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ASSESSMENT OF PARENTAL KNOWLEDGE AND AWARENESS REGARDING THE PREVENTIVE MEASURES AND ITS IMPACT ON ORAL HEALTH STATUS OF 6-12 YEARS OLD CHILDREN IN HALDIA- A QUESTIONNAIRE-BASED STUDY

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ABSTRACT

Parents have negligible knowledge about preventive oral health and dental procedures, which can significantly impact their children's general health and well-being. Neglect by parents maylead to unfavorable dental and overall health outcomes. Therefore, parental knowledge about preventive measures in oral health is essential for maintaining proper oral hygiene, controlling cavities, and caring for children's primary teeth. **Aim:** To evaluate parent knowledge on preventive measures for proper oral hygiene maintenance and to determine a possible relationship between their oral health knowledge andtheir child's dental caries experience. **Methodology:** This was a questionnaire-based study conducted among 200 participants. A questionnaire was prepared and was then given to participants and responses were collected. The data were collected systematically and analysed using the SPSS software version 20. **Result:** 200 study subjects participated in the study. The study revealed a significant difference statistically in knowledge, attitude and awareness among parents in various categories. About 81% of the participants were aware that sugar and sugar-containing diet can cause dental decaywhereas, only 25% of them had the understanding that fluorides can help prevent dental decay. It was found that the subjects who were Graduates were significantly more aware of dental health practices. **Conclusion:** Many participants had awareness about oral hygiene. However most of the participants were not aware of fluoride application for prevention of dental caries.

KEYWORDS: Oral hygiene, Dental caries, Parental knowledge, Fluoride.

INTRODUCTION

Dental caries is an irreversible microbial disease of the calcified tissues of the teeth, characterized by demineralization of the inorganic portion and destruction of the organic substance of the teeth, which often leads to cavitation.[1]

Dental caries is a significant health concern, especially among children. Studies indicate that approximately 60–90% of school-aged children suffer from this chronic disease. Primary toothdecay has been ranked as the 12th most common health condition worldwide, affecting about 500 million children with primary teeth and 60 million with permanent teeth. The higher prevalence in children compared to adults underscores the need for preventive dental care andeducation from a young age.[2]

As per the American Academy of Paediatric Dentistry (AAPD), monitoring the timing and progression of primary, mixed, and permanent tooth eruption and development constitutes a fundamental aspect of comprehensive oral healthcare for all pediatric dental patients. The eruption of primary teeth begins at 6 months and is completed by around 3 years of age. A full set of primary teeth is crucial for mastering accurate speech, fostering effective chewing, directing the permanent teeth towards appropriate alignment, and ensuring favourable aesthetics.[3] Even though permanent

teeth begin their formation during early childhood, typically from ages 0 to 3, the process of eruption typically commences around the age of 6 and continues thereafter. As the first molar erupts, the oral cavity constitutes of mixed dentition,thus heightening the risk of caries. Hence, it is crucial to ensure the maintenance of healthy primary teeth until their natural shedding process. The groundwork for the sound developmentof permanent teeth in children and adolescents is established during their initial year of life. Numerous research findings indicate a correlation between inappropriate dietary frequency, unhealthy eating practices, and insufficient oral hygiene practices during the initial three yearsof life and the occurrence of tooth decay in children. Neglecting decayed primary teeth heightens the likelihood of subsequent caries development in permanent teeth, consequently impacting the individual's quality of life.[4]

Parents play a central role in decision-making for their children and act as their earliest role models. Their knowledge, attitudes, practices, and habits regarding oral health greatly affect their children's behavior. Family routines have a strong influence on children's dental health.[5]

This study was done to evaluate parents knowledge on preventive measures for proper oral hygiene maintenance and to determine a possible relationship between their oral health knowledge and their child's dental caries experience.

MATERIALS AND METHODS

Study design

This study was a questionnaire-based study performed to assess parent's knowledge, attitude and practices toward oral health of their children with primary dentition.

