحي على المشاركين. تم تخفيض هذه الدرجات بشكل كبير في تقييم التدخل في مجموعات التنقيف الصحي مقارنة بمجموعات التحكم. تم الحفاظ على هذا التحسن في مجموعة التدخل في متابعة التقييم بعد ستة أسابيع من التدخل.

أظهرت الإناث في مجموعات التدخل والتحكم درجات أقل من متوسط البلاك واللثة مقارنة بالذكور. كانت درجات كل من اللثة واللويحة في هذه الدراسة أعلى باستمرار في المناطق الريفية منها في المجتمعات الحضرية ( $p < 0.05$  (كبير).