The Impact of Oral Health Knowledge, Attitude and Practices (KAP) of Kindergarten Teachers on Their Oral Condition in Al-Rusafa Sector/ Baghdad-Iraq.

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ABSTRACT

Background: Teachers are considered as dynamic force who take a pivotal position in any educational system. Since they may play a significant role in passing the preventive information and health promotion, it is important that their own oral health knowledge, attitude, and practices conform to the professional recommendations. The aim of this study was to evaluate oral health knowledge, attitude and practices among kindergarten teachers, and their impact on teachers' oral health condition in Al-Rusafa Sector, Baghdad, Iraq.

Materials and Methods: This cross-sectional survey was conducted among 80 kindergarten teachers. A self-administered questionnaire was distributed among these teachers. This questionnaire format contains two parts that deals with oral health knowledge, attitude and practices of teachers, and this was followed by clinical oral examination for all the teachers. Simple random sampling technique was employed for the selection of the study participants. Descriptive analysis was done and data was analyzed using Bonferonni t-test and ANOVA test.

Results: Teachers demonstrated adequate but incomplete knowledge regarding oral health. More than 85.0% of teachers were aware of preventive measures to keep good oral health and knew the bad influence of neglecting the oral hygiene. About 65.0% of teachers had the awareness about dental plaque composition and its bad effects. Meanwhile, 45.0% of them were aware about the signs of tooth decay, also 32.5% were aware about the benefits of regular correct brushing on the gingiva. No obvious differences were noticed regarding teachers' DMFS, plaque and gingival indices mean values in association to the level of teachers' knowledge, however, a positive relation were found between favorite attitude and practices and mean values of DMFS, plaque and gingival indices.

Conclusions: The studied kindergarten teachers demonstrated adequate but incomplete oral health knowledge with many of them adopting poor attitude and practices. There is a definite and immediate need for an integral educational program for kindergarten teachers on basic oral health knowledge and favorable practices. Moreover, teachers' healthy practices can affect their oral health condition positively.

Keywords: Impact, Oral health knowledge, Attitude, Practices, Kindergarten teachers. **(J Bagh Coll Dentistry 2018; 30(3): 40-47)**

INTRODUCTION

Teachers, in general, shape the future of country and prepare the young ones for future life. Thus, they should carry on acting as role models for the children. However, they cannot assist in developing a well-informed generation, if they themselves were misinformed [(1)].Teachers having good oral health knowledge, favorable attitude and healthy practices can play a key role in the implementation of different oral health educational and preventive programs, which aim to improve the oral health practices and status for themselves, in addition to the children [(2)] It is therefore important that their own oral health knowledge is accurate, and their oral health practices fits the public's expectations [(3)].

Regarding oral health, schoolteachers can play an important role in inspiring the children to adopt healthy lifestyles as well as transmitting the awareness about the causes and prevention of common oral problems [(4)].

This can be actual only if the teachers themselves practice healthy oral hygiene and lifestyle, also have a complete and in-depth knowledge about common oral diseases and their ways of prevention. Therefore, provision of oral health knowledge to the children by their teachers at the kindergarten level can prove to be more fruitful compared to the primary or secondary level because it's the time period during which the children begin to learn basic oral hygiene practices and are most prone to dental caries [(5)]. Previous studies concerning primary schoolteachers' knowledge and attitudes towards dental health showed that most schoolteachers had a positive attitude towards oral health as well as a fair amount of ideas about poor oral health conditions of children, and were eager to get involved in the oral health educational programs. Additionally, they were keen to receive training in order to improve

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their level of acquaintance concerning oral health issues [6-9].

In the present settings, no relevant literature is available regarding oral health knowledge, attitude and practices of kindergarten teachers. Hence, and in regards to the above-mentioned information, there is a need to conduct a nationwide study that may be able to assess teachers' oral health knowledge and practices, as well as to find if there is any effects between these variables and teachers' oral condition.

Against this background, the study was undertaken among kindergarten teachers, with the objective of assessing their oral health knowledge, attitude and practice, and to determine their impact- if any- on teachers' oral condition.

MATERIAL AND METHODS

This cross-sectional survey was conducted among a sample of teachers attending public kindergartens in Al-Rusafa sector in Baghdad-Iraq. Examination started at the beginning of January 2017 until the end of March 2017. Official permission was obtained from the Iraqi Ministry of Education before data collection in order to examine the selected individuals with no obligation.

