

Oral Hygiene: Association between knowledge and Practice among school going children in Ajman, United Arab Emirates

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Abstract

Introduction: Oral health is an integral component in the general health of an individual and has become a major public health issue with a substantial social impact.

Objectives: The association between knowledge and practice regarding oral hygiene among school children is assessed in this research.

Materials and Methods: The present study was conducted in a single school, United Arab Emirates. A cross-sectional research design was adopted to achieve the objectives. Consent from the parents' of the participating children was obtained before the administration of the questionnaire. The questionnaire included questions relating to socio-demographic characteristics, oral hygiene knowledge and practice. Questionnaires were distributed among all the children studying from grade six to nine. Chi square test was performed to find the association between knowledge regarding oral hygiene measures and practice.

Results: A total of 175 school children participated. All participants were Arab nationals. All children had knowledge on importance of brushing and cent percent practice brushing their teeth. Among the participants who had knowledge on frequency of brushing, 91.9% practiced the correct frequency of brushing. The association observed was statistically significant ($p \leq 0.001$).

Association between the knowledge on type of brush to be used and practice were statistically significant ($p \leq 0.001$). A statistically significant association was observed between knowledge on frequency of changing brush and practice ($p \leq 0.001$). The association observed between knowledge of the method of brushing and practice was statistically significant ($p \leq 0.001$). The association observed between correct knowledge and practice regarding interdental cleaning was statistically significant ($p \leq 0.001$). Association between the knowledge about importance to clean the tongue and practice were statistically significant ($p \leq 0.001$). A statistically significant association was observed between knowledge on frequency of cleaning the tongue and practice ($p \leq 0.001$). The relationship between knowledge and practice showed that when knowledge increases practice also increases.

Conclusion: The study concludes that good knowledge and practice regarding importance of brushing, frequency of brushing, frequency of changing the brush, performing interdental cleaning, and importance of cleaning the tongue was observed.

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Introduction

Oral health is an integral component in the general health of an individual and has become a major public health issue with a substantial social impact¹. Clinical manifestations in the oral cavity are influenced by modifiable and non-modifiable factors. To achieve appropriate general health oral hygiene plays a pivotal role². Oral health can be defined as “a standard of health of the oral and related tissues which enables an individual to eat, speak, and socialize without active disease, discomfort or embarrassment and which contributes to general well-being”³.

Assessment of oral health behaviour in children is important for planning and for evaluation of oral health promotion programs. Maintaining good oral health among school children is very essential to avoid the restriction of activities at home and in the school due to poor oral health. Poor oral health has an impact on the physical, social, and psychological health and decreases the quality of life of school aged children⁴. Studies have reported that increase in knowledge on oral health promotes good oral health practice^{4,5}. It was reported that those who have acquired good knowledge shown good oral health behaviour⁶.

The methodologies of oral hygiene ranges from brushing, inter-dental cleaning, use of mouth wash, and tongue hygiene. Regular tooth brushing is one of the most effective mechanisms to prevent oral sickness. Brushing at least two times daily: once early in the morning and the next before going to bed at night is an ideal practice. Inter-dental cleaning is just as essential as brushing to prevent tooth decay by eliminating food residues present between the teeth. Food residue is the drive force of cavity formation and subsequently teeth are vulnerable to plaque, which attract bacteria and cause them to attack the enamel⁷. In the past 20 years; many industrialized countries witnessed a dramatic decline in prevalence and severity of dental caries between children and adolescents. Once dental care is neglected and oral hygiene depreciates, it becomes the gateway for communicable diseases and more importantly chronic diseases⁵.

Peterson et al. reported that 90% of the school children have experienced dental cavities and could lead to tooth loss at a very young age⁸. Out of which, the girls have a higher percentage of taking care of their oral hygiene, more specifically just brushing their teeth as compared to boys⁸. In the National Oral Health Survey conducted in the UAE the occurrence of dental caries in the permanent teeth of 12-year-olds was estimated to be 54%, while the mean DMFT (number of missing, decayed or filled permanent teeth) for each child was 1.6. The pervasiveness of dental caries in 15-year-olds was 65% and the mean DMFT resulted to be 2.5⁹.

