

Parental Influence on Early Childhood Caries

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OBJECTIVE: Parents have a significant role in educating their children about oral hygiene, therefore their knowledge and attitude influences their children oral health status.

METHODOLOGY: In this cross-sectional study questionnaires were distributed to 300 mothers from Dow Dental College OPD to assess their knowledge, attitude and practice towards their children oral health. Questionnaire assessed demographic data, literacy level, importance of primary dentition and aspects of early childhood decay. Data was analyzed by SPSS version 20. P Values was considered significant at $p < 0.05$. Associations between multiple variables were assessed by using chi square and multinomial logistic regression analysis.

RESULTS: Majority (n=167, 55.7%) had fair knowledge, 23.3% (n=70) reported to exhibit fair attitude while 47% (n=141) reported acceptable oral hygiene practices. While majority mothers (96.7%, n=290) knew that sugar is the main cause of caries but in practice many of them were giving their children sweet upon demand (60.7%, n=182). Only 127 participants (42.3%) knew about the role of fluoride. Positive attitude towards primary dentition was shown by 169 participants (56.3%).

CONCLUSIONS: Overall very few mothers had good knowledge towards their children's oral health which resulted in the poor practices of oral hygiene.

KEY WORDS: Caries, Oral Health Knowledge, Oral Hygiene Practice, Parental Awareness.

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INTRODUCTION

Knowledge and attitudes of parents may play an important role in moulding behaviour of their children toward health and hygiene.¹ Similarly, parental Oral health knowledge and belief may positively impact child's oral health.² According to American Academy of Pediatric Dentistry "Early Childhood Caries (ECC) is defined as the presence of one or more primary teeth with caries in a child 6 years or younger".³ ECC is highly prevalent disease worldwide; its prevalence among Pakistani children is 44.4%.³ Worldwide disease burden of the ECC varies greatly. In Europe, the disease is not very common, prevalence ranges in Sweden from 11.4% among 3 to 6 year old children to 19.0% in Italy.⁴ High Prevalence is seen in middle east countries, like Palestine (76%), and UAE (83%). A prevalence of 51.9% was reported from India.⁵

It has been documented in previous researches that children who develop ECC are at high risk of developing caries in permanent dentition which results in long episodes of treatments and visits to dentists and hence affects the quality of life.⁵ There are many factors contributing to its development like excessive consumption of sugar containing food, less frequent tooth brushing habits with prolong breast feeding or falling asleep while feeding sweet or flavoured milk.⁶ Parents and caregivers play very important role in infant's oral health as evidences shows that mother's awareness of oral hygiene and its practices from pregnancy is good source of establishing infant's good oral health.⁷

Age and educational level are broadly associated with parental knowledge and their practice towards oral hygiene, as its been observed that children of young parents with low socioeconomic status and less knowledge are more prone to decay and premature loss of deciduous teeth.⁸ Establishing good oral hygiene in early few years of child's life includes regular brushing at early age assisted by mothers, their regular visits to dentists for prevention of premature loss of primary teeth is very important. In a developing country like Pakistan, majority parents are not taking their children oral

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problems as serious health issue due to their lack of proper oral health knowledge. It has been observed that there is an increased incidence of early childhood caries due to lack of knowledge of ECC among parents. Therefore, the primary goal of the study was to assess the parental influence on ECC by assessing the relationship between age and education with knowledge, attitude and practices of parents visiting Dow Dental College OPD.

METHODOLOGY

In this cross-sectional study questionnaires were distributed to 300 mothers from Dow Dental College OPD to assess their knowledge, attitude and practice towards their children oral health. Sample size was calculated after reviewing the sample size in an article by Shetty et. al. and determining the population size (that is the number of patients with children visiting Dow Dental OPD).¹ By using software open Epi^R keeping standard error of mean 5% with confidence interval of 95%, calculated sample was 298. Consent was taken before starting from all participants regarding to fill the questionnaire. All married couples having at least one normal child were included in the study. Children guardian or caretakers or special needs children were not included. Purposive sampling was used to recruit study participants. Self administered questionnaire was used in this study. The demographic data relating to area of residence, educational level and occupation were asked from the participants. Aspects of ECC and the knowledge of importance of primary teeth in child's growth and development, oral hygiene practices, nursing habits and role of diet and fluoride in maintaining oral hygiene were assessed.

Data Analysis

Data was analyzed by SPSS version 20. P Values was considered significant when <0.05 (confidence interval of 95%). Descriptive statistics of demographic variables, knowledge, attitude and practice were presented as mean, standard deviation, frequency and percentages. For Inferential statistics responses were scored and were categorized into good, fair and poor. Further analysis to see the associations between multiple variables were done by using chi square and multinomial logistic regression analysis.