The sampling frame consisted of 20 public kindergartens, chosen from total 93 kindergartens throughout the use of probability sampling (computerized simple random sampling) including different areas of Al-Rusafa sector. Total 80 teachers were drawn randomly from these 20 kindergartens to participate in this research.

In this study, the main instrument for data collection was a structured self-administered questionnaire adopted from different sources like articles and research studies [10-17]. This questionnaire format was introduced to kindergarten teachers in Arabic language in order to evaluate their oral health knowledge, attitude and practices. This method of data collection has been tested previously, and has shown to be adequate and reliable [18, 19]. This was followed by clinical oral health examination including dental examination, oral cleanliness and gingival examination for all of the participated teachers. Oral cleanliness was recorded using the plaque index criteria [20]. While, the gingival index (GI) by Löe and Silness [21] was utilized for gingival condition assessment. Diagnosing the extent and severity of tooth decay were performed regarding the WHO criteria (1987) [22]. Clinical examination was done using plane mouth mirror with dental explorer.

Statistical analysis: Data description and statistical analysis were obtained using IBMSPSS version 23-computer software (IBM Statistical Package for Social Sciences) in association with Microsoft Excel. Descriptive statistics were obtained, and the mean values and frequency distribution were calculated. According to Kolmogorov-Semirnov test for normality, the outcome quantitative variables were shown to be normally distributed. ANOVA test was employed to analyze the data. Level of significance can be tested as probability of error (p-value) thus, not significant if $p > 0.05$, significant if $p \leq 0.05$.

RESULTS

In regards to teachers' knowledge, attitude and practices (KAP) questionnaire, a full response rate was obtained, since all the selected teachers accept to participate in this research study.

Socio-demography

Out of 80 teachers, almost equal distribution was recorded regarding the three categories of teachers' age group. Relating to teachers' educational status, 51.3% of them completed institutional degree, 37.5% had a college certificate, while only 11.3% had a secondary school certificate. About teaching-experience years, the majority 57.5% had more than 10 years of experience, 23.8% had less than 5 years, whereas only 18.8% had 5-10 years of experience. Married teachers represented 92.5% of the total sample while single teachers were only 7.5%. Teachers with children constituted 87.5% of the sample, while only 12.5% of them had no children.

Knowledge

Table 1 shows teachers' scores regarding their oral health knowledge. Results showed that more than 85.0% of teachers were aware that "It is possible to prevent oral diseases by brushing, flossing and avoiding sugar", in addition to "Neglecting oral health causes periodontal disease such as swollen and bleeding gingiva" and "Bleeding during brushing is a sign of gingival disease or wrong brushing technique". However, only 2.5% of teachers did not know about the previous statements. Almost more than half of respondents had the awareness about the composition and effects of dental plaque. Additionally, about two-thirds of the sample were aware about dental plaque components and effects. Meanwhile, less than half of teachers were aware that gingival bleeding is not a sign of tooth decay, also growing old is not a reason for teeth loss, as

well as they knew that regular correct brushing technique can protect from gingival bleeding. The least proportion of teachers 27.5% were aware that tooth decay is infectious, however, 12.5% of them answered with "Do not know".

Attitude and Practices

As shown in Table 2, teachers with the highest frequency of tooth brushing "twice or more daily" constituted the largest proportion of the study sample 67.5%. Meanwhile, the largest proportion of them spend about 1 minute during brushing 55.0%, while only 16.3% of them spend less than 1 minute. Results showed that most of teachers 63.8% consuming sugary snacks never or once daily, and only 2.6% eat sugary snacks more than four times a day. Moreover, 55.0% of teachers thought that brushing at night is the best time for tooth brushing, followed by 26.3% of them who chose "after each meal" as the best time for brushing and 18.8% thought that it is the best to brush at morning. However, majority of teachers 71.3% visited dental clinics when sever toothache, followed by 15.0% of them went for a regular check-up "every 6-12 months". Moving to the reasons for usual dental clinic visits, "dental pain" was the main reason for the majority of teachers 80.0%. Although, minority of them showed that "Regular check-up time", "Esthetic" and "Improving function" were the reasons for visiting dental clinic, and they were 3.8%, 7.5% and 8.8% respectively. Relating to the reasons behind not/ dislike visiting the dentist, the larger part of teachers 61.3% reported that the "fear of needle and/or drilling" was the main reason behind their negative attitude towards visiting the dentist. The "high cost" was the second popular reason among the teachers, as 42.5% of them hate going to the dentist because of this. Only 13.8% and 3.8% of teachers revealed that there is "no time" and "no clinics nearby", respectively, were the reasons for dislike visiting dental clinic. However, 38.8% of teachers had not visited a dentist for more than a year or two, with 31.3% had visited a dentist in less than 6 months, with the least percentage 2.5% who had never been to a dentist before.

