ORIGINAL ARTICLE

Oral Health Knowledge and Oral Hygiene Practices among Private and Public School Teachers of Karachi City

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ABSTRACT

Background: Oral health education and promotion at the level of school is considered as priority for school-children since primary level of learning begins from school. Furthermore, school-teachers serve as an institution for motivating their school-children on daily basis to achieve healthy principles of living. In addition, it has also been suggested that spreading oral health awareness by approaching school-teachers have shown to be cost effective and practical policy.
Objective: To determine school-teacher's oral health knowledge and oral hygiene practices among private and public schools of Karachi city.
Methodlogy: A cross sectional study of 165 school-teachers, were conducted among nine different towns of Karachi city. At the first stage, nine towns out of eighteen towns were selected randomly through cluster sampling. In the next stage, from each selected town one private and one public school were identified randomly. Selection of school-teachers were performed through non probability convenience sampling. After selection subjects were requested to fill a validated self reported structured close ended questionnaire related to their oral health knowledge and oral hygiene practices.
Results: Regarding oral health knowledge and oral hygiene practices, the mean scores of oral health knowledge in between public and private school-teachers (Mean difference = -2.2, 95% CI -2.45- -1.95) and was statistically significant (p=0.00) whereas, the mean scores of oral hygiene practices in between them (Mean difference = -0.64, 95% CI -0.78- -0.49) was statistically significant (p=0.00). Furthermore, overall scores of school-teacher's (n=165) oral health knowledge and oral hygiene practices were found to be inadequate followed by poor practices.
Conclusion: The conclusion drawn from the study were that school-teacher's oral health knowledge and oral hygiene practices were also found to be inadequate and poor. Hence, there is an urgent need for training and motivation of school-teacher's concerning oral health education and promotion through school based community outreach programs.

Key words: Private and public school teachers, oral health knowledge, oral hygiene practices.

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INTRODUCTION

Oral health education and promotion is considered as a priority for school-children since they are at a high risk for dental diseases predominantly dental caries and gingival diseases; at the age of mixed dentition[1,2]. Many developing countries introduced school based oral health education program in order to control the growing burden of dental diseases, because school plays an incredibly significant role in a child's life by empowering him/her to make a peculiarity between good and bad choices along with expanding their knowledge and self hygiene practices related to their life-style[3]. School education is the primary level of learning, which plays an essential role in an individual's life. Considering this aspect, WHO instigated a Global School Health proposal in 1995 emphasizing on importance of school along with health education (such as improvement of general as well as oral health) for school-children's as providing awareness at this stage has always proven to be beneficial for the community[1,2].

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Schools serve as precious platform for oral health promotion among school children and reach over one billion children universally[4,5]. Numerous studies have been reported from developed and developing countries, revealing that because of health promotional activities and provision of oral care services within schools, enhancement have been observed in school children's oral health knowledge, approach and self performances along with their oral health status[6-8]. Thus, it is evident from later mentioned data that school based oral health plans are beneficial for school-children's growth but also there must be someone who can be trained and capable to deliver oral health knowledge and build up self practices among school-children.

For this purpose, school teachers have a lot to do with oral health education programs at school levels in their localities. As schools are found to be a very good opportunity with high competence of being supportive for programs involving oral health promotion and preventive dentistry for children[9]. In addition, primary school-teachers play a key role to create learning opportunities within as well as outside class rooms and are responsible to build up a child in a way so that they can be productive and recognize enduring liability for their well being and social activities[10]. A study from India on school-teachers had stated that, as they have enough educational skills as well as they are in contact with school-children , thus if adequate training has been provided to them, then they can be involved energetically in delivering oral health awareness and promotional education among their school-children[11].