RESULTS

A total of 300 questionnaires were filled. Responses were assessed by scoring them based on Good, fair and poor. The demographic data is presented in Table:1, which shows majority were Mothers (99%), falling in age from < 30 years (55.7%), most had primary educational level and were

housewives (84.3 %). Maximum patients were from Karachi South area.

Table: 2 represents the response of parents, a total of 122 participants (40.7%) of parents knew about the right time of first deciduous tooth eruption, most of them had no idea about the total number of deciduous teeth (66%). Two thirds knew that milk teeth are equally prone to decay (67%). Almost all of parents (96%,n=290) knew that sugar commonly

Table 1: Demographic Variables

		n	%
Sex	Females	296	98.7
	Males	4	1.3
Age (in years)	< 30	167	55.7
	30-45	119	39.7
	> 45	14	4.7
Occupation	Working	47	15.7
	House Ridden	253	84.3
Education Level	Educated (from secondary to post graduate)	176	58.7
	Un-educated (primary & no education)	122	41.3

Table 2: Response of Parents

	n	%
KNOWLEDGE		
Time of first deciduous tooth eruption	122	40.7
Time of first permanent tooth eruption	82	27.3
Importance of Fluoride	127	42.3
Role of Sugar in causing caries	290	96.7
Ideal time of brushing	40	13.3
Common Dental Problem among Children is Decay	152	50.7
ATTITUDE		
Regular Dental Check-ups	211	70
Role of Mother in Assisting OH Practice	273	91
Maintenance of Deciduous Dentition	103	34.3
Importance of primary teeth	169	56.3
PRACTICE		
Importance of Brushing Twice Daily	139	46.3
Importance of rinsing after every meal	151	50.3
Sweet consumption upon child's demand	182	60.7
Tools used to clean teeth other than Tooth Paste & Brush	31	10.3
Replacement of Tooth Brush @ 3 months	137	45.7

Association between Knowledge, Attitude and practice with age groups and educational level by logistic regression analysis.

Keeping Education level constant, logistic regression suggests for every "year" increase in age there is 0.913 times chance of having good knowledge and 1.006 times chance of having fair knowledge than poor.

Keeping age constant:

- a) There is 4.52 times chance for graduates to have good knowledge than fair knowledge.
- b) There is 0.50 times chance for intermediates to have good knowledge than fair knowledge.
- c) There is 0.20 times chance for respondents having at least primary education to have good knowledge than fair knowledge.
- d) There is 0.30 times chance for respondents having at least primary education to have good knowledge than fair knowledge.

Keeping education constant, for every "Year" increase in age there is 1.049 times chance of respondents having good attitude, and 0.975 times chance of having fair attitude than poor

Keeping age constant:

- a) There is 1.224 times chance of post graduates having fair knowledge than poor.
- b) There is 0.30 times chance of respondents having primary education to possess good attitude than fair.
- c) There is 4.921 times chance for intermediates to have fair attitude than poor.

causes decay in early age. Most of the mothers believed that brushing should be started at 3-4 years of age (65%) however only 14.7% mothers accepted that ideal time of brushing is after the eruption of first primary tooth. Almost half (46%) believed that regular brushing could prevent

early childhood decay. Awareness regarding role of fluoridated tooth paste was in less than the half of participants (42.3%). Parents of most children (70%) agreed that the child should have regular checkup but were not in practice of doing so.

Table 3-a KNOWLEDGE

categories of knowledge ^a	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Good	Intercept	3.717	1.270	8.569	1	.003		
	Age	-.091	.038	5.924	1	.015	.913	.848 .982
	[Post Graduates]	-22.128	.000		1		2.454E-10	2.454E-10 2.454E-10
	[Graduates]	-3.952	.920	18.473	1	.000	.019	.003 .117
	[Intermediates]	-2.181	.756	8.314	1	.004	.113	.026 .497
	[Secondary education]	-2.567	.774	11.013	1	.001	.077	.017 .350
	[Primary education]	-1.782	.720	6.133	1	.013	.168	.041 .690
Fair	[No Education]	0 ^b			0			
	Intercept	1.860	.835	4.956	1	.026		
	Age	.006	.020	.080	1	.778	1.006	.966 1.047
	[Post Graduates]	-21.631	5173.103	.000	1	.997	4.035E-10	.000 . ^c
	[Graduates]	-3.175	.580	29.974	1	.000	.042	.013 .130
	[Intermediates]	-1.484	.579	6.566	1	.010	.227	.073 .705
	[Secondary education]	-1.278	.548	5.444	1	.020	.278	.095 .815
[Primary Education]	-.822	.569	2.090	1	.148	.439	.144 1.340	
[No Education]	0 ^b			0				

a. The reference category is: poor.