Study Settings

The questionnaires were admitted to the parents in the waiting area attending for dental treatment in the Department of Pediatrics and Preventive Dentistry at Haldia Institute of DentalSciences and Research.

Participants

Parents of children with primary dentition aged 6-12 years.

Sample Size

A power analysis was designed to have adequate power to apply a statistical test null hypothesis that there is no association between parents' oral health awareness and the child's dental healthstatus. By adopting a confidence interval of 95%, a margin of error of 5% with finite populationcorrection, the expected sample size (n) was a total of 200 cases. Parents of children who werewilling to participate the survey were asked to fill a set of 10 questions.

The multiple choice questionnaire was generated on the basis of an article by Bamba S, Chachra S, et al[6] firstly designed in English and then translated to Bengali and back translated to English for evaluating language discrepancy.

The initial section of the questionnaire included gathering demographic information about theparticipant, encompassing details such as name, age, gender, the age and gender of the child, educational qualification of the parent. The subsequent segment comprised inquiries regarding understanding of oral hygiene maintenance, importance of primary teeth, cause of cavities, knowledge about 1st dental visit and about pit fissure sealants and fluoride varnishes.

Clinical examination

(1) In addition to the questionnaire, data were also collected by clinical examination for evaluating the children's dental caries experience and prevalence by calculating their dmf/DMFscore.

(2) The oral assessment of every child was done by a single operator under good lighting conditions using a mouth mirror, probe and isolation with cotton rolls to detect the presence ofcarious (whether smooth or pits and fissure caries), missed (extracted), and filled teeth.

STATISTICAL ANALYSIS

The collected data was tabulated in a spreadsheet using Microsoft Excel 2019 and then statistical analysis was carried out using the GraphPad Prism for Windows, Version 9.5 (GraphPad Software, La Jolla California USA). Knowledge was assessed through a scoring method where 1 meant a correct response and 0 meant a wrong or unacceptable response. The scores were summed up to obtain a range from 0-10. The 50th percentile was then used as a cut-off(in this case 5), to stratify the knowledge of the parents into satisfactory($\geq$5) and unsatisfactory (below 5).

Descriptive statistics were used to report i) categorical variables in terms of frequencies and percentages & ii) quantitative variables were reported in terms of mean (central tendency) andStandard deviation (SD) (measures of dispersion). The Chi-square(χ^2) test was carried out to analyze the categorical variables. Parametric tests were carried out for inferential statistics. Independent samples t-test was used to assess the difference in DMFT and dmft scores betweenthe parents' level of knowledge. Logistic regression analysis was carried out to assess the influence of the level of education on the knowledge to calculate the odds ratio (OR) with 95% Confidence intervals (CI). The *P* value of $\leq$0.05 was considered as the level of significance.

RESULTS

The total sample of children were divided by age in three groups 6-7.9 years, 8-9.9 years, 10- 12 years. The majority of the children belonged to the age group of 6-7.9 years (41.5%), followed by 8-9.9 years (36.5%), and

the mean age of the study subjects was found to be 8.3±1.68 years. In the present study, the majority of the children were females (54%). In the present study, the majority of the guardians belonged to the age group of 30-39 years (82.5%), and the mean age of the guardians was found to be 35.61±3.65years. The majority of the guardians were Males (60%), most of them were graduates followed by educated upto higher secondary.

The guardian's knowledge was assessed using a pre-validated questionnaire. All the guardians felt that a toothbrush with toothpaste was the best way to brush their child's teeth (100%). The majority of them felt that brushing once a day should be the usual frequency (48%). Most of them knew that milk teeth are important (58%). The frequency of intake of sugar was thought tobe causing cavities in tooth by most of the guardians (64%). The majority of them were aware that pea sized toothpaste is used for brushing their child's teeth (60.5%). Guardians started brushing their child's teeth as soon as the first tooth erupted in the oral cavity (50%) and brushing with a fluoride-containing toothpaste does not affect caries (46%). However, 40% felt that it did reduce caries to some extent. Only 12% of the guardians were aware of pit and fissuresealants and fluoride varnish. Only 12% of the parents were aware about pulpectomy and stainless steel crown treatment can be done for the primary teeth. 52% of the guardians felt that a dentist should be visited only on the occurrence of a problem.