Globally several studies on school-teacher's knowledge and self practices from developed countries had reported that although school-teachers have satisfactory oral health knowledge and self practices and they were willing to spread oral health knowledge among their school-children as well as discuss oral hygiene of school-children's with their parents[12,13]. On other hand, statistics from developing countries revealed that school-teachers do have desirable knowledge about fluoride, dental caries, tooth brushing, dental visits, harmful effect of junk foods with fizzy drinks commonly taken by children’s in break timings, but they lack appropriate oral health knowledge about etiology of plaque, gingivitis, caries, tooth ache and their consequences, in addition most of them had shown satisfactory levels of self oral hygiene practices, that is according to some studies about more than 60% of school-teachers brush daily[10-16]. In addition, some school-teachers were willing to acquire formal training so that they can enhance their own oral health knowledge and self practices before educating their school- children[12,17].

As far as Pakistan is concerned oral health related activities with in schools are found to be sporadic with its execution, that is restricted to few privileged schools only, which themselves have competence to arrange oral health related seminars and lectures as well as conduct routine dental examinations for their school-children[18]. On other hand, in government school settings, policies lack assimilation of significance about general as well as oral health concerns. Nevertheless, in order to accomplish consistent oral health awareness among school-children and bring equity in availing oral health services like other developing countries it has been suggested to endorse an oral health education, promotional activities as well as preventive strategies in to our present schooling system nation-wide, so that all schools irrespective of their locality in urban or rural areas, public or private sector, cantonment or civilian category, can be equally beneficent[18].

Locally in Pakistan we have limited data available on school-teacher's knowledge, attitude and self practices so much so that to date only a single study was performed in 2001, had reported that majority of the secondary school-teachers have knowledge related to dental caries however, their self practices was found to be unsatisfactory[3]. Another study; after a huge gap was conducted in 2011 among public school-teachers and reported that oral health knowledge regarding dental decay and its consequences were found to be unsatisfactory, however they were informed about importance of dental visits and benefits of fluoride but they rarely visited the dentist and only few of them had experienced of visiting the dentist as well as their self oral hygiene practices were found to be satisfactory as more than 50% of them brushed their teeth twice daily[3]. Furthermore another similar study was reported in 2013 on preschool-teachers had revealed that 77% of school-teachers had positive oral health knowledge about dental caries and majority 67% of them had recognized that bacteria is the main causative agent, as well as about more than fifty percent of them had stated satisfactory oral hygiene practices that is 62% of them used to brushed their teeth twice daily[12]. It has been manifested from the previous studies that infrastructure concerning school education in our country exists already, but in order to develop it into "Health Promoting Schools"; it is necessary to reorganize and restructure it in terms of faculty, knowledge and functioning.

OBJECTIVES

To determine school-teacher's oral health knowledge and oral hygiene practices among private and public schools of Karachi city.

METHODOLOGY

It was an observational descriptive cross sectional study, performed in Karachi city. A total sample of 165 school-teachers were selected through non probability convenience sampling, total duration of study was eighteen months, sample selection was based on inclusion criteria that is all the subject and class teachers who return consent forms were chosen. However, all those school-teachers who were absent on the day of data collection or did not return the consent form were excluded from the study. Sampling technique that was used in the study was two step cluster sampling. In first step, nine towns out of 18 towns were selected randomly. In the next stage from each selected town we identified one private and one public school randomly. The selected towns were Sadder, Jamshed, Gulshan Iqbal, Liaquatabad, North Nazimabad, Keemari, Malir and Shah Faisal. Furthermore, the class and subject teachers of primary and secondary school-children from private and public schools were selected to fill the modified self-reported questionnaire that was validated by pilot study before, related to their oral health knowledge and oral hygiene practices.

After selecting the schools, permission to conduct the study was taken from school's Principal. As well as consent forms were distributed amongst class and subject teachers of primary and secondary school children to take their permission for being part of the study. After taking permission, questionnaires were distributed among teachers for assessing their oral health knowledge and oral hygiene practices. The questionnaire was comprised of two parts; first part included the socio-demographic variables followed by variables related to oral health knowledge and oral hygiene practices. Institutional Review Board of Dow University of Health Sciences, was asked to provide ethical approval for the study. Moreover, a written approval from school-teachers were also obtained. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