OECD (the Organization of Economic Co-Operation and Development) in 2006¹⁰ found out that Brazil, Russia, Saudi Arabia, United States, France, Italy and Poland have the poorest oral hygiene in the 12-year olds while Britain had a better oral hygiene¹¹⁻¹³. As oral hygiene is the maintenance of the cleanliness of the mouth by flossing or brushing the teeth in order to avoid tooth decays and diseases of the gum. The purpose of this is to avoid the build-up of bacteria and food on the teeth in order to prevent the generation of acids that dissolve the protective layer of tooth, the enamel, and causing holes in the tooth¹².

Oral hygiene should be educated and practiced at early age as it is one of the determinants of the health state later in one's life. Considering the fact that very few studies have been done regarding the knowledge and practices of dental hygiene in Ajman, UAE. Yet another factor is the rise in the number of dental problems in students of this age. Hence, the association between knowledge and practice regarding oral hygiene among school children is assessed in this research.

Materials and Methods

The present study was conducted in a single school in Ajman, United Arab Emirates. The proximity of the school to the university and willingness of students to participate in the research were the basis for selection of the school. The students were of Arab nationality, and all children attending the school from grade six to nine participated in this study. A cross-sectional research design was adopted to achieve the objectives. Consent from the parents' of the participating children was obtained before the administration of the questionnaire. The study was conducted over a period of six months. Questionnaire was prepared in English language and translated to Arabic language for the convenience of the study population. Questionnaire was back translated. The questionnaire included questions relating to socio-demographic characteristics, oral hygiene knowledge and practice. The questionnaire was pilot tested before finalizing the questionnaire.

Questionnaires were distributed among all the children studying from grade six to nine. Anonymity and confidentiality was maintained by asking the participants not to write any information revealing their identity in the questionnaire. Analysis was performed using SPSS version 21. Chi square test was performed to find the association between knowledge regarding oral hygiene measures and practice.

Results

A total of 175 school children participated, of which 89 (50.9%) were of above 13 years. The participant's age ranges between 11 and 15 years. All participants were Arab nationals.

Table 1: Association between correct knowledge and practice on Dental Hygiene (N=175)

| Dental Hygiene | Knowledge | Practice | | | | P value |
|-----------------------------|-----------|----------|------|-----|------|---------|
| | | Yes | | No | | |
| | | No. | % | No. | % | |
| Frequency of brushing | Yes | 136 | 91.9 | 12 | 8.1 | p<0.001 |
| | No | 2 | 7.4 | 25 | 92.6 | |
| Type of brush | Yes | 68 | 82.9 | 14 | 17.1 | p<0.001 |
| | No | 17 | 18.3 | 76 | 81.7 | |
| Frequency of changing brush | Yes | 114 | 96.6 | 4 | 3.4 | p<0.001 |
| | No | 10 | 17.5 | 47 | 82.5 | |
| Duration of brushing | Yes | 37 | 59.7 | 25 | 40.3 | p<0.001 |
| | No | 10 | 8.8 | 103 | 91.2 | |
| Method of brushing | Yes | 16 | 64.0 | 9 | 36.0 | p<0.001 |
| | No | 4 | 2.7 | 146 | 97.3 | |

All children had knowledge on importance of brushing and cent percent practice brushing their teeth. Among the participants who had knowledge on frequency of brushing, 136 (91.9%) practiced the correct frequency of brushing. Among those who did not have knowledge on frequency of brushing only two (7.4%) were practicing the correct frequency of brushing. The association observed was statistically significant ($p \leq 0.001$).

