Research Article

Are Dentist Parents Better Aware of Caries Prevention than Non-Dentist Parents?

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Abstract

***Objective**: This study aimed to assess the parental knowledge of dentists and non-dentists regarding caries prevention, and its impact on the oral health of their children. **Method**: A cross-sectional study was conducted, using a self-administered questionnaire designed based on the precede-proceed model. A sample of about 150 people was selected from different private and government dental hospitals of the twin cities. A final sample of 50 dentists and 50 non-dentists who were fulfilling the selection criteria was achieved. A range of individual variables suggests age range of child, financial stability, educational background, presence of any other dentist in the immediate family, and selection of the eldest child, was controlled for. **Results**: The children of dentist parents were found to have a lesser caries experience, as compared to non-dentist parents. **Conclusion**: This study suggests that dentist parents have better oral health-related knowledge and practices as compared to non-dentist parents. However, the areas of oral health in which non-dentist parents have a greater lacking should be further investigated.*

Introduction

Dental caries is a transmissible infection in which mutants streptococci (MS) are for the most part thought to be the fundamental etiological agents. **(**1-3**)** As in numerous irresistible diseases, colonization by pathogens is needed before the disease can occur. **(**2**)**

The utilization of DMFT has been observed a few times to gauge the predominance of dental caries. Patients with children between 6-9 years were chosen from dental OPD of children's Hospital, Islamabad and Lahore. The mean worth for DMFT in 6-9 years of age kids was found to be 0.39 and 2.69 for every child in respective cities. **(**4, 5**)**

The dental strength of preschool children has broad ramifications on the oral wellbeing of the person as he develops into a grown-up.

Oral health of the elementary school going youngsters are affected by the central role of parents' dental learning, demeanor, awareness about eating regimen, sustaining practices, oral cleanliness propensities, preventive general dental visits, consideration of essential and permanent teeth, and concern towards oral wellbeing. **(**6**)** Knowledge and awareness are necessary prerequisites for changes in behavior, including behavior related to health and disease prevention. **(**6**)**

A quantitative study named (Parental knowledge, attitudes and cultural beliefs regarding oral health and dental care of preschool) was carried out in regards to parental learning, demeanor and social convictions concerning oral wellbeing of the children in India, which is also a developing country. However, in this study, no consideration was paid particularly towards the knowledge of parents in the dental expert field. The explanation behind this is that dental practitioners are, for the most part, accepted to have better information and its application for counteractive action of caries in their children. But this theory has not been tested any time recently. Likewise, they are not considered as the intended interest group of oral wellbeing health campaigns.

Another study was completed in Victoria named (parental knowledge beliefs and behaviors for the oral health of toddlers residing in rural Victoria) **(**7**)** However the study was constrained to the toddlers, while this study is concentrating on a range from 2 to 14 years of age. **(**7**)**

Rationale

The primary aim of this study was to analyze the knowledge of parents who are dentists, as compared to those who are not, about caries prevention in their primary school-going children and to formulate data for the prospect of future research.

The secondary aim of this study was to check the effect of knowledge and beliefs on general practices and the effect it has on the daily life of an individual.

Materials and methods

Sample

Sampling Place:

This study used a sample that was collected from the various private and government dental hospitals, including Armed Forces Institute of Dentistry (AFID), Islamic International Dental Hospital, Maryam Memorial Hospital, Amanat Hospital, Dr. Haider & Associates, Anwar Hospital, Social Security Hospital, Nescom Hospital. This was done by paying several visits until the desired number of responses was achieved.

Sampling time:

Data were collected in May/June 2015. Data collection of the dentists was done mainly during the weekdays by surveys mentioned below. It took place for the non-dentists over the weekends when parents were expected to be at home.

Sampling procedure:

The final response rate was 67% (including 100 respondents). The sampling procedure was a (two-level) sampling method aimed at selecting eligible parents. Stage 1 involved selection of 150 people (75 dentists & 75 non dentists) from various dental hospitals. The hospitals were chosen for the dentist parent group, and for the non-dentist group, a selection of patients was done, who was present in the waiting areas of the dentists who were surveyed. Informed consent was taken from the respondents, after explaining the purpose of the study to them. Questions regarding marital status, number of children and their ages were asked from the respondents. Those respondents (72 non-dentists and 57 dentists) whose children

fell in the criteria of the age range 2-14 years were then selected for stage 2, The final achieved sample was then selected by inquiring about the respondents' socioeconomic status, assessed by their income. Due to the sensitive nature of the question, the income was inquired using the self-administered written questionnaire instead of verbal questioning. This then resulted in a total of 61 non-dentists and 50 dentists. Furthermore, to keep the sample size of both groups equal, 50 dentists and 50 non-dentists were targeted for a successful comparison.

Controlled variables:

To minimize bias, the following variables controlled:

Financial status was kept constant along with educational status by inquiring the information via questionnaires which were filled under observation. This improved the response rate.