The data were entered and managed by using Statistical Package for Social Sciences Version 17. Descriptive analysis of the data including frequencies, percentages and means of school-teacher's oral health knowledge and oral hygiene practices. Knowledge scale was used in measuring knowledge which was based on 23 items containing statements about oral health knowledge related to dental plaque, caries, periodontal diseases. For each correct answer score 1 was given, while score of 0 for no and I don't know. A cut off point for inadequate knowledge was from 16-28 while for adequate knowledge was 29 and above. Practices scale was based on 12 questions relevant to school teacher's self oral hygiene practices, delivering of oral health related lectures as well as encouraging their own school children for regular tooth brushing. Each correct response was scored as 1while no and I don't know was scored as 0. A cut off point for bad oral hygiene practices were 19 and less and for good oral hygiene practices score of 20 or above was kept[19]. Then comparisons among oral health knowledge and oral hygiene practices of private and public school-teachers were performed by using independent sample T test. Level of significance at p=0.05.

RESULTS

A total of n=165 school-teachers were interviewed through a self reported structured questionnaire regarding their oral health knowledge and oral hygiene practices. Socio-demographical details are mentioned in Table I.

Table I: Socio-demography of School-teachers

Variable	Frequency (n=165)	Percentage %	Mean ± SD
Gender			
Male	34	20.6	
Female	131	79.4	
Class			
1	86	52.1	
6	79	47.9	
Teaching Qualification			
Intermediate	22	13.3	
Bachelors	85	51.5	
Masters	58	35.2	
Teacher's Age			
=30	85	51.5	29.5±6.21
=30	80	48.5	
Teaching Experience			
=10	112	67.9	7.2±5.2
=10	53	32.1	

Regarding knowledge about what does dental plaque mean; sixty eight percent (n=112) stated that it's a soft debris on teeth, while 13.9 % (n=23) of them stated staining of teeth, 12.1% (n=20) described it as a hard debris on teeth and 6.1 % (n=10) had no knowledge about dental plaque. Thirty nine percent (n=65) of school-teachers acknowledged that dental plaque leads to dental caries, 30.3% (n=50) stated it results in inflammation of teeth, 24.2% (n=40) confirmed its relation to staining of teeth while 6.1% (n=10) were

those who had no knowledge that dental plaque is a causative factor for dental diseases. Eighty seven percent (n=144) of school-teacher's had basic knowledge about Dental Caries or Dental Decay and only 12.7% (n=21) responded negatively. Regarding identification of the causative factors for dental caries according to their knowledge; 57% (n=94) stated that dental plaque leads to dental caries, 84.2%(n=139) described consumption of sweetened food, 80.6% (n=133) reported inadequate tooth brushing, 79.4% (n=131) stated poor oral hygiene and 58.2% (n=96) acknowledged that excessive intake of fizzy drinks were related to the incidence of dental caries. As for their knowledge about periodontal (gum) diseases, fifty two percent (n=86) of school-teachers responded affirmatively while 47.9% (n=79) reported negatively. Concerning causes of periodontal diseases, 30.3% (n=50) of school-teachers responded dental calculus, 39.4% (n=65) with mal-align teeth, 48.5% (n=80) with improper tooth brushing, 12.7% (n=21) with advancing age and 32.7% (n=54) selected hard food stuff in their response.(Table II A-B)

Table II-A: Descriptive Analysis on School- teacher's Oral Health Knowledge

Variable	Frequency (n=165)	Percentage %
Plaque means		
Soft debris on teeth	112	67.9
Staining of teeth	23	13.9
Hard debris on teeth	20	12.1
I do not know	10	6.1
Plaque leads to		
Inflammation of gums	50	30.3
Staining of teeth	40	24.2
Dental caries	65	39.4
I do not know	10	6.1
Knowledge of dental caries		
Yes	144	87.3
No	21	12.7
Causes of dental caries		
Dental plaque	94	57.0
Yes	23	13.9
No	48	29.1
I do not know		
Sweetened food		
Yes	139	84.2
No	13	7.9
I do not know	13	7.9
Inadequate tooth brushing		
Yes	133	80.6
No	11	6.7
I do not know	21	12.7
Poor oral hygiene		
Yes	131	79.4
No	15	9.1
I do not know	19	11.5
Excessive intake of fizzy drinks		
Yes	96	58.2
No	17	10.3
I do not know	52	31.5

