ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 6, Issue – 3, June - 2023, Page No. : 432 – 439

Validated Questionnaire of Maternal Attitude and Knowledge for Predicting Caries Risk in Children: Epidemiological Study in South Bangalore, Karnataka

[1]Dr. Prachi Srivastava, Postgraduate student, Dental College and Hospital, Rajeev Gandhi Institute of Health Sciences, Bangalore, India.

[2]Dr. Prashanth ST, Professor, Dental College and Hospital, Rajeev Gandhi Institute of Health Sciences, Bangalore, India.

[3]Dr. Amitha HA, Department of Pediatric and Preventive Dentistry, Vokkaligara Sangha, Dental College and Hospital, Rajeev Gandhi Institute of Health Sciences, Bangalore, India.

Corresponding Author: Dr. Prachi Srivastava, Postgraduate student, Dental College and Hospital, Rajeev Gandhi Institute of Health Sciences, Bangalore, India.

Citation of this Article: Dr. Prachi Srivastava, Dr. Prashanth ST, Dr. Amitha HA, "Validated Questionnaire of Maternal Attitude and Knowledge for Predicting Caries Risk in Children: Epidemiological Study in South Bangalore, Karnataka", IJDSIR- June - 2023, Volume – 6, Issue - 3, P. No. 432 – 439.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Dental caries is a disease with multiple Etiology. There are four major factors of interaction: the host (saliva and susceptible tooth), microflora; substrate; fermentable carbohydrates (dietary), cariogenic bacteria (plaque) and time.

There are many factors which do not seen in clinical examination but contribute to the dental caries incidence. The study was conducted in VS Dental College, South Bangalore, India. The population consists of 75 pairs of mother and children, aged between 2 and 8 years.

The inclusion criteria were as follows: children aged between 2 and 8 years, boys or girls, and mother as primary caregiver. The objectives of the study are pinpointing and identification could be done by clinical examination and answering the questionnaire.

Most of the mothers were aware of the deleterious effects of eating sugary foods and not brushing twice a day.

The questionnaire provided a clear analysis of all the risk factors affecting the incidence of dental caries in children and how maternal knowledge plays an important role in it.

Keywords: Caries, Dental, Mother, Questionnaire

Introduction

Dental caries is an important global health problem. In general, its prevalence is high, particularly in children. It is the most common disease which is infectious occurring since childhood.

Child's quality of life can be affected by caries because of severe pain and discomfort which can lead to disfigurement, acute and chronic infections, and changed eating and sleeping, as well as risk of hospitalization, high treatment costs, and loss of school days with the consequent diminished ability to learn. [1-3]

Dental caries is a disease with multiple Etiology. There are four major factors of interaction: the host (saliva and susceptible tooth), microflora; substrate; fermentable carbohydrates (dietary), cariogenic bacteria (plaque) and time.

There are many factors which do not seen in clinical examination but contribute to the dental caries incidence. Those things are considered as dental caries risk factor. The risk factors are an indirect cause and play an important role in the incidence of disease, significantly associated with disease progression. [5-7] These factors are derived from interviews with parents and children from clinical assessment, such as socioeconomic, attitudes, knowledge, and behaviour about oral health. [7-8]

Materials And Methods

The study was conducted in VS Dental College, South Bangalore, India. The population consists of 75 pairs of mother and children, aged between 2 and 8 years.

The inclusion criteria were as follows: children aged between 2 and 8 years, boys or girls, and mother as primary caregiver. The objectives of the study are pinpointing and identification could be done by clinical examination and answering the questionnaire. We arrange the study to substantiate the questionnaire validation for predicting caries risk in children. [7-8]

Questionnaire of maternal attitude and knowledge for predicting children's caries risk partially was designed referring to the Likert Scale, which is an instrument most used in research of the beliefs, and attitudes.

Respondents were asked to state their level of agreement about the statement.