Each parent was guided to fill the questionnaire for not more than one child.

To overcome personal bias, parents were requested to fill the questionnaire for their eldest child in case they had more than one child.

For further elimination of bias the questionnaire title was kept neutral to prevent competition in the subconscious of the two groups belonging to different professional fields, as well as there was no demarcation between the questions asked from both the surveyed groups.

For further bias reduction, it was ensured that the child of the dentist did not have any other dentist in their immediate family other than the parent him/herself. Since this factor influences the child's practices it could alter the results. Those who had other siblings in the dental carrier were exempted from the study.

Study design

This study has been conducted to explore the relationship between parental knowledge and caries prevention in children aged from 2 years to 14 years; it is a cross-sectional, quantitative study that recruited study participants through a self-administered questionnaire and was carried out in various private and government dental hospitals. This survey was conducted because children of dentists and non-dentists vary in the matter of prevalence of caries.

Questionnaire:

A mixed questionnaire was designed using the Precede-Proceed model. The questionnaire had 21 questions in total. Most of the questions were closed-ended along with other questions that were pictorial. 8 questions were designed to test parental knowledge and 9 were about general practices. 4 of the questions were regarding general information of the respondents including the parent's income, age and gender of the child and the parent's gender and profession.

The questionnaire was easy to understand and did not take more than 3-4 minutes for the parents to fill.

Figure 1.0 Questionnaire
Knowledge of the parent:
Q1) Do you think dental caries is a serious problem?
Q2) Which of the following is the most cariogenic?
Q3) Do you think that decayed mild teeth should be filled?
Q4) Which of the following quantities of toothpaste should be used for your child?
Q5) Which tooth paste has the best ant cariogenic properties as applied to children?
Q6) What is the recommended frequency of applying fluoride varnishes to children at a high risk of developing caries?
Q7) At what age the child's thumb sucking habit should be stopped (to avoid malocclusion)
General practices of parents:
Q9) When did your child start commencement of tooth brushing?
Q10) How often does your child brush his/her teeth?

Q11) How does your child rinse after brushing?
Q12) How frequently does your child eat sweets/chocolates?
Q13) How frequently do you take your child to the dentist?
Q14) How many teeth are present in your child's mouth?
Q15) Did your child ever have dental caries?
Q16) To what extent did your child have dental caries?
Q17) If yes, how many teeth are treated?
section 3: General information of parents
Q18) Parents income
Q19) Child gender
Q20). Age of child
Q21) Parents profession

Caries assessment:

Initially, the caries assessment was analyzed by asking a closed-ended question regarding the presence of caries. Only those that had caries were asked further questions about caries, which tested for the extent of caries for example 1 tooth affected by minor caries or 2 teeth affected by gross caries etc.

Those whose children have never had caries before were exempted from further questioning.

Data analysis:

For assessment of each question's responses and comparison of answers among dentists and non-dentists, a program SPSS Version 17.0 was used. The method of analysis used was the Chi-squared test, which was applied to questions number 1 to question number 12. Fig 2.0 shows the questions to which the chi-square test was applied and the resulting p values. Data is represented in form of tables for convenience and Bar charts for easy interpretation of results, by the use of Microsoft Excel 2010.

Ethical consideration:

Before the commencement of the study, ethical approval for the study was obtained from the dental department of every hospital targeted. Permission for study conduct was also obtained from the Head of Department of Community dentistry Dr Humza Bin Saeed at Islamic International Dental College, G7-4 Islamabad.

RESULTS

From a sample of 150 people, 100 people were finally chosen as the sample, which included 50 dentists and 50 non-dentists.

Null hypothesis:

The null hypothesis suggests that there was no significant difference in the knowledge, its application and general practices, between the dentist and non-dentist parents, about caries prevention in their primary school-going children.

Comparisons of calculated p-values using the Chi-square test, between the two sample participants are given in Figure 1(For answers to Questions 1 to 12). However, the null hypothesis was rejected based on p-values which were less than the critical value i.e. 0.5, so there seemed a significant difference in the knowledge, its application and general practices between dentists and non-dentists parents regarding caries prevention in their children.

Q#	Question	a-value	P-value	Rejected
1	Is caries a serious problem?	4.167	0.125	Rejected
2	Which milk is the most cariogenic?	4.006	0.045	Rejected
3	Should decayed milk teeth be filled?	9.746	0.008	Rejected
4	What quantity of toothpaste should be used?	8.319	0.004	Rejected
5	Which toothpaste is most anti-cariogenic?	2.990	0.084	Rejected
6	Recommended frequency of varnish application?	7.853	0.005	Rejected
7	Use of pits and fissure sealants	30.286	0.000	Rejected
8	At what age the child's thumb sucking habit should be stopped	12.360	0.000	Rejected

9	Age of commencement of tooth brushing of child?	10.176	0.001	Rejected
10	Frequency of tooth brushing?	3.274	0.195	Rejected
11	How does child rinse after tooth brushing?	1.864	0.394	Rejected
12	Frequency of intake of sweets?	1.308	0.520	Rejected

Figure 1

Thus it is seen, as compared to non-dentist parents knowledge of the dentists was higher, application of their knowledge was better and the outcomes in their child were significant. Comparison of data pointed towards greater awareness among dentists on the subject.