The proportion of the responses differed significantly from each other for all the questions. (P<0.05)

Table 1: Responses to the Questions Assessing Knowledge.

Sl No.	Questions	Responses	Frequency (%)	*P* value
Q1	Best way to brush your child'steeth	(a) Toothbrush with paste√	200(100%)	<0.0001**
		(b) Toothbrush withpowder	0(0%)	
		(c) Datun	0(0%)	
Q2	Frequency of brushing in a day	(a) Twice a day√	40(20%)	<0.0001**
		(b) Once a day	96(48%)	
		(c) After each meal	64(32%)	
Q3	Do you think milk teeth areimportant?	(a) Yes√	116(58%)	0.02*
		(b) No	84(42%)	
Q4	What causes cavities in the mouthof a child?	(a) Frequency of intakeof sugar√	128(64%)	<0.0001**
		(b) Quantity of sugar indiet	72(36%)	
Q5	How much paste do you apply onthe brush?	(a)Pea sized√	121(60.5%)	<0.0001**
		(b) Full brush	44(22%)	
		(c) Smear layer	35(17.5%)	
Q6	When did you start using toothbrush on your child's teeth	(a) As soon as 1st tootherupt√	36(18%)	0.03*
		(b) At the age of 1 year	100(50%)	
		(c) >1 year	64(32%)	
Q7	Brushing with fluoridatedtoothpaste daily	(a) Reduces caries tosome extent√	80(40%)	<0.0001**
		(b) Eliminates decay	28(14%)	
		(c) Has no effect oncaries	92(46%)	
Q8	Have you heard about pit andfissure sealants and fluoride varnish?	(a) Yes√	24(12%)	<0.0001**
		(b) No	84(42%)	
		(c) Don't know	92(46%)	
Q9	Are you aware of pulpectomy andstainless steel crown can be done for milk teeth?	(a) Yes√	24(12%)	<0.0001**
		(b) No	80(40%)	
		(c) Don't know	96(48%)	
Q10	How often do you think a personshould visit a dentist?	(a) 6 monthly√	64(32%)	<0.0001**
		(b) Yearly	32(16%)	
		(c) When a person hasany problem	104(52%)	

√: Correct response

*:statistically significant(P<0.05); **: highly statistically significant (P<0.01).

Table 2: Comparison of the mean DMFT and dmft scores between the Gender.

	Females (*n*=108)	Males (*n*=92)	Total (*N*=200)	*P* value
DMFT (Mean±SD)	0.93±1.29	0.88±1.18	0.91±1.23	0.77ns
Dmft (Mean±SD)	4.91±2.75	5.21±3.46	5.05±3.09	0.49ns

- Comparisons were carried out with the Independent samples t-test for the mean DMFT/dmft scores between the genders: it was found that although the mean DMFT scores of the females (0.93±1.29) were higher than the males (0.88±1.18), the difference was not statistically significant (*P*=0.77) whereas the mean dmft scores of the males (5.21±3.46) were higher than the females (4.91±2.75), the difference was also not statistically significant (*P*=0.49).

Table 3: Comparison of the mean DMFT and dmft scores between the Knowledge status.