Statement items have been selected from the literature and the pertinent study, about maternal risk factor.

There is no problem in terms of scoring.

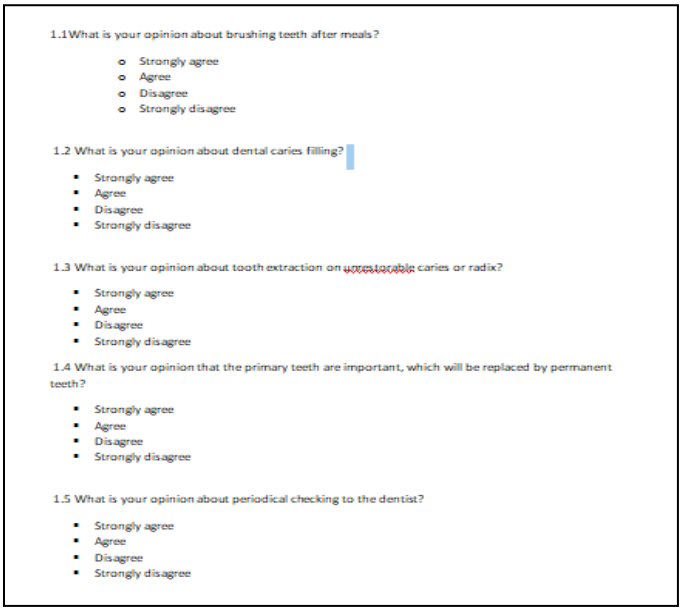

Figure 1

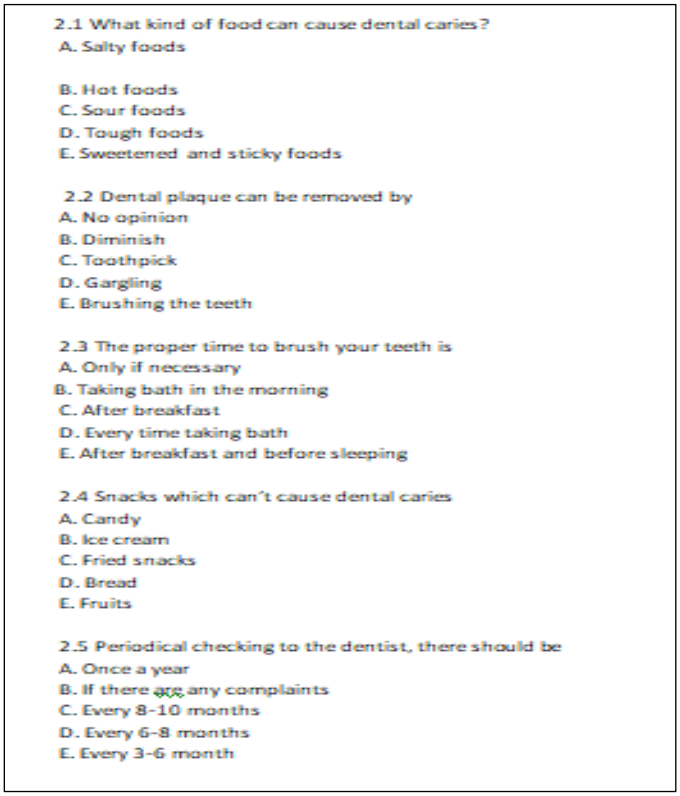

Figure 2

Results

A final validation and reliability study using a sample of 75 pairs of mother and children was conducted to establish whether the questionnaire provides reliable and valid measures of predicting caries risk in children. All questions for predicting caries risk in children were developed and validated using standard and measurement procedure.

The study provides validating questionnaire of maternal attitude and knowledge for predicting caries risk in children. The question about mother's attitude and knowledge consists of: brushing teeth after meals item (question 1 and 8), caries restoration item (question 2), extraction of radix or unrestorable teeth item (question 3), the importance of primary teeth (4), cariogenic food item (question 6 and 9), plaque removal (question 7), and periodical checking item (question 5 and 10). The statistical analysis was Cronbach alpha.