When the use of fluoride toothpaste, frequency of tooth brushing, and presence of caries in the children was compared it was seen that in the case of dental professionals, the percentage of children with caries was lesser as compared to children of non-dentists. As the brushing frequency and use of fluoride toothpaste were more common among the children of dentists.

Assessment of knowledge concerning the global issue regarding caries suggested that all 50 (100%) of the dentist parents surveyed, believed that dental caries is a serious problem whereas only 46 (92 %) of the non-dentists were of the same view. **Figure 2**

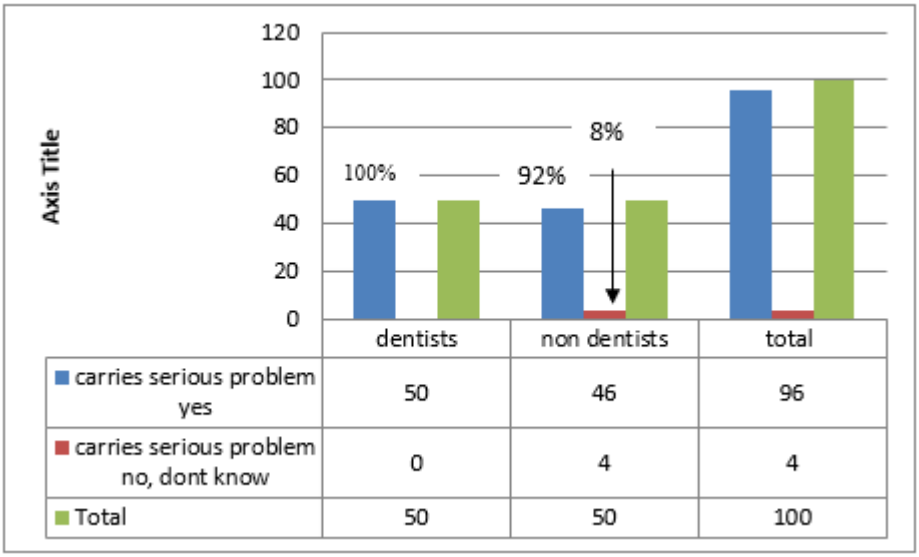
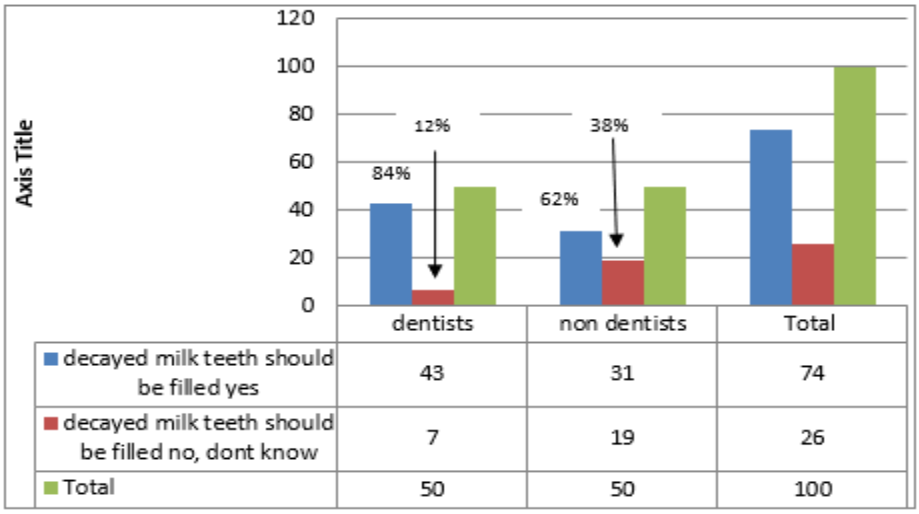