Regarding the question, which deals with the items used for keeping oral hygiene, as shown in Figure 1. Results revealed that 96.3% of teachers use toothbrush and toothpaste for cleaning their teeth, 22.5% use salt and warm water as a mouthwash, 11.3% of them use medical mouthwash, 6.3% floss their teeth, and the least proportion used Miswak 3.8%. Meanwhile, assessing the count of items used by teachers, results showed that most of them 70.0% used only a single item to keep their oral hygiene, 21.25% used 2 items and only 8.75% of them used 3-4 items to keep good oral health.

Moreover, in questions that came with multiple answer, the participants were free to choose more than one answer for each question, and this would explains why the total answering percentage does not equal the total sample number when dealing with these questions.

Caries experience

As reviewed in Table 4, he impact of teacher's knowledge on caries experience, the mean (DMFS) of teachers was found to reach its highest value in teachers with the highest knowledge scores, a statistical significant difference ($p<0.05$) was recorded when comparing between the knowledge scoring terciles [23]. While when dealing with teacher's favourite attitude and practices regarding their oral health, the mean (DMFS) was found to be higher in teachers with the least favourite attitude and practices compared to those with the most favourite attitude and practices whom recorded the lowest (DMFS) mean, Additionally, results showed a statistical significance difference ($p<0.05$) between the three categories.

Oral cleanliness and gingival health status

Regarding the impact of teacher's knowledge on plaque and gingival indices, results showed that the mean value of plaque was obviously higher in teachers with the highest scores comparing to those with the lowest scores whom had the lowest plaque mean value, however, the statistical difference failed to reach the significance ($p>0.05$). Similarly, the mean value of GI was found to be the highest in teachers who got the maximum scores regarding their knowledge about personal oral health, and the lowest in teachers who got the minimum scores, also, the difference observed was statistically significant ($p<0.05$).

Passing to the category that deals with teacher's favourite attitude and practices regarding personal oral health, plaque and gingival indices mean values found to reach their highest values in teachers with the lowest attitude and practices scores comparing to the mean plaque and gingival indices, which registered the lowest values in teachers with the highest attitude and practices scores. Although, the difference failed to reach the statistical significance ($p>0.05$).

Table 1: Assessment of teachers' scores regarding their knowledge towards personal oral health.

Teachers' knowledge questionnaire towards their personal oral health	Aware		Unaware		Don't know	
	No.	%	No.	%	No.	%
It is possible to prevent oral diseases by brushing, flossing and avoiding sugar. (True)	75	93.8	3	3.8	2	2.5
Neglecting oral health causes periodontal disease such as swollen and bleeding gingiva. (True)	74	92.5	4	5.0	2	2.5
Bleeding during brushing is a sign of gingival disease or wrong brushing technique.(True)	70	87.5	8	10.0	2	2.5
Dental plaque can lead to dental caries. (True)	54	67.5	6	7.5	20	25.0
Dental plaque means food remnants and bacteria on teeth. (True)	52	65.0	8	10.0	20	25.0
No pain in the mouth means the mouth is disease free. (False)	40	50.0	34	42.5	6	7.5
Gingival bleeding is the first sign of tooth decay. (False)	36	45.0	28	35.0	16	20.0
Tooth loss is a normal part of growing old. (False)	31	38.8	41	51.3	8	10.0
Regular correct brushing of teeth does not protect from gingival bleeding. (False)	26	32.5	50	62.5	4	5.0
Tooth decay is infectious (spread from person to person). (True)	22	27.5	48	60.0	10	12.5

Table 2: Assessment of teachers' scores regarding their attitude and practices towards personal oral health.