Association between the knowledge on type of brush to be used and practice were statistically significant ($p \leq 0.001$). Among the participants who had knowledge on type of brush to be used, 68 (82.7%) were using the correct type of brush. Among those who had no knowledge regarding the correct type of brush to be used only 17(18.3%) were using correct type of brush. With regard to frequency of changing brush, of the 118 participants who had correct knowledge 114 (96.6%) were changing the brush in correct frequency. A statistically significant association was observed between knowledge on frequency of changing brush and practice ($p \leq 0.001$). Of the total participants, 62 had correct knowledge on duration of brushing 31 (59.7%) reported correct practice whereas among those who did not have correct knowledge 10 (8.8%) followed correct practice. The association observed was statistically significant ($p \leq 0.001$). The association observed between knowledge of the method of brushing and practice was statistically significant ($p \leq 0.001$). Among the total participants 25 had correct knowledge on method of brushing, of which 16 (64.0%) were having the correct practice and of those without knowledge 4 (2.7%) reported to have correct practice. Details are given in table 1.

Table 2: Association between correct Knowledge & practice on Interdental Cleaning (N=175)

| Interdental Cleaning & use of mouth wash | Knowledge | Practice | | | | P value |
|--|-----------|----------|------|-----|------|---------|
| | | Yes | | No | | |
| | | No. | % | No. | % | |
| Inter-dental cleaning | Yes | 139 | 94.6 | 8 | 5.4 | p<0.001 |
| | No | 9 | 32.1 | 19 | 67.9 | |
| Use of mouthwash | Yes | 73 | 73.7 | 26 | 26.3 | p<0.001 |
| | No | 11 | 14.5 | 65 | 85.5 | |

The association observed between correct knowledge and practice regarding interdental cleaning was statistically significant ($p \leq 0.001$). Among the total participants 147 had correct knowledge, and of which 139 (94.6%) had correct practice. The correct knowledge on importance of using mouth wash was observed among 73 (73.7%) of those 99 who had knowledge. Among those reported to have no knowledge on use of mouth wash 11 (14.5%) used mouth wash. The association observed was statistically significant ($p \leq 0.001$). Details are given in table 2.

Table 3: Association between correct Knowledge & practice on Tongue Hygiene (N=175)

| Tongue Hygiene | Knowledge | Practice | | | | P value |
|-------------------------------|-----------|----------|------|-----|------|---------|
| | | Yes | | No | | |
| | | No. | % | No. | % | |
| Important to clean the tongue | Yes | 134 | 96.4 | 5 | 3.6 | p<0.001 |
| | No | 21 | 58.3 | 15 | 41.7 | |
| Frequency of tongue cleaning | Yes | 39 | 41.1 | 56 | 58.9 | p<0.001 |
| | No | 11 | 13.8 | 69 | 86.3 | |
| Materials to clean the tongue | Yes | 70 | 81.4 | 16 | 18.6 | p<0.001 |
| | No | 9 | 10.1 | 80 | 89.9 | |

Association between the knowledge about importance to clean the tongue and practice were statistically significant ($p \leq 0.001$). Among the participants who had knowledge on importance of cleaning the tongue, 134 (96.4%) were practicing it whereas among those who had no knowledge regarding the importance of cleaning the tongue 21 (58.3%) used to clean their

tongue. With regard to frequency of tongue cleaning, of 95 participants who had correct knowledge 39 (41.1%) practiced it. A statistically significant association was observed between knowledge on frequency of cleaning the tongue and practice ($p \leq 0.001$). Of the participants, 86 had correct knowledge about the materials used to clean the tongue and 70 (81.4%) reported correct practice whereas among those who did not have correct knowledge 9 (10.1%) had correct practice. The association observed was statistically significant ($p \leq 0.001$). Details are given in table 3.

