

LEVEL OF PERIODONTAL HEALTH KNOWLEDGE AMONG HIGH SCHOOL STUDENTS IN THE EAST OF SAUDI ARABIA

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العنوان : مستوى المعلومات بصمة اللثة عند طلبة المدارس الثانوية في المنطقة الشرقية في المملكة العربية السعودية

ملخص البحث :

قيس مستوى المعلومات اللثوية ل 581 طالب وطالبة مدرسي في المرحلة الثانوية (15 - 18 سنة) في منطقة الظهران في المملكة العربية السعودية . شارك طلبة وطالبات المدارس الخاصة والحكومية . وزع عليهم نموذج أسئلة يحتوي على 13 سؤال وطلب منهم أن يكملوا جمع الأسئلة تحت المراقبة في داخل الفصل

أدخلت جميع المعلومات إلى الكمبيوتر . واستخدم تحليل كاي المربع لتجد العلاقة بين مدى التجاوب الصحيح للأسئلة وبين نوع المدرسة ، الجنس والمستوى الدراسي للطلبة .

النتائج أوضحت بأن 62.7% من الطلبة استطاع أن يعرف بأن البلاك هو سبب مرض اللثة . اختلفت درجة المعلومات الصحيحة بين الطلبة بالنسبة للعلامات وطرق الوقاية والعلاج من أمراض اللثة . الطلبة في السنة الثالثة كانوا أكثر علماً من الطلبة في السنة الأولى والثانية .

مستوى المعلومات أعلى عند الطلبة في المدارس الحكومية عنها عند المدارس الأهلية . إذا نستنتج من هذه الدراسة أن مستوى المعلومات بصحة اللثة يعتبر متوسطاً عند طلبة المدارس الثانوية في المجموعة التي فحصت يجب أن يحول الأخصائيين والعاملين على صحة القم والأسنان على زيادة توعية الطلبة بعمل مزيد من برامج المدارس .

The level of periodontal knowledge of 581 high school students (aged 15 - 18y) in the Dhahran area in Saudi Arabia were assessed. A 13-item questionnaire was distributed among male and female students in both government and private schools. Students were asked to complete all items under supervision in the classroom. Chi square was used to test the association between the responses to correct answers and type of school, sex and level of education. Results showed that 62.7% respondents can define plaque as the cause of periodontal disease. Correct information concerning the signs, causes, prevention and treatment of periodontal disease varied widely. Older students were more knowledgeable about causes and signs of periodontal disease than younger students. A higher level of knowledge was found among students in governmental schools than in private schools. It can be concluded from this study that an average level of knowledge regarding periodontal disease was found in this target group and consequently, the role of dental professionals and public health workers should be concentrated on more dental school programs to educate this target group.

Introduction

Oral health education works best when it is customized to the level of knowledge and concerns of the recipients. Dental

health education has been largely aimed at young people." Health education is community based and founded on the principle of community development approach. It holds the promise for improvement in health behavior.

Periodontal status of adults in Central Saudi Arabia was studied by Guile. He reported that a proportion of healthy subjects ranged from 32% among the 15-19

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years old group to 4.6% among the 30-34 years old group. Bleeding was highest (12.1%) among the 15-19 years old group. It was also found that the percentage of healthy individuals decreased with age. His study of one region of Saudi Arabia gives a tentative indication that the level of early periodontal disease may be high in the younger ages. The study lead the present researchers to question the level of periodontal health knowledge of the 15-19 years old group.

Presently, there is a dearth of information on the level of periodontal health knowledge in high school students in Saudi Arabia, due to very limited baseline data and reported studies. Hence, the goal of this study was to provide baseline data on periodontal health knowledge in high state of school students' throughout the Kingdom of Saudi Arabia. Another goal was to compare the periodontal health knowledge of students in governmental schools versus those in private schools in the Dhahran province. The latter goal is a part of a project designed to study the knowledge state of school students' throughout the Kingdom of Saudi Arabia.

Materials and Methods

A random cluster sample of high schools was surveyed in the Dhahran Province. Nine high schools were chosen. Both governmental and private schools were randomly included. A total of 581 respondents were included in the study. The number of students as related to selected variables are shown in Table 1.

A prepared questionnaire was used to study the level of periodontal health knowledge in both male and female high school students. At onset, the dental terminologies were explained to the students orally before the questionnaires were distributed to high school students in the sample schools. Table 2 reflects the items found in the questionnaire. Ages of the students ranged from 15 to 18 years. The responses to each question varied from whether they agree, disagree or were not sure. Students completed the 13-item questionnaire under classroom supervision.

Students were asked to complete all items. The items included in this survey are modifications of items taken from a previous survey directed to a subsample of

Table 1. Number of students as related to selected variables.

