INTRODUCTION:

Globally, schools reach over 1 billion children and serve as a valuable platform for oral health promotion of school children. The school-going age is the most influential period of a child’s life and it is this period during which the children develop skills, beliefs and attitudes which they practice throughout their lives. Hence, schools strongly influence children’s growth and welfare. Oral health promotion and education can be taught as well as reinforced throughout the school period.

Children spend substantial period of their life at school in close proximity with their schoolteachers. Hence, it is easier for teachers to influence their diet and hygiene practices as they are at a developing stage. Schoolteachers can play an important role in influencing children to adopt healthy oral lifestyles as well as imparting awareness about the etiology and prevention of common oral ailments. This can be a reality, if schoolteachers themselves practice healthy oral hygiene and lifestyle; have a thorough and in-depth knowledge about common oral diseases and their modes of prevention. Therefore, provision of oral health knowledge to the children by their teachers at the preschool 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 the basic oral
hygiene practices and are most prone to dental caries.

Previous studies concerning primary schoolteachers’ knowledge and attitudes towards dental health conclude that most school teachers had a positive attitude towards educating children about oral health as well as towards school-based oral health promotions and the school teachers had a fair amount of idea about poor oral health conditions of children and were eager to get involved in the oral health education programs. They were keen to receive training in order to improve their level of acquaintance concerning oral health issues.

A local study was performed to assess the oral health knowledge and oral hygiene practices of primary schoolteachers of Sahiwal, Punjab province and reported that 80% of male and 95% of female teachers of secondary school had knowledge about the relationship between dental plaque and dental caries whereas they rarely visited the dental office for routine dental check-up or any pathology and above all, only a small proportion of them had an experience of dental treatment.

In our settings, no relevant literature is available regarding oral health knowledge, attitude and practices of preschool teachers and hence, in the light of aforementioned information, there is a need to conduct a nationwide study which may be able to gauge teacher’s oral health knowledge, and self practices. These, in turn, will aide in laying the platform for school based oral health promotion programs in our educational system.

Hence, the present investigation is being carried out with an initiative to assess the level of knowledge, attitude and practices regarding dental health of preschool teachers of Saddar Town, Karachi, Pakistan.

**METHODOLOGY**

The current study was a cross-sectional design type; commencing from August, 2011 up till December, 2011; utilizing a structured self-administered questionnaire to evaluate the oral health knowledge, attitude and practices of preschool teacher’s of Karachi city. Before field administration, the study questionnaire was pre-tested for validation.

Two-stage cluster sampling technique was utilized for study purpose. Saddar Town was selected on the basis of convenience due to its easy approach. Saddar Town has total 11 Union Councils; therefore, each Union Council was regarded as a single cluster. Out of 11 UC’s, six are densely populated (Cluster Group 1) while five have comparatively lesser resident population (Cluster Group 2). In first stage, four sub-clusters from each of the two Cluster groups were selected at random by lottery method and in the second stage, preschools located in eight selected sub-clusters (Union Councils) were identified and a request for participation was sent to their administration. From each sub-cluster, first two schools to give consent for the study were chosen, therefore the sampling frame comprised of total sixteen preschools. From each selected preschool, a list of tutors was acquired and each teacher was assigned a serial number. Then, seven teachers from each preschool were randomly selected through lottery method to minimize biasness. Hence, study sample was drawn to be 112 teachers. Teachers of both genders tutoring the preschoolers, employed in chosen school and those providing consent were requested to fill the questionnaire.

The study tool comprised of a pre-tested self administered questionnaire based on 29 close-ended questions in English language regarding participant’s demographic information, gauging their knowledge towards etiology of dental caries and its risk factors, attitude towards importance of oral health and disseminating such knowledge to children as well as their personal oral hygiene practices.

Statistical Package for Social Sciences software (SPSS) version 17 was utilized for data analysis. Descriptive data included frequencies, percentages, means, and standard deviations of pre-school teachers’ socio-demographics, knowledge, attitude and practices towards oral health.