Figure 2

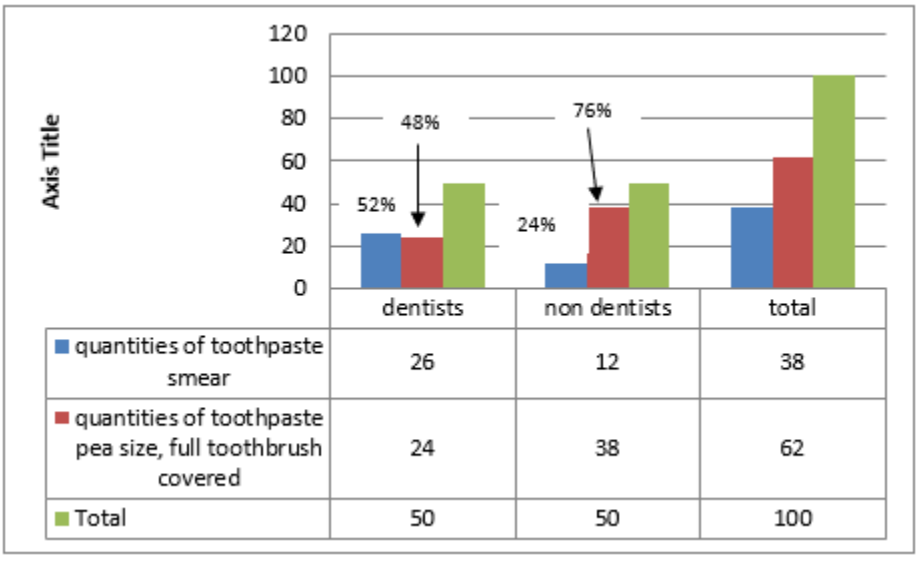
It was believed by 42 (84%) of the dentists that decayed milk teeth should be filled as compared to 31 (62%) non-dentists giving the same response. **Figure 3**



	dentists	non dentists	Total
decayed milk teeth should be filled yes	43	31	74
decayed milk teeth should be filled no, dont know	7	19	26
Total	50	50	100

Figure 3

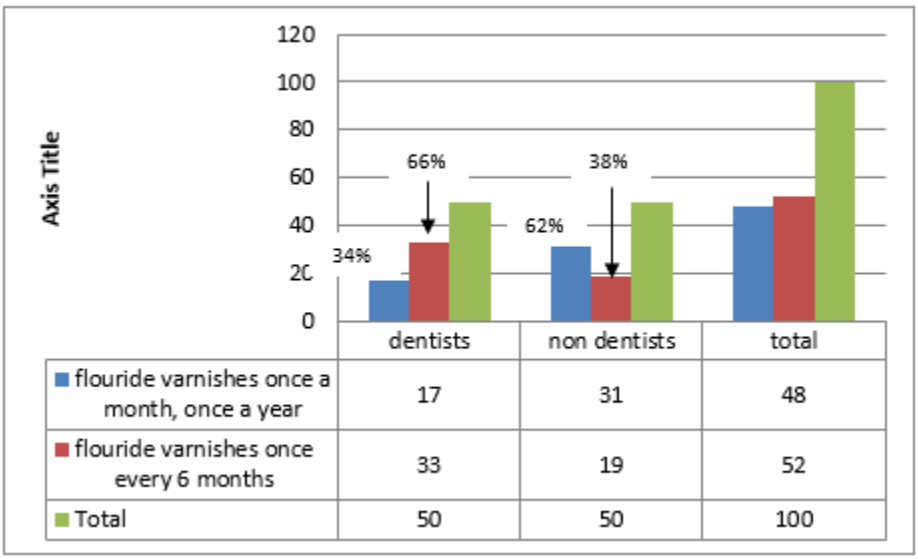
It was believed by 42 (84%) of the dentists that decayed milk teeth should be filled as compared to 31 (62%) non-dentists giving the same response. **Figure 4**



	dentists	non dentists	total
quantities of toothpaste smear	26	12	38
quantities of toothpaste pea size, full toothbrush covered	24	38	62
Total	50	50	100

Figure 4

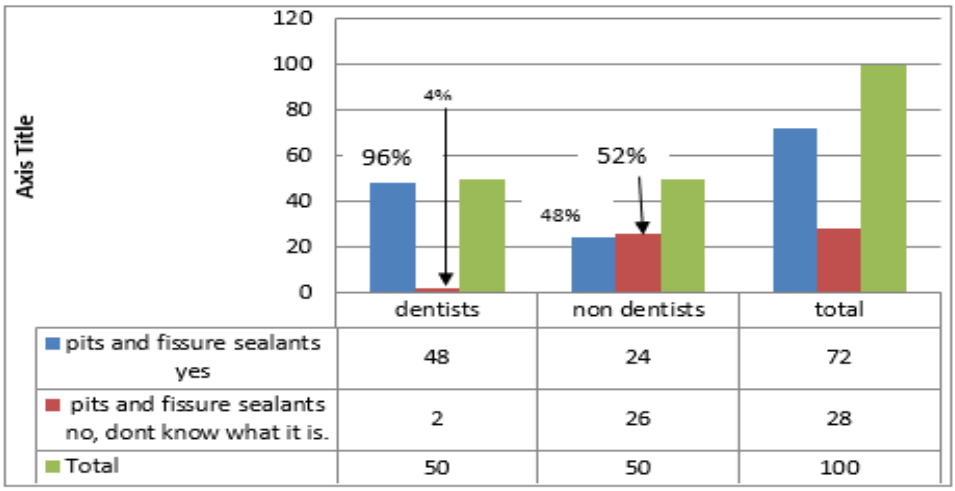
When it came to the quantity of toothpaste that should be used for the child it was seen that 26 (52%) dentists preferred the use of a smear of toothpaste whereas only 12 (24%) of the non-dentists had the same view. **Figure 5**



	dentists	non dentists	total
flouride varnishes once a month, once a year	17	31	48
flouride varnishes once every 6 months	33	19	52
Total	50	50	100