Sex	Number		Percentage	
	Govt.	Private		
Male	215	121		57.5%
Female	212	33		42.5%
Total	581			100%

Education	Government		Private	
	Number	Percentage	Number	Percentage
3rd year	120	28.1%	47	30.5%
2nd year	151	35.4%	55	35.7%
1st year	156	36.5%	52	33.8%
Total	427		154	

a nationally representative consumer panel in 1980. Four items focused on causes of periodontal disease (plaque, hereditary, poor diet or due to diabetes mellitus). One item dealt with whether plaque is understood. Four items addressed signs of gum disease: bleeding gums when brushing, sore/swollen gum, mobility of the teeth, and bad odor of the mouth. Four items dealt with the prevention and treatment methods: brushing, flossing, proper diet, proper treatment and eating flavored candies to avoid bad odor.

Cross tabulations were generated for all the categorical responses with type of school (government vs private), sex (male vs female), and level of education. Chi-square was used to test the association between the responses and school type, sex and level of education.

Results

Responses to periodontal health questions are found in Table 2. Approximately, 62.7% respondents could define plaque as the cause of periodontal disease. More than 50% of the students could identify signs of gum disease and they agreed that periodontal disease is not hereditary. They also agreed that the best way to keep from getting gum disease, was to clean their teeth and go routinely to the dentist for treatment. The extent of correct information possessed by high school students varied.

The knowledge level among the governmental and private schools students in responding to most of the items was not significantly different. Significant differences were shown in three items as shown in Table 3. Students in governmental schools showed significantly higher level of knowledge in recognizing bleeding upon brushing (62.2% vs 52.7%), bad odor

(74.5% vs 61.2%) and the need to go routinely to the dentist in order to save their teeth. The level of knowledge among males and females was significantly different. A higher proportion of females (68.1% vs 59%) recognize that plaque build up is the cause of gum disease and bleeding gums and bad odor are signs of periodontal disease (69.9% female vs 52.1% male).

Table 5 shows the distribution of knowledge level according to education level. There was a significant difference between education level and responses to questions in three items. A higher proportion of knowledge in these items was demonstrated among students in the 3rd year. The relationship between the education level and other responses was not found to be statistically significant, however.

Discussion

This survey documents the limited knowledge of high school students about periodontal health in Dhahran Province. The questions used in this study were used previously and permit comparisons. The items demonstrate some evidence of the systematic approach to assessment of patients' knowledge and beliefs. However, the questions were modified according to the needs and purpose of this survey.

In the present survey, 62.7% respondents could define plaque as the cause of periodontal disease. This result is in agreement with other studies of dental health knowledge in 9-12 year old children⁵ where 93.6% could define plaque and 70.07% could identify signs of gum disease. It is also in agreement with Walsh⁶ where he estimated the level of knowledge in pretest controls of 14 years old respondents. Less than 50% answered correctly about

Table 2. Number and percentages of responses to the questionnaire items.

Scale and item	Agree		Don't agree		Not sure	
	Number	%	Number	%	Number	%
Causes of gum diseases and 'plaque build up	359	62.7	107	18.7	107	18.7
Poor diet	252	41.9	228	37.9	121	20.1
Heredity	54	9.0	482	79.9	67	11.1
Diabetes mellitus	79	13.1	332	55.0	191	31.6
Signs of gum disease, 'bleeding gums when brushing	361	59.4	147	24.2	100	16.4
'Sore/swollen gums	274	46.9	155	26.5	155	26.5
Loose teeth	331	55.2	135	22.5	134	22.3
Bad odor	351	57.9	158	26.1	97	16.0
Prevention and/or treatment can be cured with right diet	186	30.9	259	43.1	156	26.0
Prevention and/or treatment can be cured with brush and floss	349	57.4	139	22.9	120	19.7
Treatment will help save teeth and avoid bad odor	428	70.5	111	18.3	68	11.2
Losing your teeth is an unavoidable part of the aging process	46	7.6	447	73.6	114	18.8
The best way to avoid bad odor is to eat favorable candies and gums, this can delay you from visiting dentist	111	18.3	406	66.8	91	15

'Correct answer

'Significant at $p < 0.05$ *Highly significant at $p < 0.01$

caries and periodontal health. However, it is not in agreement with Linn⁷ in a study of 15 years old students where level of knowledge was not optimal because there was no evidence that they know about plaque. Fewer than one fourth of the respondents knew that periodontal disease was a disease of the gingiva.

The reason for this disagreement may be due to the sample size. The Linn⁷ study included 2,517 students while our survey

included only 581. Comparing our result to the large survey done in Riyadh Province, Saudi Arabia, few respondents knew the definition of periodontal disease (4.2%) among the total sample.⁸

In the present survey, girls ranked higher than boys in awareness of several preventive behaviors and on symptoms of periodontal disease. This is in agreement with Linn. Moreover, older students were more knowledgeable about causes and signs

or periodontal disease than younger students. This finding supports the results of Bader.

The result that students in governmental schools demonstrated higher levels of knowledge than those in private schools is striking because students in private schools probably have higher socio-economic status. This may be attributed to the fact

that concepts of oral hygiene have been presented to government schools' students by the King Saud University College of Dentistry's students as advocated by its comprehensive community dentistry program.