Table 3-b ATTITUDE

categories of attitude ^a	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Good	Intercept	-3.595	1.663	4.673	1	.031		
	Age	.048	.045	1.097	1	.295	1.049	.959 1.146
	[Post Graduates]	-19.277	.000		1		4.248E-9	4.248E-9 4.248E-9
	[Graduates]	-19.286	6223.273	.000	1	.998	4.210E-9	.000 . ^b
	[Intermediates]	-18.912	7301.164	.000	1	.998	6.119E-9	.000 . ^b
	[Secondary education]	-.864	.742	1.357	1	.244	.421	.098 1.804
	[Primary education]	-18.998	5602.793	.000	1	.997	5.613E-9	.000 . ^b
Fair	[No Education]	0 ^c			0			
	Intercept	-1.012	.791	1.640	1	.200		
	Age	-.025	.022	1.360	1	.244	.975	.935 1.017
	[Post Graduates]	.202	.876	.053	1	.818	1.224	.220 6.814
	[Graduates]	.272	.550	.245	1	.620	1.313	.447 3.861
	[Intermediates]	1.594	.506	9.926	1	.002	4.921	1.826 13.263
	[Secondary education]	.116	.535	.047	1	.829	1.123	.394 3.201
[Primary education]	.957	.487	3.854	1	.050	2.603	1.002 6.764	
[No Education]	0 ^c			0				

a. The reference category is: poor.

Table 3-c PRACTICE

categories of practice ^a	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Good	Intercept	2.178	.971	5.033	1	.025		
	Age	-.008	.024	.111	1	.739	.992	.946 1.040
	[Post Graduates]	-22.778	.000		1		1.281E-10	1.281E-10 1.281E-10
	[Graduates]	-2.711	.670	16.387	1	.000	.066	.018 .247
	[Intermediates]	-.546	.778	.494	1	.482	.579	.126 2.658
	[Secondary education]	-1.919	.632	9.223	1	.002	.147	.043 .506
Fair	[Primary education]	-.548	.687	.636	1	.425	.578	.151 2.221
	[No Education]	0 ^b			0			
	Intercept	2.340	.910	6.613	1	.010		
	Age	-.015	.022	.488	1	.485	.985	.943 1.028
	[Post Graduates]	-2.544	.817	9.703	1	.002	.079	.016 .389
	[Graduates]	-1.744	.622	7.875	1	.005	.175	.052 .591
Poor	[Intermediates]	-.004	.764	.000	1	.996	.996	.223 4.450
	[Secondary education]	-1.306	.616	4.497	1	.034	.271	.081 .906
	[Primary education]	-.327	.684	.228	1	.633	.721	.189 2.757
	[No Education]	0 ^b			0			

a. The reference category is: poor.

Keeping education constant, for every "Year" increase in age, there is 0.992 times chance for respondents to acquire good habit of practice, and 0.943 times chance to acquire fair habit of practice than poor.
 Keeping age constant:
 a) There is 0.37 times chance for graduates to adapt good knowledge over fair
 b) There is 0.58 times chance for intermediates to adapt good knowledge over fair
 c) There is 0.54 times chance for respondents having secondary education to adapt good knowledge over fair.
 d) There is 0.80 times chance for respondents having at least primary education to adapt good knowledge over fair.

Association between Knowledge, Attitude and practice with Educational level and Age by using Multinomial logistic regression & chi square tests.

Table: 3-a, 3-b and 3-c shows Logistic regression which demonstrated 4.52 odds for graduates to have good knowledge, when age was kept constant. When education was kept constant, odds ratio was 4.921 for intermediates to have fair attitude.

Table: 4 shows results of Chi square which demonstrated significant association of knowledge (0.042, 0.001) and practice (0.005, 0.000) with age and educational level however attitude was not found to a significant association

Pearson Chi square analysis

Table: 4 Pearson Chi square (Asymp.sig 2-sided)

	Age Group	Educational Level
Knowledge	0.644	0.000*
Attitude	0.345	0.000*
Practice	0.328	0.000*

with both of them.

While Figure 4-a, 4-b, 4-c, 4-d, 4-e, 4-f shows bar charts relating to above results.