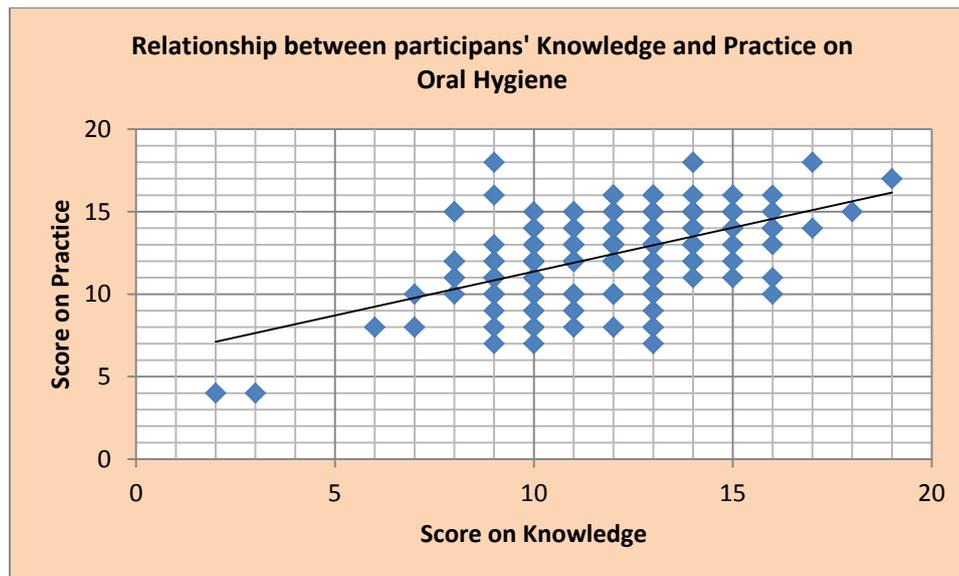


Figure 1: Relationship between participants' Knowledge and Practice on Oral Hygiene.

Figure 1 show the relationship between knowledge and practice where it was observed that when knowledge increases practice also increases. In other words, there is a positive correlation between knowledge and practice with correlation coefficient, $r = 0.486$ and on using Spearman correlation test, a significant correlation with p value < 0.001 was found.

Discussion

This cross-sectional study was conducted to determine the association between knowledge of and practice regarding oral hygiene among school children in Ajman, UAE. Brushing, interdental cleaning, tongue hygiene are the most important tools for better oral health. In the present study all students were aware about the importance of brushing and were practicing it.

In terms of brushing, more than 90% of the participants reported correct practice, which is similar to the studies conducted across the globe. The observed rate is comparable with the studies conducted in Europe and Canada¹⁴, Brazil¹⁵, Sweden¹⁶ whereas the studies reported from Jordan¹⁷, China¹⁸, Nigeria¹⁹, Poland²⁰, Burkina Faso²¹, India²², Mexico²³, Tanzania²⁴, and Kenya²⁵ showed lower percentages than that reported in the present study. These differences in observation could be due to the research methodological differences in the studies and also the socio-cultural and demographic variations within and between countries.

Among the participants who had the knowledge on the type of brush to be used, 68 (82.7%) were using the correct type of brush in accordance to the guidelines given by American Dental Association. The probable reason for use of correct type of brush may be the easy availability of the correct type of brush in the market²⁶. According to our research more than 95% change the brush in correct frequency whereas a study conducted in Pakistan²⁷ reported lower percentage. This may be attributable to the socio-economic characteristics of the study population. A Study conducted in India, showed similar percentage with regard to correct frequency of changing brush²⁸. This similarity in practice may be a result of higher knowledge in oral hygiene. That means those who have adequate knowledge on the importance of brushing, practice the habit of changing their brush at the appropriate time. In the present study 60% practiced correct duration of brushing. It was similar to the study conducted by Suprabha et al²⁸. The categorization of duration of brushing differed in both the studies. With regard to method of brushing 64% were having the correct practice whereas in a study conducted in India²⁹ showed only 11% of the participants practiced the correct method of brushing. Studies have reported that the concept of correct method of brushing develops over the years in an individual.