Figure 5

33 (66%) of the dentists believed that fluoride varnishes should be applied after every 6 months in patients with a high risk of caries whereas only 19 (38%) of non-dentists thought so. **Figure 6**



	dentists	non dentists	total
pits and fissure sealants yes	48	24	72
pits and fissure sealants no, dont know what it is.	2	26	28
Total	50	50	100

Figure 6

A large gap existed in the knowledge of the general population (non-dentist parents) & dentists when it came to the matter of the use of pits and fissure sealants. This was indicated when 26 (52%) of the non-dentists reported that they either do not know about it or don't recommend It. 48 (96%) of the dentists believed that pits and fissure sealants should be applied as a method of prevention. **Figure 7**

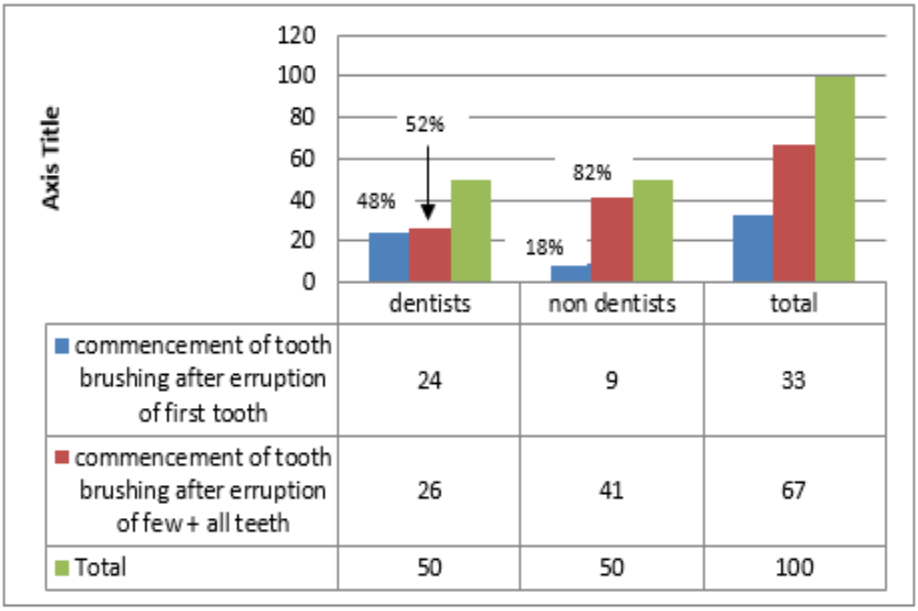
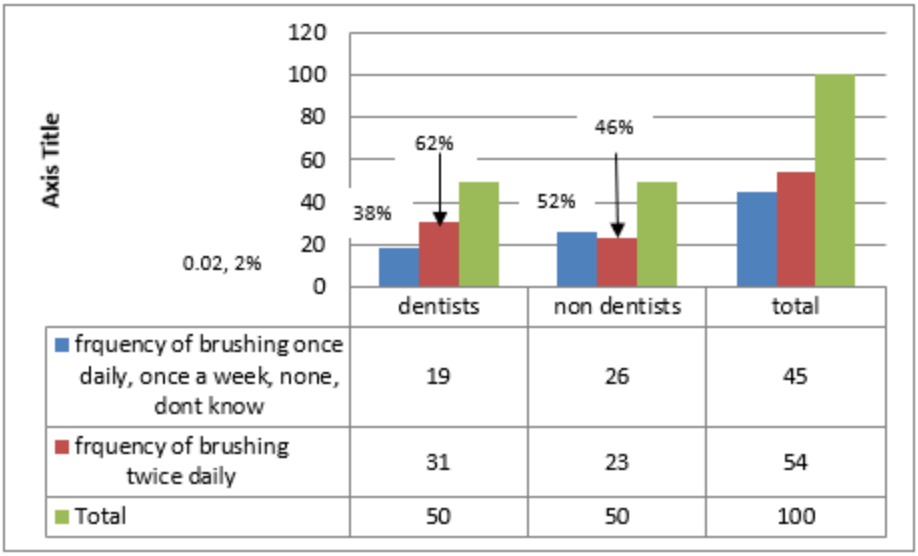