Teachers' attitude and practices of towards their personal oral health		No.	%
Frequency of teeth brushing	Once daily	20	25.0
	Twice or more daily	**54**	**67.5**
	Not always	6	7.5
Time spend for brushing	Less than one minute.	13	16.3
	About 1 minute	**44**	**55.0**
	2 minutes or more	23	28.8
Frequency of eating sweet snacks per day	**Never or once daily**	**51**	**63.8**
	2-3 times	27	33.8
	4+ times	2	2.6
Items that you use for keeping oral hygiene (multiple answer)	**Brushing with tooth paste**	**77**	**96.3**
	Mouth wash	9	11.3
	Dental floss	5	6.3
	Warm water and salt	18	22.5
	Miswak	3	3.8
Best time for tooth brushing	At morning	15	18.8
	At night	**44**	**55.0**
	After each meal	21	26.3
Frequency of dental clinic visits	Regular (every 6-12 months)	12	15.0
	When sever toothache	**57**	**71.3**
	Occasionally	11	13.8
Reasons for usual dental clinic visits	**Dental pain**	**64**	**80.0**
	Regular check-up time	3	3.8
	Esthetic	6	7.5
	Improving function	7	8.8
Reasons behind not/ dislike visiting the dentist (multiple answer)	**Fear of needle and/or drilling**	**49**	**61.3**
	High cost	34	42.5
	No clinic nearby	3	3.8
	No time	11	13.8
Last visit to the dentist	Less than 6 months	25	31.3
	6-12 months	22	27.5
	1-2 years or more	**31**	**38.8**
	Never went to a dentist	2	2.5

Table 3: Mean values and Standard error (SE) of teachers' caries-experience regarding questionnaire scores.

Variables	Teachers score (terciles)	No.	DMFS	
			Mean ±SE	p-value*
Teacher's knowledge score about oral health	Lowest (<= 50)	32	33± 3.4	<0.001**
	Average (51-70)	35	38± 4.1	
	Highest (71+)	13	61± 9.5	
Teacher's favourite attitude and practice score	Lowest (<= 41)	33	49± 5.2	0.035**
	Average (42-53)	27	33± 4.0	
	Highest (54+)	20	34± 4.6	

***Comparison of mean values of the three categories of each (KAP) part- ANOVA test**
**** Significant (p≤0.05)**

Table 4: Mean values and Standard error (SE) of teacher's plaque and gingival indices regarding questionnaire scores.

Variables	Teachers score (terciles)	PlI			GI	
		No.	Mean ±SE	p-value*	Mean ±SE	p-value*
Teacher's knowledge score towards personal oral health	Lowest (<= 50)	32	1.28± 0.080	0.17 [NS]	1.12± 0.076	0.041**
	Average (51-70)	35	1.31± 0.077		1.16± 0.081	
	Highest (71+)	13	1.49± 0.112		1.43± 0.122	
Teacher's favourite attitude and practices score	Lowest (<= 41)	33	1.40± 0.087	0.13 [NS]	1.30± 0.086	0.12 [NS]
	Average (42-53)	27	1.33± 0.069		1.11± 0.073	
	Highest (54+)	20	1.21± 0.100		1.10± 0.108	

***Comparison of mean values of the three categories of each (KAP) part- ANOVA test**
**** Significant (p≤0.05)**
[NS] Not Significant