To draw comparative analysis between the outcome variable and socio-demographic factors of schoolteachers, One-way ANOVA was utilized. Ethical approval for the research was obtained from Ethical Review Board of Dow University of Health Sciences in addition to participation consent from preschool teachers.

As per authors preference, a cut off mark of 50% was defined for differentiating amongst schoolteachers possessing either satisfactory or unsatisfactory knowledge regarding dental caries as well as factors leading to it.

**RESULTS**

A total of 112 teachers were approached for the questionnaire-based study out of which 96 consented for participation hence, the response rate was 86%

**Socio-demography of preschool teachers:** All study participants were females. The mean age of sample was 28 ±8.64 years with 66.7% (64) below 30-year age bracket and 33.3% (32) over 30-years old. Around nine percent (9) of teachers had received secondary school education, 33% (32) had higher education, 47% (45) had received
graduate degree whereas only ten percent (10) were postgraduates. Teaching experience of sixty two percent (60) individuals ranged between 1-5 years, 25% (24) had 5-10 years experience while the remaining sample had been teaching for more than 10 years.

**Oral health knowledge, attitude of teachers and its dissemination to children:*** About 77% (74) preschool teachers were aware of dental caries/dental decay while 67% (65) of them recognized it to be of bacterial origin whereas 28% (27) of participants had no knowledge concerning the etiology of dental caries (see Table 1).

### Table 1: Oral health knowledge and attitude of preschool teachers

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>FREQUENCY (n = 96)</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know what is Dental Caries?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>74</td>
<td>77.1</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>22.9</td>
</tr>
<tr>
<td>Know the cause of Dental Caries?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69</td>
<td>71.9</td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>28.1</td>
</tr>
<tr>
<td>Discuss OH practices with students:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>90</td>
<td>93.8</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>6.3</td>
</tr>
<tr>
<td>If yes, frequency:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Every 6 months</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Monthly</td>
<td>17</td>
<td>17.7</td>
</tr>
<tr>
<td>Weekly</td>
<td>65</td>
<td>67.7</td>
</tr>
<tr>
<td>Daily</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>4</td>
<td>4.2</td>
</tr>
<tr>
<td>Encourage students to brush regularly:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>93</td>
<td>96.9</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Your responsibility to assess students oral health:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>94</td>
<td>97.9</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Regarding risk factor identification for dental caries, majority cited confectionaries (86.5%, 83) and inappropriate tooth-brushing (81.3%, 78) while plaque (56.3%, 54), poor oral hygiene (66.7%, 64), and sweetened food and drinks (63.5%, 61); though at a comparatively lower percentage, were also recognized as causes of dental decay. Only 21% (20) of teachers affirmed that low socio-economic status can also lead to dental caries (see Figure 1).

**Figure 1: Risk factors of dental caries identified by teachers.***

Ninety-four percent (90) teachers discussed oral hygiene practices with their respective students, out of which 67% (65) held discussions once a week. Ninety-seven percent (93) participants acknowledged that they persuade children to brush their teeth regularly. Almost all teachers 98% (94) realized their responsibility towards assessing student’s oral hygiene (see Table 1) and 85% (82) felt that children possessed a positive behavior towards their own oral hygiene while ten percent (10) of teachers could not judge children’s attitude related to their oral health. Sixty-nine percent (66) schoolteachers revealed that parents were not apprehensive about their children’s oral hygiene. Seventy percent (68) of schoolteachers acknowledged that no oral health promotion seminars, lectures or dental check-ups are arranged by school administration and no medical or dental check-up facility exists in majority of schools.

Regarding comparative analysis between teacher’s socio-demographics and their status of knowledge relating to dental caries; no association could be established between age (p-value= 2.74) and teaching experience (p-value= 0.739) of participants with their knowledge status. However, education had a significant effect (p-value= 0.006) on teacher’s knowledge concerning dental caries and its etiology. As far as attitude is concerned, no association (p-value= 0.478, 0.244, & 0.690) could be established with any socio-demographic variable.

**Self oral hygiene (health) practices:*** Sixty-five percent (62) of teachers brushed twice a day and around 99% (95) used a tooth-brush along with a tooth-paste for cleaning their teeth irrespective of toothpaste brand. Fifty-seven percent (57) of them rinsed after meals on regular basis and seventy-four percent (71) respondents did not use any mouth-wash for additional oral health protection.