Figure 7

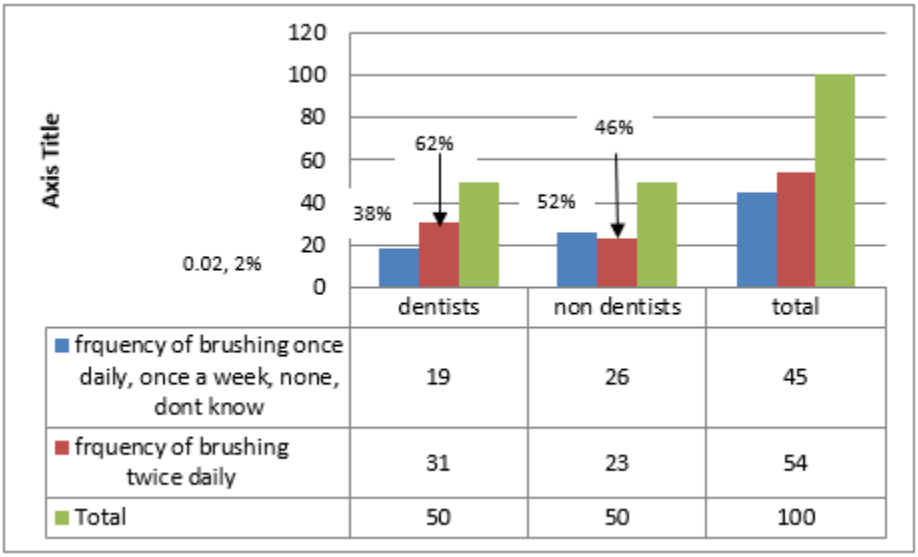
The practices of the respondents were a reflection of their knowledge regarding the prevention of caries. At least 24 (49%) of the children of dentists commenced tooth brushing after the eruption of their first tooth whereas only 9 (18%) of children of non-dentists were reported to have started it after the eruption of the first tooth. **Figure 8**



	dentists	non dentists	total
frquency of brushing once daily, once a week, none, dont know	19	26	45
frquency of brushing twice daily	31	23	54
Total	50	50	100

Figure 8

When it came to the matter of frequency of tooth brushing, 31 (62%) children of dentists were reported to brush their teeth twice daily and 24 (48%) children of non-dentists practiced tooth brushing twice a day. **Figure 9**



	dentists	non dentists	total
frquency of brushing once daily, once a week, none, dont know	19	26	45
frquency of brushing twice daily	31	23	54
Total	50	50	100

Figure 9

Inquiry about intake of sweets gave results for dentists which showed only slightly better practices among dentists as compared to the non-dentists, 20 (40%) of them saying their child took sticky sugar-rich foods only once a week. Non-dentists gave a similar but still lower response of only 17 (34%) of them saying their child takes sticky sweets once a week. **Figure 10**

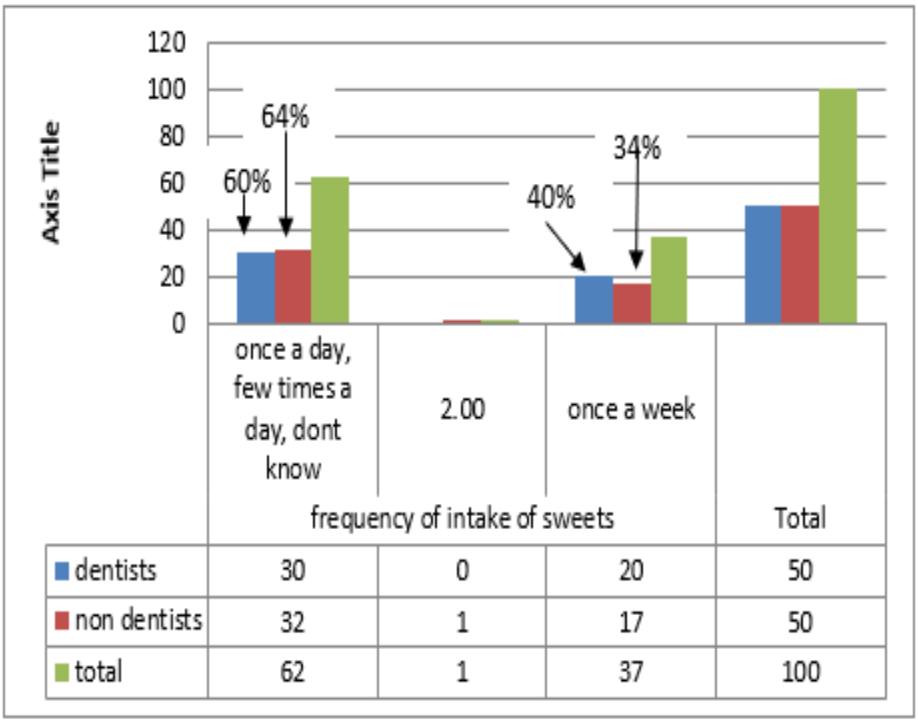


Figure 10

The status of oral health was further assessed by checking for the presence of caries in dentists and non-dentists children. The obtained results showed that 18 (36%) of the dentist's children and 47 (94%) of the non-dentists children had caries, with variable extents. **Figure 11**