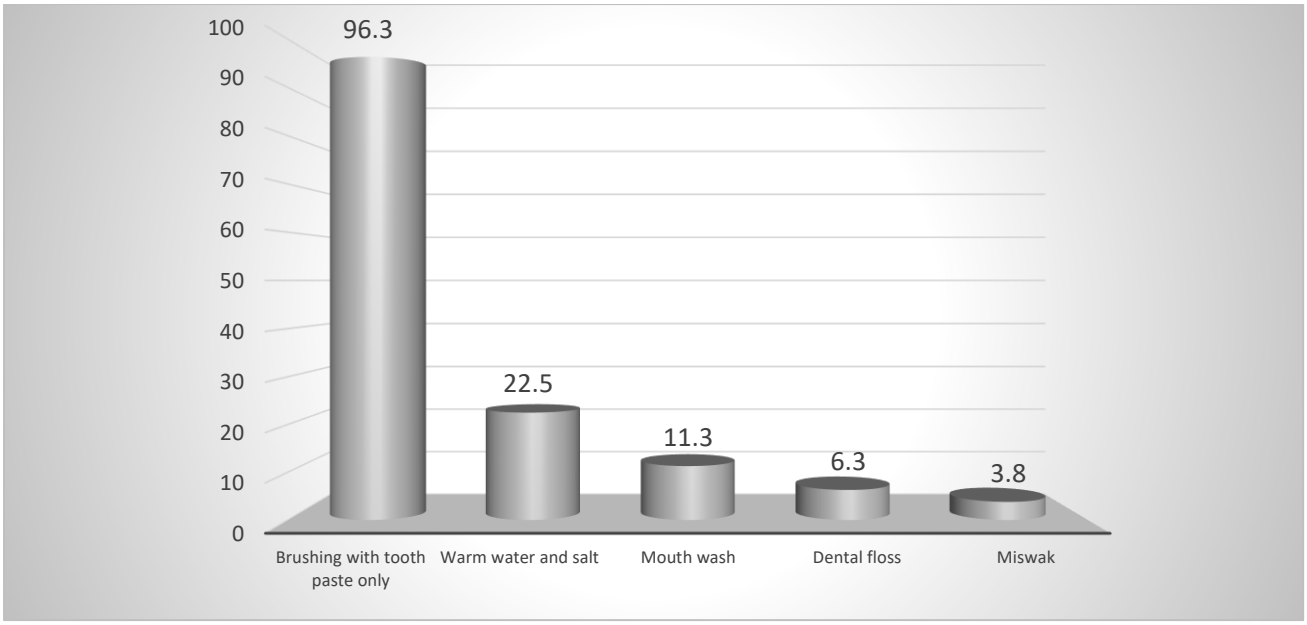

Figure 1: Bar chart showing the relative frequency of the most used oral hygiene items by teachers.

DISCUSSION

This study assessed the oral health knowledge, attitude and practices among kindergarten teachers, and their impact on the oral health status of teachers themselves. The (KAP) data were collected by means of self-administered questionnaires mainly because of practical reasons.

In regards to teachers' knowledge about personal oral health, it was relatively adequate but incomplete. Majority of the respondents correctly identified the proper ways to prevent oral diseases in addition to their causes, and about the signs of periodontal diseases. However, the results of the present study vary conspicuously from previous studies that showed that only 50.0% of teachers had the basic knowledge of the causes and prevention of oral diseases [24, 25]. Meanwhile, only 32.5% aware that regular correct brushing technique can protect from gingival diseases, a finding that is not in line with a previous study [26].

Concerning teachers' favorable attitude and practices towards personal oral health, which was generally poor, the largest proportion 67.5% brush twice or more daily, which is considered the most favorable practice [27]. While when discussing the time consumed during brushing, results found that more than half of teachers spend about 1 minute. Although, only 28.8% of them took about 2 minutes, which is supposed to be the most favorable duration [28]. When considering the aids used in regular oral hygiene practices, results revealed that almost all teachers used toothbrush and toothpaste; one possible explanation could be the influence of family traditions in routine practices. This finding agreed with previous studies [29, 30]. The percentage of teachers used dental floss as an oral hygiene maintenance tool was very low 6.3% and was approximate to figures reported form Nigerian school teachers [30, 31].However, usage of medical mouthwash found to be higher than flossing, this might be related to the effect of visual media and advertising of these medical mouthwashes on teachers.

Preventive regular dental visit is widely considered as a standard oral health practice. In the current study, only 15.0% of teachers went to routine dental checkup every 6-12 months and this low percentage assure that very few of them understood the importance of visiting a dentist at least once, or twice annually. These findings emphasized the need for promoting the principles of preventive dentistry among kindergarten teachers and were not in agreement with some previous studies [32, 33]. Also noted among the teachers in the present study was the fact that the highest percentage of them 71.3% visited a dentist primarily because of sever dental pain. This finding was consistent with studies done elsewhere [30, 31]. However, the least proportion had visited a dentist to improve function, aesthetic or routine checkup, which indicated that the utilization of dental services was mainly for pain relief, rather than for prevention and having a better oral health. These results concurred with Amith *et al.* [34]. Generally, all the above disparities might be due to multiple reasons namely; lack of awareness, unaffordability or lack of accessible oral health services.

Concerning caries experience, an interesting finding was seen regarding teachers' knowledge towards personal oral health, where the maximum mean was found in teachers with the highest knowledge, and a high statistical significant difference was recorded ($p<0.001$). This unexpected finding could suggest that even high knowledge might be not enough unless it is associated with healthy daily practices. However, the mean (DMFS) of teachers was found to be obviously higher in teachers with the lowest scores regarding their attitude and practices compared to those with the highest scores, with a statistically significant difference ($p<0.05$). All the preceding findings suggested that teachers' knowledge have no impact on their oral condition. Nevertheless, the more favourable attitude and practices, the less mean values regarding caries experience. Thus, this showed that favourable oral health attitude and practices of teachers could cause a positive impact on personal oral condition.