Four percent (4) of teachers had a habit of consuming tobacco in the form of chalia (betel nut). Majority 84% (81) do not go for routine dental check-ups and most of them (86%) visit a dentist only when troubled by dental problems. Only 20-30% (24-29) teachers experienced dental treatment procedures such as scaling, extractions, fillings, or root canal.

**DISCUSSION**

All the respondents were females due to the reason that at pre-school level female tutors are generally preferred as highlighted in previous reports. Major proportion of
study sample was a mix of graduates and intermediate-educated teachers with only few accomplishing postgraduation whereas none of them had any formal training for undertaking preschool teaching employment. This is in accordance to statistics provided by Ministry of Women Development\textsuperscript{12} which state that educational status of females in Pakistan is lowest in the World with eight percent women completing Intermediate education, five percent Bachelor’s and only 1.4% women attaining a Master’s degree.

Majority of schoolteachers possessed basic knowledge about dental caries and its relation to bacteria. These findings are encouraging compared to schoolteachers of Kosovo\textsuperscript{13} and parallel to reports from other parts of the World\textsuperscript{4,7,8}. Similar percentage recognized the common risk factors for tooth decay and this information corresponds with findings of other studies conducted on the subject.\textsuperscript{5,7,10,14-16} The probable rationalization for such affirmative knowledge might be that teachers had either received such information from dental professionals or attained it through audio-visual oral health-based programs or print media such as newspaper/magazines. Additionally, education level was significantly associated with the knowledge of teachers depicting that as teachers attain higher education, their subsequent knowledge regarding dental caries and its etiology amplify.

Almost every teacher acknowledged of discussing healthy oral hygiene practices with their students and felt that promoting regular tooth-brushing amongst their students is their responsibility; however this activity was not on a regular basis; similar findings have been documented in global literature as well.\textsuperscript{5,7,17-19} Such oral health discussions are sporadic nonetheless encouraging since they illustrate the involvement of school teachers in oral health promotion activities at schools. However, in current study teachers’ observed a negligent attitude of parents as well as school authorities concerning the oral health status and education needs among preschool children and lack of medical/dental services in majority of schools.

Less than two-third school teachers brushed twice a day preferably using combination of a tooth-brush and toothpaste over miswak in the present study, whereas the opposite was practiced by Saudi school teachers\textsuperscript{15}, who used miswak instead. Regarding dental visits, only small proportion reported to visit a dentist routinely and this percentage of dental attendance is lower compared to reports from Middle East\textsuperscript{8,20} but higher then that reported by Bokhari and Almas\textsuperscript{10}. However, such poor dental attendance practice again seems to be universal.\textsuperscript{10,15,20} Although, the schoolteachers recognize the importance of tooth-brushing frequency and use of toothpaste but unfortunately they lack concept of regular dental visits; hence, they cannot be expected to educate their students about its necessity and benefits. Dental treatments were rare among schoolteachers, thereby reflecting a poor perception regarding treatment needs and this percentage is low compared to findings reported in other studies.\textsuperscript{10,19}

The recommendations for promoting oral health at schools were generally optimistic and parallel to the opinion of schoolteachers in other regions of the world\textsuperscript{4,7,9,13} reflecting a positive attitude towards their concept of oral health promotion and how it can be effectively employed in our present school curriculum.

**CONCLUSION**

Preschool teachers of Karachi, Pakistan possess satisfactory knowledge about tooth decay as well as its etiology and along with positive oral hygiene practices; majority of them are actively involved in disseminating oral health education thereby empowering young children to take good care of their oral hygiene which might prove to have favorable impact on their oral health status. However, they lack the concept regarding importance of routine dental visits and had poor perceptions about dental treatment needs.

In the light of above findings, it is recommended to educate and equip teachers for initiating school-based oral health education strategy in our settings.

**ACKNOWLEDGMENTS**

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**COMPETING INTERESTS**

The authors declare that they do not have any competing interests.

**REFERENCES**