Table II-B: Descriptive Analysis on School-teacher's Oral Health Knowledge

Variables	Frequency (n=165)	Percentage %
Knowledge of periodontal diseases		
Yes	86	52.1
No	79	47.9
Causes of periodontal diseases		
Dental calculus		
Yes	50	30.3
No	27	16.4
I do not know	88	53.3
Mal-aligned teeth		
Yes	65	39.4
No	22	13.3
I do not know	78	47.32
Improper tooth brushing		
Yes	65	39.4
No	22	13.3
I do not know	78	47.3
Growing age		
Yes	21	12.7
No	34	20.6
I do not know	110	66.7
Hard food stuff		
Yes	54	32.7
No	22	13.3
I do not know	89	53.9

Seventy percent (n=116) of school-teachers brushed their teeth at-least twice a day and almost 89.1 % (n=147) among them used a tooth paste for cleaning their teeth. Thirty seven percent (n=61) stated that they always rinse their mouth after meals while 30.3 % (n=50) of them rinsed occasionally and 32.7% (n=54) were those who never rinsed their mouths. Responding to the question concerning frequency of sweet consumption during a day, 49.1% (n=81) of school-teachers stated that they take occasionally while thirty eight percent (n=62) reported once a day and 13.3% (n=22) of teachers took sweets with every meal. Sixty three percent (n=105) of school-teachers responded negatively about discussion of oral hygiene practices with school-children while only 36.4% (n=60) gave affirmative answers and amongst those who replied affirmatively, 25.5% (n=42) stated that they discussed them occasionally within classroom. On asking about reason of not discussing oral hygiene practices with school-children, 55.2% (n=91) of school-teachers responded that school administration does not allow whereas 44.2% (n=73) of them did not answer. Seventy six percent (n=125) stated that they do not discuss oral hygiene practices with parents while 24.2% (n=40)

Table III: Descriptive Analysis on School- teacher's Oral Hygiene Practices

Variables	Frequency (n=165)	Percentage (%)
Frequency of teeth brushing		
Once daily	39	23.6
Twice daily	116	70.3
More than twice daily	10	6.1
Tooth cleaning aid		
Tooth paste	147	89.1
Manjan	07	4.2
Maswak	09	5.5
Tooth powder	02	1.2
Frequency of mouth rinse after meals		
Always	61	37.0
Never	54	32.7
Sometimes	50	30.3
Frequency of sweet food		
In every meal	22	13.3
Once a day	62	37.6
Sometimes	81	49.1
Discussion oral hygiene practices with school children		
Yes	60	36.4
No	105	63.6
Frequency of discussion oral hygiene practices		
Occasionally	42	25.5
Weekly	03	1.8
Monthly	15	9.1
Never	105	63.6
Reason of not discussing oral hygiene practices		
School admin does not allow	91	55.2
School children are not interested	01	0.6
No reason	73	44.2
Discussion of oral hygiene practices with parents		
Yes	40	24.2
No	125	75.8
Encourage school children regular tooth brushing		
Yes	82	49.7
No	83	50.3

gave positive replies. Fifty percent of school-teachers (n=82) encouraged their school-children for regular tooth brushing whereas same number of school-teachers that is 50.3% (n=83) responded negatively.(Table III)

Mean score of knowledge and practices of school teachers were found to be 67.3%(±0.47) and 61.8%(±0.48), respectively showed that majority of them had inadequate oral heal knowledge followed by poor oral hygiene practices.(Table IV)

However as far as oral health knowledge and oral hygiene practices among public and private school-teacher's were concerned, the mean scores of oral health knowledge among public school-teacher's were more than private school-teacher's (Mean difference = -2.2, 95% CI -2.45- -1.95) and statistically significant (p=0.00) whereas, the mean scores of oral hygiene practices in between public school-teacher's were more than private school-teacher's was (Mean difference = -0.64, 95% CI -0.78- -0.49) and statistically significant (p=0.00).(Table V)

Table V: Difference b/w School-teachers Oral Health Knowledge & Oral Hygiene Practices (public vs. private