Bar Charts showing Association of Education with Knowledge, attitude and Practice by using Pearson chi-square test

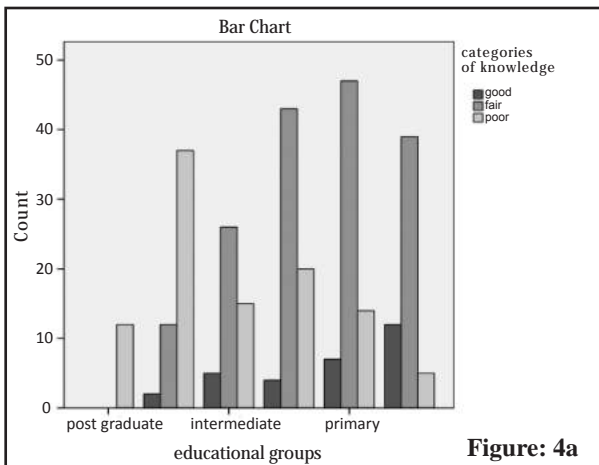


Figure: 4a

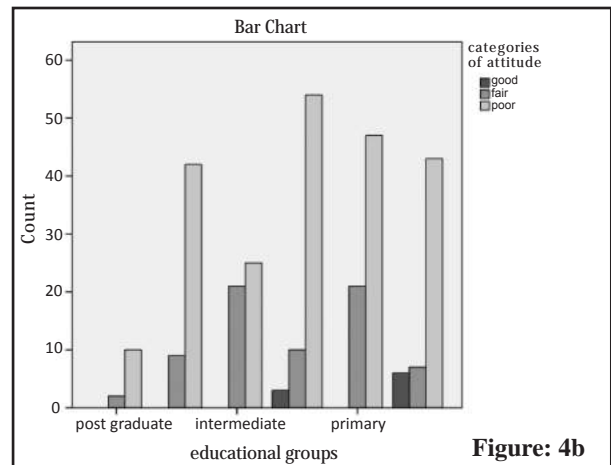
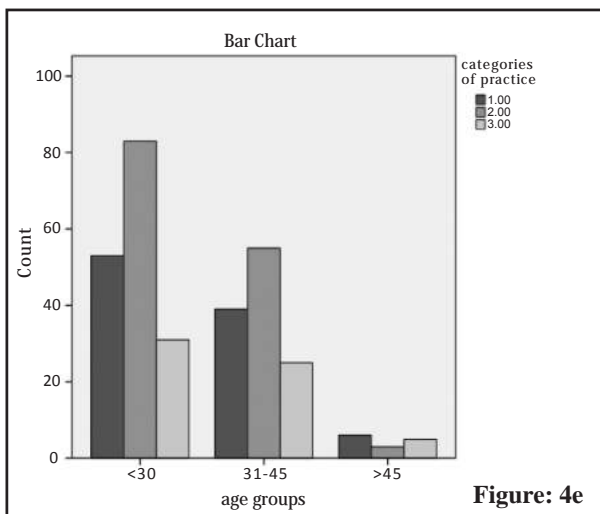
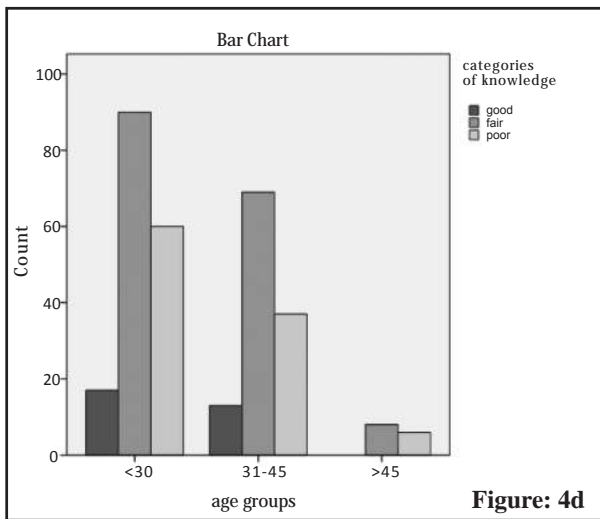
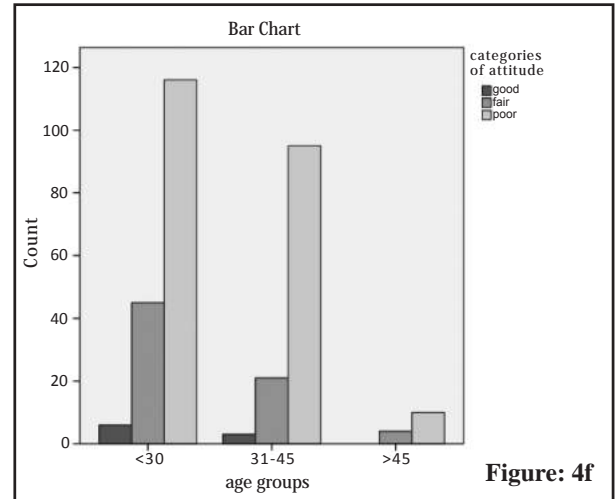
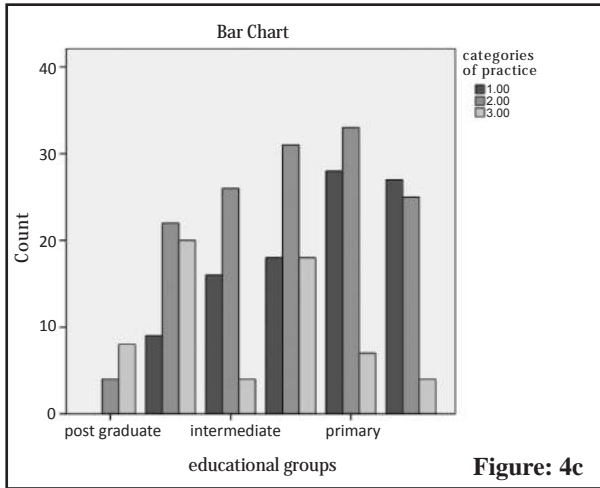