According to the present study, 95% performed inter-dental cleaning. A lower percentage of inter-dental cleaning was reported in studies from Pakistan²⁷, India²⁹, Turkey³⁰, and Finland³¹. Consumption of non-vegetarian diet leads to 'bothersome between the teeth' may be the possible reason for higher percentage of inter-dental cleaning practice in the present study.

With regard to the use of mouth wash, more than 70% of the participants reported the use of mouthwash and a similar result was observed in a research conducted by Kompalli etal³². Whereas in a research conducted by Mahmoud et al³³. reported a lower percentage as compared to the present study. It was reported in the present study that more than half of the participants used to clean their tongue and it was in accordance with the study conducted by Kompalli etal³². The major limitation in this study is that as it is a self-reported data the practice cannot be ensured and the study conducted at single school therefore cannot generalize the findings.

Conclusion

The present study conducted among school children concludes that good knowledge and practice regarding importance of brushing, frequency of brushing, frequency of changing the brush, performing interdental cleaning, and importance of cleaning the tongue was observed. Poor knowledge and practice was observed with regard to duration of brushing, appropriate way to brush the teeth, and use of mouthwash. Future studies with large sample may be conducted.

References

1. Continuous improvement in the oral health in the 21st century- the approach of the WHO Global Oral Health Program. The World Oral Health Report. 2003; Available from URL: http://www.who.int/oral_health/media/en/orh_report03_en.pdf?ua=1
2. Navneet Grewal, Manpreet Kaur, Status of Oral health awareness in Indian children as compared to western children. *J Indian Soc Pedod Prev Dent* 2007;25(1):15-9.
3. Kay E, Locker D. A systematic review of the effectiveness of health promotion aimed at improving oral health. *Community Dent Health*. 1998;15(3):132-44.
4. F. P. Ashley. Role of dental health education in preventive dentistry, in *Prevention of Dental Disease*, J. J. Murray, Ed., pp. 406–414, Oxford University Press, Oxford, UK, 1996.
5. Jayakumary Muttappallymyalil, Binoov Divakaran, Jayadevan Sreedharan, Salini K, Santhosh Sreedhar. Oral health behaviour among adolescents in Kerala, India. *Italian Journal of Public Health* 2009; 6(3):218-224.
6. Salwa A. Al-Sadhan. Oral health practices and dietary habits of intermediate School children in Riyadh, Saudi Arabia. *Saudi Dent J*.2003;15(2): 81-7.
7. Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. *Int Dent J* 2006, 56:61-70
8. Petersen, P. E. Oral cancer prevention and control--the approach of the world health organization. *Oral Oncology* 2009; 45(4-5): 454-460.
9. Gisela L T. Dental Caries. 2014; Available from URL: <http://www.mah.se/CAPP/Country-Oral-Health-Profiles/EMRO/United-Arab-Emirates/Oral-Diseases/Dental-Caries>.
10. Oral hygiene statistics. 2014; Available from URL: <http://www.statisticbrain.com/oral-hygiene-statistics>.
11. Oral health & obesity policy brief. 2014; Available from URL: http://www.childrennow.org/uploads/documents/oral_health_brief_022011.pdf
12. Oral Health. World health organization. 2013; Available from URL: http://www.who.int/oral_health/objectives/en/
13. Al-Beirut. Oral health in Syria-World Health Organization. *International Dental Journal* 2004;54:383–388.
14. Kuusela S, Honkala E, Kannas L et al. Oral hygiene habits of 11-year-old schoolchildren in 22 European countries and Canada in 1993/1994. *J Dent Res*. 1997;76:1602–9.
15. Vettore MV, Moysés SJ, Sardinha LM et al. Socioeconomic status, tooth brushing frequency, and health-related behaviors in adolescents: an analysis using the PeNSE database. *Cad Saude Publica*. 2012;28:101-13.