	Satisfactory (*n*=108)	Unsatisfactory (*n*=92)	Total (*N*=200)	*P* value
DMFT (Mean±SD)	0.49±0.95	1.39±1.35	0.91±1.23	<0.0001**
dmft (Mean±SD)	3.55±2.35	6.8±2.93	5.05±3.09	<0.0001**

- DMFT: Comparisons were carried out with the Independent samples t-test for the mean DMFT scores between the knowledge status and it was found that guardians with satisfactory knowledge (0.49±0.95) about dental health status had significantly lower DMFT scores than those with unsatisfactory level of knowledge (1.39±1.35) (*P*<0.0001).
- dmft: Comparisons were carried out with the Independent samples t-test for the mean DMFT scores between the knowledge status and it was found that guardians with satisfactory knowledge (3.55±2.35) about dental health status had significantly lower dmft scores than those with unsatisfactory level of knowledge (6.8±2.93) (*P*<0.0001).

Table 4: Association between the Educational status and the responses aboutKnowledge status.

	Odds Ratio(95%CI)	*P* value
8^{th} pass		
Secondary	1.000(0.2037 to 4.909)	0.99ns
Higher Secondary	2.000(0.6485 to 7.565)	0.25ns
Graduation	25.33(7.855 to 101)	<0.0001**

ns: not statistically significant (*P*>0.05); **: highly statistically significant (*P*<0.01).

A logistic regression analysis was carried out to evaluate the degree of association between Educational status and the responses about Knowledge status. It was found that the subjects who were Graduates were significantly more aware of dental health practices [OR: 25.33 (95%CI: 7.855 to 101); *P*<0.0001].

DISCUSSION

The oral health of children depends on the awareness and knowledge of their parents as these factors contribute to the oral health status and its related habits of the children established during infancy and maintained in early childhood.[7]

This survey provides data about knowledge, attitude, and perception of parents towards their child's oral health. Based on attitude on a first dental visit, in the present study, a greater number of parents reported that they visit a dentist only when the child was symptomatic. Thiswas in accordance with the study done by Kumar et al. (2019)[8] and Santhosh Babu et al. (2017).[9] In this study, the majority of parents were aware that frequent intake of sugary items have an adverse impact on child's oral health. Similar results were reported in the study done by Khanduri et al. (2018).[10]

According to the current study, around 50% of parents began brushing their children's teeth only after they reached the age of one year. In contrast to findings from other studies, parents demonstrated a lack of awareness regarding the recommendation to initiate tooth brushing as soon as the child's first tooth emerges. It's essential to maintain the habit of brushing teeth at least twice daily: once in the morning before breakfast and again at night after the last drink. According to this survey only 20% parents admitted that their child brushes twice daily. According to Attin T et al[11] most patients fail to achieve sufficient plaque removal. Therefore, highlighting the importance of brushing teeth twice daily to enhance plaque control. According to Akhil et al[12] both parent and the child are aware of the fact that they have to practice toothbrushing twice daily, but the extent of practicing night brushing in their daily life is questionable. This study showed only 47.6% of children and 53% of parents have been practicing night brushing.

According to Almehmadi et al.[13] The potential effect of fluoride on teeth was accurately reported in a majority of the post-graduate degree holders (38.6%), followed by college degreeholders (34.5%), high school (28.3%), and less than high school subjects (14.3%). About 65.3% of males and 47.4% females were not sure if fluoride application was safe for their children, however, 67.2% of the population revealed that tooth pastes were one among the fluoride sources for their children.

Thakare et al[14] in his study noted that most mothers were cognizant of the significance of primary teeth. Similarly, participants in the present study expressed the belief that deciduous teeth were important and expressed a desire to preserve them until they naturally fall out.

According to a study by Gayan A et al[15] mothers of 32 participants i.e 16% of the total participants were aware of the root canal treatment and capping on milk teeth. Mothers of 4 participants i.e 2% of the total participants were aware of fissure sealants whereas in this study12% of the total participated parents were aware about pit fissure sealants, fluoride varnish pulpectomy and stainless steel crown.

CONCLUSION

Knowledge, attitude and practice regarding the importance of primary dentition was good in almost half of the study participants. Many participants had awareness about oral hygiene. However most of the participants were not aware of fluoride application for prevention of dental caries. Thus, improving awareness among parents by oral health education and oral health promotion is crucial in the care of child's oral health.

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