

## Oral Health Awareness and Practices of School Going Children Aged 11 to 16 Years in a Squatter Settlement of Karachi

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### ABSTRACT

**Objective:** To assess the awareness and practices of school going children aged 11 to 16 years regarding oral health and hygiene in a squatter settlement of Karachi.

**Methods:** Data of this cross sectional study was collected by self administered questionnaire from school students of Gulshan e Sikanderabad, a squatter settlement in Karachi. Sample size of 204 was selected by simple random sampling and school going children aged 11 to 16 years were included in the study. The data was analyzed by SPSS version 20.

**Results:** Total 204 students were included in this study with mean age of 14.5 + 1.9 years, of them 140 (68.6%) were males and 64 (31.4%) were females. Significant difference (p= 0.001) was found between the practices and beliefs of students regarding oral health and hygiene. It was observed that gum bleeding, foul smelling, dental caries, plaque formation and tooth loosening were the most common problems faced by almost half of the school students. Chalia (Areca nut) was consumed by majority i.e. 113 (55.4%) of the school students. Cigarette, Gutka and Naswar were also consumed less frequently than chalia but still by notable proportion of students.

**Conclusion:** Students from the schools of this squatter settlement were aware of the importance of maintaining oral health and hygiene and practice them as well; however they were also involved in consuming oral substance abuse despite knowing the damaging outcome of these substances.

**Key words:** School going children, Oral health and hygiene, squatter settlement.

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### INTRODUCTION

Oral health is integral part of general health<sup>1</sup>. Its impact on quality of life in terms of speaking, eating, and socializing without pain and embarrassment is considerable<sup>2,3</sup>. Oral health problems can disrupt sleep and productivity. Children suffering with oral problems are 12 times more likely to have restricted activity days<sup>4</sup>. Literature revealed that more than 50 million school hours per year are lost due to dental problems affecting the overall health and school performance of the child<sup>4,5</sup>. Research by Benzian H showed significant association between untreated dental caries and low Body Mass Index<sup>6</sup>.

Oral diseases like dental caries, periodontal disease, tooth loss, oral mucosal lesions are a significant trouble in high income countries and the burden is growing in low and middle income countries<sup>7</sup>. In all countries the load is significantly higher in poor and deprived populations<sup>8</sup>. Dental caries is the most prevalent dental problem globally affecting 60 to 90% of school children and immense majority of adults. Dental caries is a major problem in industrialized world, Asia and Latin America but less severe and less common in Africa<sup>9,10</sup>. It is one of the most common causes of tooth loss among children and young adults<sup>11,12</sup>.

The existing outline of oral disease shows different risks across countries or in diverse areas within the same country, associated with quality of life, psychosocial and environmental factors, health systems and their execution. In most developing countries like Pakistan, overall population does not gain from systematic oral health care or reputable preventive programs. In some countries the incidence of dental caries has recently grown and may further enlarge due to growing consumption of sugars and/or deficient use

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of fluorides<sup>10</sup>. In some developed countries there is a decline in oral health problems due to better awareness and practices<sup>10</sup>. On the contrary in developing countries like Pakistan it's on the rise largely due to changing lifestyles and dietary patterns accompanied with lack of knowledge and poor attitude regarding oral health<sup>7</sup>. Literature shows that Pakistan is facing a high burden of dental caries and DMFT (decayed missing and filled teeth) score of a 12 year old has increased from 1.2 as reported in 1988 to current score of 1.6<sup>13,14</sup>.

One of the risk factors for poor oral health in south asia is *supari, pan, pan masala and gutka* chewing. Some studies have reported an increase in the use of products of Areca nut among school going children<sup>9</sup>. Since children start substance abuse at a very young age, it becomes a habit and may produce grave impact on their oral as well as general health in later life<sup>10</sup>. Although many studies have been done on knowledge and attitude of young children regarding oral health, less attention has been paid to urban slums and madressa children. Therefore, the objective of this study was to assess the knowledge and practices of children in urban slum.

## METHODOLOGY

This cross-sectional study was first approved by the university ethical review board and then conducted among school children from three schools in Gulshan e Sikanderabad, which is an urban squatter settlement in Keemari area of Karachi.

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 subjects for being included in the study.