16. Jensen O, Gabre P, Sköld UM et al. Is the use of fluoride toothpaste optimal? Knowledge, attitudes and behaviour concerning fluoride toothpaste and tooth brushing in different age groups in Sweden. *Community Dent Oral Epidemiol.* 2012;40:175–84.
17. Rajab LD, Petersen PE, Bakaeen G, Hamdan MA. Oral health behaviour of schoolchildren and parents in Jordan. *Int J Paediatr Dent.* 2002;12:168-76.
18. Zhu L, Petersen PE, Wang HY, et al. Oral health knowledge, attitudes and behaviour of children and adolescents in China. *Int Dent J.* 2003;53:289-98.
19. Kolawole KA, Oziegbe EO, Bamise CT. Oral hygiene measures and the periodontal status of school children. *Int J Dent Hyg.* 2011;9:143-48.
20. Wierzbicka M, Petersen PE, Szatko F et al. Changing oral health status and oral health behaviour of schoolchildren in Poland. *Community Dent Health.* 2002;19:243-50.
21. Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. *Int Dent J.* 2006;56:61-70.
22. Gupta T, Sequeira P, Acharya S. Oral health knowledge, attitude and practices of a 15-year-old adolescent population in Southern India and their social determinants. *Oral Health Prev Dent.* 2012;10(4):345-54.
23. Casanova-Rosado AJ, Medina-Solís CE, Casanova-Rosado JF, Vallejos-Sánchez AA, Minaya-Sánchez M, Mendoza-Rodríguez M, Márquez-Rodríguez S, Maupomé G. Tooth brushing frequency in Mexican schoolchildren and associated socio-demographic, socioeconomic, and dental variables. *Med Sci Monit.* 2014 Jun 7;20:938-44.
24. Carneiro L, Kabulwa M, Makyao M et al. Oral health knowledge and practices of secondary school students, Tanga, Tanzania. *Int J Dent.* 2011;2:1-6.
25. Okemwa KA, Gatongi PM, Rotich JK. The oral health knowledge and oral hygiene practices among primary school children age 5-17 years in a rural area of Uasin Gishu district, Kenya. *East Afr J Public Health.* 2010 Jun;7(2):187-90.
26. Brushing your teeth. American Dental Association. 2014, Available from URL: <http://www.mouthhealthy.org/en/az-topics/b/brushing-your-teeth>
27. Khan A, Khan M, Khan A. A. Oral Health Related Knowledge, Attitude and Practices among Patients-A Study. *Pakistan Oral & Dental Journal* 2010;30(1):186-191.
28. Suprabha B S, Rao A, Shenoy R et al. Utility of knowledge, attitude, and practice survey, and prevalence of dental caries among 11- to 13-year-old children in an urban community in India. *Global Health Action* 2013;6:20750-7.
29. Mehta A, Pradhan S, Pradhan S et al. The oral hygiene habits and general oral awareness in public schools in Mumbai. *International Journal of Laser Dentistry* 2013; 3(2): 60-67.

30. Kirtiloglu T, Yavuz US. An assessment of oral self-care in the student population of a Turkish University. *Public Health* 2006;120(10):953-7.

31. Honkala E, Rajala M, Rimpela M. Oral hygiene habits among adolescents in Finland. *Community Dentistry and Oral Epidemiology* 2006;9(2):61-8.

32. Kompalli Pratap V, Mahalakshmi M. Knowledge, Attitude and Practices of School children and teachers of Khammam towards Oral Hygiene. *WebmedCentral DENTISTRY* 2013;4(2):1-6.

33. Mahmoud K. Al-Omiri, Ahed M. Al-Wahadni, Khaled N. Saeed. Oral Health Attitudes, Knowledge, and Behavior among school children in North Jordan. *Journal of Dental Education* 2006;1:179-187.