Figure: 4b



DISCUSSIONS

Mothers are considered as role models for their children.¹ Childs oral health is strongly associated with mother's oral hygiene practices and are established during infancy and practiced throughout life.⁹ As Pakistan is still a developing country very few studies have been conducted in Pakistan regarding Parental influence on ECC. This study provides a new data about the awareness of mothers towards the oral hygiene of their children as the questionnaire focuses on basic knowledge and importance of primary teeth as they are important for child's growth and development. In this study 40.7% of the mothers knew the right time for first deciduous tooth eruption however 66% had no idea about the numbers of total deciduous teeth, most of the mothers thought that only anterior four teeth are deciduous teeth, findings were in agreement to a study conducted in India.¹⁰ Majority of the mothers knew about the dietary and feeding practices, 96.7% knew that excessive consumption of sugar cause early decay and these findings were consistent with other previous studies conducted in Pakistan, India and Malaysia.^{1,8,11}

In our society, most people think the primary teeth are temporary and its treatment is waste of time and money.¹² In our study, only 56.3% of mothers were aware of importance of primary teeth.

Pertaining to prevention of dental caries, 46% of mothers believe that regular brushing twice a day with fluoride toothpaste can help in reducing dental pain, findings were very close to a study in Mumbai¹⁰ More than half of participants had no idea that tooth paste should have fluoride or not (finding were consistent with study in india¹⁰) 42.3% knew that they use fluoride toothpaste at home. When questioned about importance of fluoride only 30% agreed that it can prevent or arrest early decays which is slightly

lower than in the other study.⁸ This finding is contrary to a study conducted in Malaysia showed that reported excellent (85%) knowledge of mothers.¹¹ However similar lower results were also seen in India.¹⁰ Mothers of 91% children believed that childrens' early brushing should be supervised by them. The ratio is close to results of India but contrary to the results of study from Pakistan which stated that 96% of mothers did not know that they should supervise their children for brushing.^{8,10} Majority of the parents believe that cleaning of teeth should commence at age when all milk teeth have erupted (at 3-4 years) which is much higher than the ideal age for the start of brushing. Our results are consistent with the findings of Riyadh and India.^{13,10}

The status of first molar has been studied in many studies to assess the oral health status of children because its early loss results in multiple problems in occlusion and function.¹⁴ Our results were slightly less than the findings found in Jordan.¹⁴

More than 80% of children use tooth paste and toothbrush for cleaning. These findings were in line with the other study in India.¹⁰

Almost half of mothers (46%) reported that their children are brushing twice a day, which is quite close to results in India which reported 41% but less than the results reported in Malaysia.^{10,11} Forty five percent of mothers are changing their children tooth brush after 3 months, while 37% are changing only when bristles are frayed out, these findings are contrary to reported literature.^{8,10}

When parents were asked about the time of consumption of sweet food, 60.7% replied that upon the demand of child, these findings are greater than those reported from India (41%).¹⁰

The limitations of our study are that the results cannot be extrapolated as sample size was small and included limited mothers who were visiting dental centers only. This study needs to be conducted on larger scale with large sample size on different pediatric hospitals to overcome the over estimation of Attitude towards dental treatment. Our population needs awareness programmes regarding oral hygiene practices to bring positive behavioural changes in Parents.

CONCLUSION

This study found positive association between the age and educational level of parents with their knowledge and practice towards oral hygiene.

CONFLICT OF INTEREST

None declared.

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