A written request letter mentioning the purpose of research and questionnaire in English and in Urdu translation was submitted to school's principal and their approval was taken before data collection. On the basis of 62% awareness of students about gum diseases<sup>14</sup> and at 95% confidence level with 0.07 margin of error; sample size was calculated as 185 by using WHO sample size estimation calculator, however total 204 students both males and females, aged from 11 to 16 year participated in the study that were selected through convenience sampling technique. Student's enrolment list was taken from school administration and questionnaire was distributed among all the present students. Data was collected before the scheduled session in the class and only those students were included in the study that were present on the day of data collection and gave informed consent. A self administered questionnaire was developed after thorough literature search and it was pretested before

final data collection. It comprised of three sections; first section was about demography, second section captured questions on awareness of students regarding oral health and third section assessed the oral hygiene practices of students. Questionnaire was also translated into Urdu to avoid any barrier in its filling by students and data collection personnel provided assistance to students when they didn't understand the language.

Data of the study was entered and analysed by SPSS version 11. All qualitative variables were presented as frequencies and percentages and all quantitative variables were presented as mean and standard deviation. Chi square test was used to find association between qualitative variables and p value less than 0.05 was taken as statistically significant.

## RESULTS

In this study a total of 204 students participated, with mean age of 14.5+ 1.9 years, of them 140 (68.6%) were males while 64 (31.4%) were females. Figure 1 illustrated comparison of belief and actual practice regarding various oral cavity cleaning products. There was significant difference ( $p=0.0001$ ) in their practices and beliefs. According to results, 105 (51.5%) students cleaned their mouth once daily, 87 (42.6%) twice daily (morning and night) while 12 (5.9%) never used any product to clean their mouth. Duration of using any method during each episode of mouth cleaning is presented in figure 1. Students were also inquired about time of the day when they clean their mouth and of them 172 (84.3%) said that at the wake up time, 85 (41.7%) said before going to bed, 88 (43.1%) after meal and 51 (25%) said that before the time when they were leaving home or going out somewhere.

School children were using various products to clean their mouth so they were asked about the reasons for using that product. Quality of the product, religious affiliation, availability, advertisement, attraction, people recommendation and cost effectiveness were the reason narrated by 119 (58.3%), 106 (52%), 86 (42.2%), 84 (41.2%), 78 (38.2%), 77 (37.7%) and 59 (28.9%) respectively. About 12 (5.9%) students said that they change their brush or miswaak in three months while 14 (6.9%) said in a year on the other hand rest of 178 (87.3%) said it depend on the condition of brush or miswaak to change it or not and there was no specific time to change it. Of all, 100 (49%) students learn the habit of cleaning mouth method from their parents, 45 (22.1%) from school and madressa, 21 (10.3%) had self learning while rest of other i.e. 38 (18.6%) learned it from their relatives, friends or siblings. In our sample only 47 (23%) students heard about fluoride and of them 43 (21.1%) said that it can protect teeth.

Table 1 narrated the beliefs and personal practices of students regarding different substance abuse and food items that have any impact on oral health. Significant associations were found between their practices and beliefs for all the items except chalia (p=0.390). Students were asked about the impact of oral health on general body health for which 125 (61.3%) students were affirmative; on the other hand for the impact of general body health on oral health 92 (45.1%) students were assenting. Table 2 shows the problems faced by school students regarding their oral health and its association with different oral substance abuse. None of these associations were significant. In an event of dental problems, 83 (40.7%) visited dentist or doctor while 59 (28.9%) used home remedies and 62 (30.4%) did not took any measure for their dental problems. Source of knowledge regarding oral health and hygiene was stated as parents by 113 (55.4%), friends by 45 (22.1%), media by 25 (12.3%), and school/ madressa by 10 (4.9%) students while 11 (5.3%) did not answered this question.

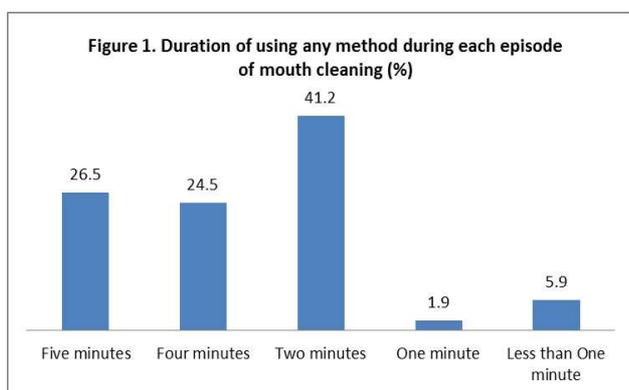
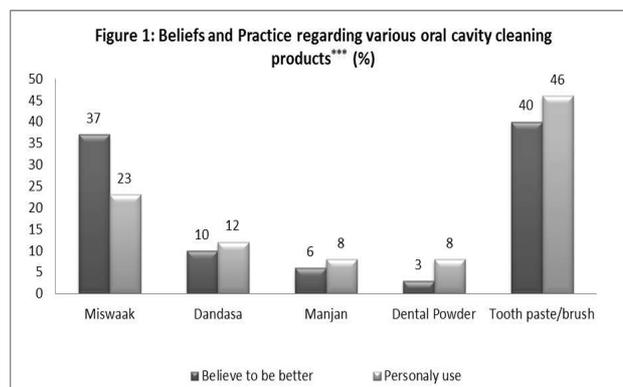