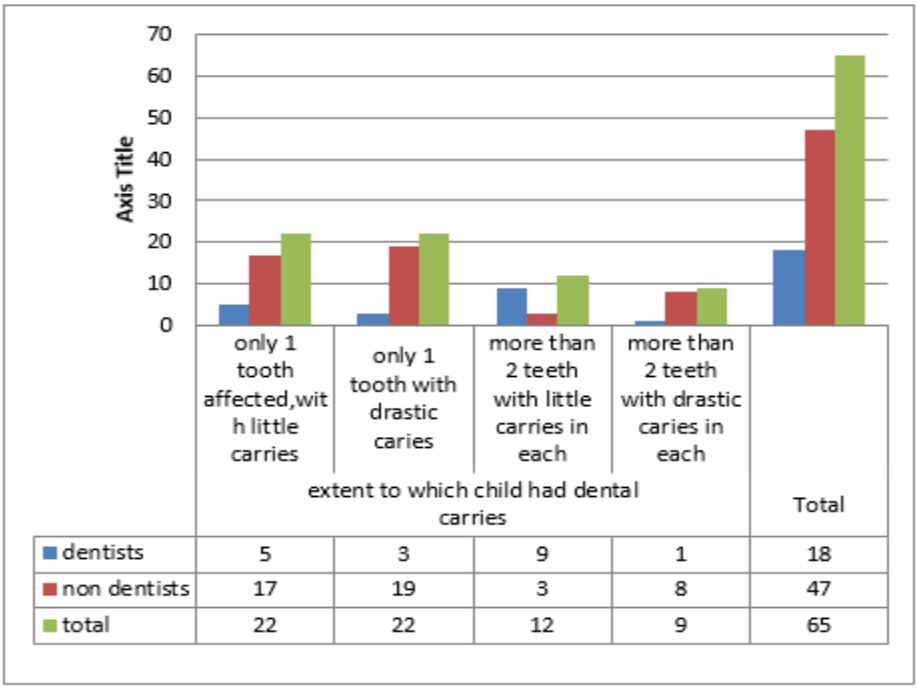


Figure 11

The preference for treatment of tooth after it is damaged by caries was analyzed by the number of teeth that are treated after being affected with caries. Both the group members gave various responses which are recorded in the figure below. The figure shows a much greater concern for parents, both dentists and non-dentists, towards the treatment of caries affected teeth. **Figure 12**

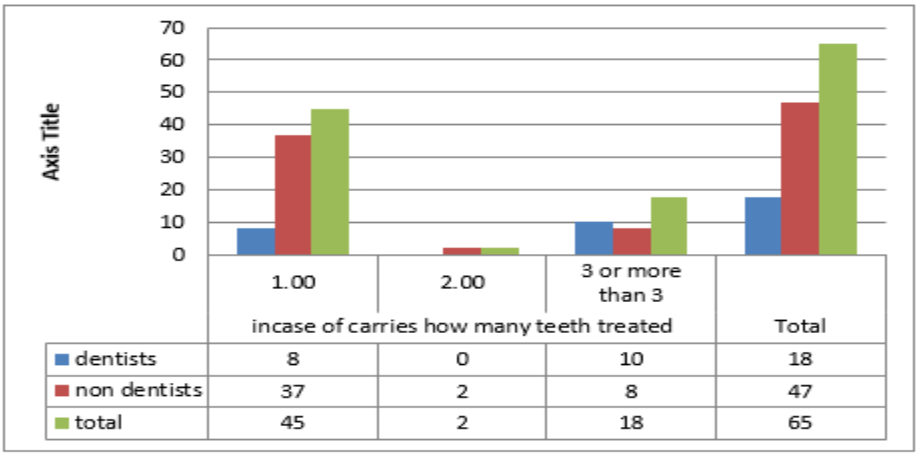


Figure 12

Conclusion

To conclude, dentists gave more appropriate responses about knowledge and general practices that favor the prevention of dental caries. Results to each question showed that dentists had greater awareness and better knowledge about caries, which they accepted as a serious problem. This also reflected their general practices and hence this was the reason behind their children having a more sound oral health status, comparatively to the children of the non-dentist parent's group.

Discussion

This paper gives vital new information to the verification base recognized with different beliefs and practices as well as learning of parents, identified with caries aversion. **(**8**)** This is one of the very few Pakistani studies including parents from two diverse expert foundations (i.e. dental specialists and non-dental specialists) living in urban territories of Pakistan. It displays the contribution of parents to evaluate their education, mentality and reported practices regarding the oral health of their children.