Similarly, an inverse relationship was noticed in regards to teachers' plaque mean value, as it raised with increasing the knowledge scores towards personal oral health, however, the statistical difference failed to reach the significance ($p>0.05$). Likewise, the mean value of gingival index was found to be the highest in teachers who got the maximum scores and vice versa with a statistically significant difference ($p<0.05$). These confounding results regarding the relation between teacher's knowledge towards personal oral health and their plaque and gingival health status might be related to different variables other than the level of knowledge, like age, educational status, years of experience, marital status or being a mother of children or not. However, when discussing teachers' favorite

attitude and practices scores, the plaque and gingival mean values seems to decrease with increasing teachers' scores regarding their favorable attitude and practices. These outcomes confirmed that healthy attitude and practices of teachers could be reflected positively on the oral health status of the teachers themselves. However, knowledge alone was not enough, unless it turns into real action.

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الخلاصة

الخلفية: يعتبر المعلمون قوة ديناميكية ذات مواقف محورية في أي نظام تعليمي. وبما أنه يمكنهم أن يلعبوا دورا هاما في تمرير المعلومات الوقائية وتعزيز الصحة، من المهم أن تكون المعرفة الصحية الخاصة بصحة الفم، والاساليب، والممارسات مطابقة للتوصيات المهنية. هدفت هذه الدراسة إلى تقييم معرفة صحة الفم وأساليبه وممارساته بين معلمات رياض الأطفال وتأثيرها على الحالة الصحية الفموية للمعلمات في قطاع الرصافة في بغداد /العراق.

المواد والطرق: أجري هذا المسح المقطعي على 80 معلمة في رياض الأطفال. وقد تم توزيع استبيان يملئ ذاتيا على المعلمات. يحتوي هذا الاستبيان على جزأين يتناولان معارف صحة الفم واساليب وممارسات المعلمات، وتلا ذلك فحص فموي سريري لجميع المعلمات. وقد استخدمت تقنية أخذ العينات العشوائية البسيطة لاختيار المشاركين في الدراسة تلاها إجراء تحليل وصفي وتحليل البيانات باستخدام اختباري بونفيروني تي واختبار أنوفا.

النتائج: أظهرت المعلمات معرفة كافية ولكن غير مكتملة فيما يتعلق بصحة الفم. وكان أكثر من (85.0٪) من المعلمات على بينة من التدابير الوقائية للحفاظ على صحة الفم الجيدة وكذلك معرفة التأثير السيئ لإهمال نظافة الفم. حوالي (65.0٪) من المعلمات كان لديهن الوعي حول مكونات الصفيحة الجرثومية واثارها السيئة. وفي الوقت نفسه، (45.0٪) منهن كانوا على بينة من علامات تسوس الأسنان، فيما كان (32.5٪) منهن على بينة من فوائد استخدام فرشاة الاسنان الصحيح والمنتظم على اللثة. لم يلاحظ وجود اختلافات واضحة فيما يتعلق بالقيم المتوسطة لتسوس الاسنان، الصفيحات الجرثومية ومؤشرات اللثة للمعلمات فيما يخص مستوى معارف المعلمات، ومع ذلك، تم العثور على علاقة إيجابية بين الاساليب والممارسات المفضلة ومتوسط القيم لتسوس الاسنان، الصفيحات الجرثومية ومؤشرات اللثة.

الاستنتاجات: أظهرت عينة المعلمات اللواتي شاركن بالدراسة معرفة كافية ولكن غير مكتملة لصحة الفم مع وجود العديد منهن ممن يتبنين أساليب وممارسات غير صحيحة ما يؤشر وجود حاجة واضحة وفورية لبرنامج تعليمي متكامل لمعلمات رياض الأطفال حول المعرفة الأساسية لصحة الفم والممارسات المواتية. علاوة على ذلك، يمكن للممارسات الصحية للمعلمات أن تؤثر بشكل إيجابي على حالتهن الصحية الفموية.

كلمات البحث: الأثر، معارف صحة الأسنان، الأساليب، الممارسات، معلمات رياض الأطفال.