Table 1: Beliefs and Personal Practices regarding Oral Substance Abuse and Food Items (n=204)

	Believe it is bad n (%)	Personally consume it n (%)	Believe it is bad and Personally consume it n (%)	P-value
Oral Substance Abuse				
Cigarette	147 (72.1)	37 (18.1)	23 (11.3)	0.000
Chalia	132 (64.7)	113 (55.4)	74 (36.3)	0.390
Niswaar	112 (54.9)	44 (21.6)	16 (7.8)	0.000
Gutka	127 (62.3)	40 (19.6)	16 (7.8)	0.001
Paan	127 (62.3)	40 (19.6)	23 (11.3)	0.001
Food Items				
Candy	74 (36.3)	154 (75.5)	69 (31.4)	0.000
Chocolates	75 (36.9)	162 (79.4)	63 (30.9)	0.000
Cold Drink	72 (35.3)	152 (74.5)	48 (23.5)	0.000
Packet Juices	59 (28.9)	175 (83.5)	49 (24)	0.000

## DISCUSSION

The study on oral health and hygiene among school children has yielded acceptable results regarding their



\*\*\*P value < 0.05 considered significant, obtained by chi square test

Table 2: Oral Health Problems associated with various oral substance abuse among school students in a Squatter Settlement

Oral Health Problems n (%)	Oral Substance Abuse consumed by students				
	Cigarette n (%)	Chalia n (%)	Niswar n (%)	Gutka n (%)	Pan n (%)
Gum Bleeding 115 (56.4)	20 (10.8)	59 (28.9)	20 (9.8)	23 (11.3)	23 (11.3)
Foul Smelling 113 (55.4)	20 (9.8)	60 (29.4)	21 (10.3)	21 (10.3)	24 (11.8)
Dental Caries 112 (54.9)	19 (9.3)	56 (27.5)	20 (9.8)	22 (10.8)	25 (12.3)
Plaque formation 109 (53.4)	23 (11.3)	60 (29.4)	29 (14.2)	23 (11.3)	23 (11.3)
Teeth loosening 108 (52.9)	22 (10.8)	60 (29.4)	19 (9.3)	22 (10.8)	22 (10.8)
Teeth Discoloration 98 (48)	17 (8.3)	50 (24.5)	21 (10.3)	23 (11.3)	22 (10.8)

awareness and practices. In this research along with oral health and hygiene, practices of students towards oral substance abuse were also assessed. Most dentists recommend that teeth should be brushed twice daily. In our study we found that 51.5% children brush once daily and 42.6% brush twice daily. These findings agree in part with Prasad et al. who reported 66.9% once and 30.7% twice daily tooth brushing by school children of Tamil Nadu, India<sup>15</sup>. Our findings also disagree with those of Vakhani et al. the reason for this disparity may be related to a study population belonging to different socioeconomic strata<sup>9</sup>. Several studies have verified that brushing right after meals can do more harm than good as after meals the bacteria in mouth make acids with the sugars in food leading to a drop in pH of the mouth. Lower mouth pH makes the enamel soft and more vulnerable to being scrubbed away by tooth brush; this negates the commonly prevailing belief that teeth should be cleaned right after each meal. Therefore, the teeth should be brushed before eating so that the bacteria in mouth can be minimized before being fed sugars in the food<sup>16</sup>. We found that around 84% of the children brush their teeth right after they wake up i.e. before breakfast and around 41.7%