Difficulties in enlisting parents into this study to having children between 2-14 years of age were faced, as the study was limited to Rawalpindi and Islamabad cities in Pakistan. However, this was necessary as primary school children were targeted in the study. (8) Also, there is a well-documented relationship between socio-economic status and dental caries. Thus, moderate-income families were represented in the study (by selecting respondents falling within a fixed family income range) to keep the socio-economic status controlled. **(**8**)**

Parents' knowledge (other than the dentist's group) regarding the risk variables for caries was generally deficient. Learning and mindfulness are important requirements for changes in conduct, including practices identified with wellbeing and prevention and control of disease-related illnesses. Most parents accepted that insufficient tooth cleaning and sweet snacks and beverages lead to caries, which reflects famously held convictions. **(**8**)**

The results showed that 11 (22%) of the non-dentist parents were accounted for to hold the conviction that habitual thumb-sucking for children is normal even after 5 years of age. This is in opposition to proposals by numerous authorities; while 39 (78%) of non-dentists believed it must be stopped by age 5. This is in contrast to the dentists, where this value was 100%. This gave a clear picture of the lack of knowledge and its application among the non-dentist parents.

Further analysis was done using the Chi-square test which is used to compare the knowledge of the two groups targeted for this study. The null hypothesis stated that there was no significant difference in the knowledge and its application between the dentist and non-dentist parents. To analyze data for the acceptance or rejection of the null hypothesis, the Chi-square test was applied to different questions such as the question regarding whether caries is a serious problem or not. All 50 (100%) dentists believed that it is a serious problem while 46 (92%) non-dentists were of the same view. The p-value obtained was 0.125 which is less than the critical alpha value/a value, so the null hypothesis is rejected for this specific question. This showed that there was a significant difference in the knowledge of dentists and non-dentists regarding the seriousness of caries.

Furthermore, the p-value for the testing of knowledge regarding the most anti-cariogenic toothpaste obtained was 0.084, which is another clear indication for the rejection of the null hypothesis.

Introduction to fluoride is defensive against the progress of caries. Assurance of defense against it can be accomplished by the utilization of fluoride toothpaste as a major aspect of customary tooth cleaning practices. In our survey 45 (90%) of dentists said they choose fluoridated toothpaste for their children, compared to 40 (80 %) of non-dentists who choose the same normally. Controlled utilization of fluoride toothpaste, which minimizes the danger of fluorosis in the permanent dentition, obliges great parental seeing in various territories. Firstly, there ought to be learning of foundation levels of fluoride, in particular the fluoride levels in drinking water. Also, the quantity of fluoride in the toothpaste chosen must be coordinated to the relative caries risk in the child. In conclusion, to maintain a strategic distance from excessive toothpaste ingestion, parents must be mindful of the proper quantities of toothpaste to apply to the brush or cleaning material. For this, a question was asked regarding the quantity of toothpaste which should be used for the child. 12 (24%) non-dentists chose the option with the correct quantity of toothpaste whereas 25 (50%) dentists chose that option. The p-value obtained is 0.004, rejecting the null hypothesis.

Preparing a kid for general tooth cleaning needs to begin ahead of schedule in life and parents require training and support in this area. This was highlighted when this survey found out that only 9 (18%) non-dentist parents began the tooth-brushing regime in their child after the eruption of the first tooth, which is the ideal time for its commencement. The p-value obtained is 0.001, which is far less than the alpha value indicating rejection of the null hypothesis. Therefore, a clear difference between the general practices between the two groups is outlined.

This study depended on the response given by respondents in a self-filled questionnaire. No attempt was made to access the extent of caries of each respondent's child. This could have been possible using a

DMFT (decayed, missing, filled teeth) technique. This study was focusing on the same socioeconomic status of dentists and non-dentists of the twin cities. It is not wholly reliable to derive a judgment that represents all the socioeconomic classes residing in Pakistan.

It is believed that mothers have more influence on a child's upbringing because of greater interaction between a child and his/her mother. (8) Data collected from the mothers are not analyzed separately from fathers which otherwise would have improved the results of this study. Furthermore, this study specifically focused on primary school going children rather than on a broader range of age, which could have resulted in research outlining a vast majority of children.

In this study, it was not considered to create research questions regarding other sources that can add to the reasons for the better oral health of the children. This can cause invalidity in the results so future studies must inquire about all environmental aspects (such as water fluoride levels) affecting the child, whose parent's knowledge and its application is being assessed.

A dominant percentage of parents accepted that cleaning children's teeth ought to begin as the teeth erupted or not long after the eruption. Tooth-brushing in children was more driven by social norms than by the medical advantages emerging from it. This acknowledgment of tooth cleaning is sure, yet the conduct should be changed to guarantee that, without water fluoridation, toothpaste utilization is likewise included and socially strengthened, especially for those children considered at greater risk. It is suggested that generally non-dentist parents require more data and direction to make suitable decisions concerning fluoride toothpaste utilization.

It is critical to outline a pilot study to figure out how the study discoveries can be interpreted into oral health projects. Future studies should have a method of measuring the lifetime effect of knowledge on the oral hygiene of children and thus on the prevention of caries. Such a lifetime economic cost-benefit should be accompanied by engagement and education of the general population which should include both groups 'Dentists' and 'Non-dentists'.

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