Periodontal care and knowledge has been shown in several studies to be correlated with the family socio-economic

Table 3. Comparison of the level of knowledge on periodontal disease between government and private students.

	Bleeding gum upon brushing		Sore/swollen gum		Treatment with help save teeth and avoid bad odor (Agreed)	
	(Agreed) Number	%	(Agreed) Number	%	Number	%
Govt, schools	265	62.2 %	181	44.4%	316	74.5%
Private schools	96	52.7%	93	52.8%	112	61.2%
Significant (P values) government vs private schools	0.0466"		0.0006**		0.00171**	
	'Significant at p < 0.05		"Highly significant at p < 0.01		**Very highly significant at p < 0.001	

Table 4. Comparison of periodontal disease knowledge between male and female students.

	Plaque build up is the cause of gum disease (Agree)		Gums bleed when brushing (Agree)		Bad odor (Agree)		Treatment will help save teeth (Agree)	
	Number	%	Number	%	Number	%	Number	%
Male	204	59.0%	188	52.1%	182	50.6	238	65.7
Female	154	68.1%	172	69.9%	169	69.15	189	77.5
Significant (P values) Male vs female	0.021'		0.0001***		0.0001**		0.0004**	
	'Significant at p < 0.05		"Highly significant at p < 0.01		**Very highly significant at p < 0.001			

status. Other studies demonstrated that the father's occupation is the only measure correlated to periodontal care and knowledge. The results of this study showed only a moderate percentage of correct answers regarding periodontal disease. The authors recommend that the role of dental professionals and public health workers ought to be more focused on school programs. Exposure to oral disease prevention measures should result at both individual and community levels.

Table 6: Number and percentage of respondents who agreed that treatment will help save teeth and avoid bad odor.

	Male	Female
Number	238	65.7%
Percentage(%)	189	77.5%
Significant P value male vs female	0.004**	

*Significant p < 0.005 ***Very highly significant p < 0.001
 **Highly significant p < 0.01

Table 5: Comparisons between education level and periodontal disease knowledge.

	Agree		Disagree		Not Sure	
	Number	%	Number	%	Number	%
Loose teeth						
First level	114	54.8%	40	19.2%	54	26.2%
2nd level	98	47.6%	54	26.2%	54	26.2%
3rd level	119	64.0%	41	22.0%	26	14.0%
Poor Diet						
First level	74	35.6%	82	39.4%	52	25%
2nd level	86	41.7%	75	36.4%	45	21.8%
3rd level	92	49.2%	71	38%	24	12.8%
Plaque build up.						
First level	118	59%	33	16.5%	49	24.5%
2nd level	114	57%	52	26%	34	17%
3rd level	127	73%	22	12.7%	24	13.9%

Significant P Values

Loose teeth 0.004*** *Significant at p < 0.05

Plaque build up 0.0004 *** **Very highly significant at p < 0.001

Poor diet 0.015" *Highly significant at p < 0.01

Conclusion

- 1) Around 62.7% of respondents can define plaque as the cause of periodontal disease. This implies result of an average level of knowledge regarding periodontal disease.
- 2) Students in governmental schools demonstrated higher level of knowledge than students in private schools.
- 3) Females showed higher level of knowledge than males in recognizing signs of periodontal disease.
- 4) Older students were more knowledgeable about the cause and signs of periodontal disease than younger students.

References

1. Heloe LA: Comparison of dental health data obtained from questionnaires interviews and clinical examination. *Scand J Dent Res* 1972;80:495-499.
2. Schmidt G, Gilda S, Haglund B, Lofgren CG, Svensson K: Tandvardsbehör och subjektiv bedömning av egen tandhälsa. *Tandläkartidningen (Abstract)* 1982;74: 978-984.
3. Guile EE: Periodontal status of adults in central Saudi Arabia. *Community Dent Oral Epidemiol* 1992;20:159-160.
4. Bader JD, Rozier RG, McFall WT, Ramsey DL: Dental patients knowledge and beliefs

about periodontal disease. *Community Dent Oral Epidemiol* 1989;17:60-64.

5. Woolfolk MW, Lang WP, Faja BW: Oral health knowledge and sources of information among elementary school children. *J of Public Health Dent* 1989;49:39-43.
6. Walsh MM: Effects of school based dental health education on knowledge, attitudes and behavior of adolescents in San Francisco. *Community Dent Oral Epidemiol* 1985;13:143-147.
7. Linn EL: Teenager's attitudes, knowledge and behaviors related to oral health. *J Am Dent Assoc* 1976;92:946-951.
8. Al Shammery AR, Guile E, El Backly M, Lambome A: An oral health survey of Saudi Arabia. Phase I 1991, pp.120.
9. Richard ND: Utilization of dental services. In Richards ND and Cohen LK, eds. *Social Sciences and Dentistry. A critical bibliography.* The Hague Asijthoff, 1971; p. 209.

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