Variable	Mean difference	95% CI of the Difference		p-value
		Lower limit	Upper limit	
Teacher's Knowledge	-2.2	-2.45891	-1.95607	0.00*
Teacher's Practices	-0.64	-.78974	-.49359	0.00*

Table IV: Oral health knowledge and oral hygiene practices scores of School-teachers (n=165)

Variable	Total score	Mean ±SD	Adequate knowledge = 28		Inadequate knowledge = 27	
Knowledge	23	1.32(±0.47)	Frequency (n) 54	Percentage (%) 32.7	Frequency (n) 111	Percentage (%) 67.3
			Good practices = 25		Poor practices = 12	
Practices	12	1.38(±0.48)	Frequency (n) 63	Percentage (%) 38.2	Frequency (n) 102	Percentage (%) 61.8

DISCUSSION

Among the total sample of school-teachers that participated in the study, more than half of them were belonging from private school setup while less than half were from public school; selected amongst nine different towns of the Karachi city. Majority of participants were females which indicate that these are preferably employed in educational institutes at a higher proportion compared to males[3,11,20]. Concerning oral health knowledge, majority of the subjects possessed basic awareness about dental plaque and its outcomes, dental caries and causes of it. These findings were encouraging and comparable to the studies reported from other parts of world[3,12,15,17,21,22]. Most likely the reasons behind affirmative knowledge among school-teachers in regards to oral health might be, dental professionals or conquered it through media or health-based programs or magazines. Furthermore, greater portion of school teachers also showed lack of knowledge regarding causative agents of periodontal disease. These findings were in concurrence with reports from other studies[15,23] as well as from a local study[3], thus indicating that awareness related to gum diseases among school-teachers were not well disseminated.

Regarding oral hygiene practices among school-teachers, majority of them used to brush twice a day preferably using combination of tooth-brush and tooth paste over miswak, these findings were in accordance with other studies[11,20,24] whereas contradictory with practices of Saudi school-teachers[17], as they were using miswak as a replacement for tooth brush, may be because they wanted to follow religious practices since miswak is considered as a Sunnah in Islam. Majority of the school-teachers responded negatively in regards to the discussion of oral hygiene practices among their school-children or with their parents, these findings were in disagreement with the reviewed literature[12,22,25,26] where half of the school-teachers from present study have affirmed that they encouraged their school-children about regular tooth brushing whereas half of them responded negatively. One of the prominent aspect of this study was the disclosure of school authorities' negligent attitudes in both private and public set up; towards arrangement of oral health education and promotional seminars for their school-children as well as lack of dental facility services almost in every school representing nine different towns of Karachi city.

Over all oral health knowledge and oral hygiene practices of school-teachers were found to be in-adequate and poor respectively. Given that the findings of current study regarding school-teacher's knowledge and school-children's dental caries status were also similar to Wyne et al[17]. It may be important to examine in future research whether teachers spend some time in educating students about their general health followed by oral health particularly in our setup. Furthermore, it might be appropriate to include the oral health related messages in daily routine teachings as a very recent Indian study has shown that schools where teachers were trained for health education, their children had significantly lower prevalence of dental caries and mean plaque index[27]. Statistically significant results were obtained among school teacher's oral health knowledge and oral hygiene practices in between private and public setup, these findings were not in agreement with study reported by Manjunath et al[11]. The reason may be in current study sample drawn from nine different towns which have varying socio economic background as well as Karachi itself is multicultural metro city where people from different backgrounds live.

CONCLUSION

The conclusions drawn from the study is that school teachers had inadequate oral health knowledge followed by poor oral hygiene practices therefore they were failed to disseminate them in their school children through lectures or oral health workshops. Thus current study had highlighted an urgent need that all school-teachers have to upgrade their oral health knowledge and oral hygiene practices in order to disseminate them equally among school-children thereby empowering upcoming generation to take good care of their oral hygiene so that it may have affirmative impact on their oral health status. Hence, it is recommended that we have to raise awareness among school teachers oral health knowledge and oral hygiene practices through an oral health education sessions and community outreach programs in both public and private school settings of the country.

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