before bed time and 25% brush as they go out. Thus the knowledge of method, timings and duration of cleaning is varied among the children. American Dental Association recommends that the tooth brush should be replaced every three to four months, or sooner if bristles are ragged<sup>17</sup>. Most children in the community are unaware of when to replace a tooth brush or miswaak. More children use tooth brush (46%) compared to miswaak (23%). The quality of product and religious affiliation of children play key role in choice of product as well as availability and advertisements. Parents and school play a key role in awareness about brushing. A study done in Saudi Arabia by Al Kheraif found significant difference in hygiene practices of children who received health education and those who did not<sup>18</sup>. The community from which we have collected data was privileged by a primary health care centre that has conducted health awareness sessions on ongoing bases with in community and occasionally in schools. Considering this fact and findings from our study we may assume that our study participants had noticeable awareness about oral health and hygiene taking the socioeconomic status in account; however practices of chewing Chaalia, Niswaar, and Gutka etc are still alarming. Consuming oral substance abuse is a common trend among Asians<sup>19</sup> and the studies by Shah S.M et al in Karachi revealed the use of areca nut and betel leaf to be 74% and 35% respectively<sup>20,21</sup> in primary school children whereas in our study it was 56% and 19.6% correspondingly. The most distressing finding of our study is the frequency of Gutka and Niswar chewing i.e. 19.6% and 21.6% respectively which is higher than recorded by studies on the adult population of Karachi that is 7.5% for Gutka and 14.6% for Niswar<sup>20</sup>. This particular finding probably results from the fact that the community belongs to Pathan ethnicity where naswar has been consumed traditionally and lack of awareness about hazards associated with niswar prevails but unusually high level of gutka consumption might be pointing to a growing use of tobacco by the youth which needs to be determined by further studies.

In our study we also assessed the oral health problems and highest frequency of oral health problems was found to be associated with chewing areca nut (chalia). About 75 to 85% children consume candy, chocolates, soft drinks etc without realizing they can be harmful while around 24 to 31% consume these items despite realizing their hazards for oral health. The visit to dentist was reserved only for dental problems (like pain etc) and only 40% visited a dentist compared to 58% in a similar study in private schools of Karachi and 60% in a similar study in Jordan by Al Omiri et al<sup>22</sup>. Only 40% children visit dentist for dental problems unlike the study by Vakani F et al where 58% children had visited the dentist, 36% out of whom for dental

decay<sup>9</sup>. The finding is also dissimilar to a similar study in Bangalore india where only 35% children visited dentist in the previous year but most of whom had appointments made by parents<sup>23</sup>. The poor attitude towards dental service utilization could be due to poverty limiting accessibility to dental care due to high cost of dental treatment. Also poor availability, fear of dental procedures or lack of emphasis by the parents who hold a belief that dentist should be visited only in some kind of dental emergency and not for a routine check up may all play part. The benefits of fluoride have been proven especially for high risk children<sup>24</sup>. Only 21% of children were aware of the beneficial role of fluoride however it was higher compared to a similar study conducted in Udaipur, India (12.6%)<sup>25</sup>.

While we were doing literature search we observed that most of the studies were focused either on oral health or on oral substance abuse. On the other hand our study reported oral health and hygiene practices of school children along with their practices towards oral substance abuse. There were few limitations to this study; firstly information was taken from students through self administered questionnaire that may cause subjective bias. Similarly sample of only 204 students was recruited as this was the available and accessible number of students according to inclusion criteria. So the findings of this study may not be generalized. However this study may provide insight of oral health practices of school going children from a squatter settlement of metropolitan city of Karachi. These findings may help in designing health education session for communities with low socioeconomic background. In our study we also assessed the health eating practices in relation to oral health and it was noticed that eating habits of children need to be addressed and health awareness programs need to be conducted that provide information about hazards of chewing smokeless tobacco and areca and motivate children to refrain from such habits. As it was a student project and resources were limited so it is also suggested to conduct similar type of research where oral examination will be conducted to associate it with oral health practices.

## CONCLUSION

The attitude and perception of children needs to be constructed for better utilization of dental services. But for that the oral health services need to be made accessible to the community at low cost. The knowledge about brushing is present but there are gaps that need to be bridged. Parents and schools play a key role in providing knowledge and inculcating good habits in children, so they should be the target of any program that is designed to address the health of community. The rising trend of chewing areca nut and smokeless tobacco is threatening and warrants immediate action

by health authorities. Educational programs for children in schools and on Television can be a platform for enlightening children about the hazards of chewing areca nut and smokeless tobacco and refining their behaviour.

### Conflict of interests

Authors declare that there is no any conflict of interests.

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