The results are presented in the tables as follows-

Age	n	%
2 yrs	1	1%
3 yrs	23	31%
4 yrs	15	20%
5 yrs	18	24%
6 yrs	10	13%
7 yrs	6	8%
8 yrs	2	3%
Total	**75**	**100%**

Gender	n	%
Male	43	57%
Female	32	43%
Total	**75**	**100%**

Question	Strongly Agree		Agree		Disagree	
	n	%	n	%	n	%
Q1	32	43%	42	56%	1	1%
Q2	34	45%	39	52%	2	3%
Q3	1	1%	74	99%	0	0%
Q4	0	0%	74	99%	1	1%
Q5	0	0%	74	99%	1	1%

Most of the parents agreed in all the first five questions.

Question	A		B		C		D		E	
	n	%	n	%	n	%	n	%	n	%
Q6	0	0%	0	0%	0	0%	12	16%	63	84%
Q7	0	0%	0	0%	0	0%	4	5%	71	95%
Q8	0	0%	75	100%	0	0%	0	0%	0	0%
Q9	0	0%	0	0%	75	100%	0	0%	0	0%
Q10	75	100%	0	0%	0	0%	0	0%	0	0%

Most of the parents opted for the last option in the 6 and 7 question, while in question 8, 9, 10 the most popular option chosen was b, c and a respectively.

Q1	Female		Male		$\chi 2$	P-Value
	n	%	n	%		
Agree	8	25%	34	79%		
Disagree	1	3%	0	0%		
Strongly Agr	23	72%	9	21%	22.082	<0.001*
Total	32	100%	43	100%		

Statistically significant association was observed between gender and the response given to Q1 (P<0.001)

Q2	Female		Male		$\chi 2$	P-Value
	n	%	n	%		
Agree	20	63%	19	44%		
Disagree	0	0%	2	5%		
Strongly Agr	12	38%	22	51%	3.427	0.180
Total	32	100%	43	100%		

Association between gender and the response given to Q2 was not statistically significant (P>0.05)

Q3	Female		Male		χ2	P-Value
	n	%	n	%		
Agree	32	100%	42	98%	0.754	0.385
Strongly Agr	0	0%	1	2%		
Total	32	100%	43	100%		

Association between gender and the response given to Q3 was not statistically significant (P>0.05)

Q4	Female		Male		χ2	P-Value
	n	%	n	%		
Agree	32	100%	42	98%	0.754	0.385
Disagree	0	0%	1	2%		
Total	32	100%	43	100%		

Association between gender and the response given to Q4 was not statistically significant (P>0.05)

Q5	Female		Male		χ2	P-Value
	n	%	n	%		
Agree	31	97%	43	100%	1.362	0.243
Disagree	1	3%	0	0%		
Total	32	100%	43	100%		

Association between gender and the response given to Q5 was not statistically significant (P>0.05)

Q6	Female		Male		χ2	P-Value
	n	%	n	%		
D	3	9%	9	21%	1.823	0.177
E	29	91%	34	79%		
Total	32	100%	43	100%		

Association between gender and the response given to Q6 was not statistically significant (P>0.05)

Q7	Female		Male		χ2	P-Value
	n	%	n	%		
D	4	13%	0	0%	5.678	0.017*
E	28	88%	43	100%		
Total	32	100%	43	100%		

Statistically significant association was observed between gender and the response given to Q7 (P<0.05)

Q8	Female		Male		χ2	P-Value
	n	%	n	%		
B	32	100%	43	100%	–	–
Total	32	100%	43	100%		

Q9	Female		Male		χ2	P-Value
	n	%	n	%		
C	32	100%	43	100%	–	–
Total	32	100%	43	100%		

Q10	Female		Male		χ2	P-Value
	n	%	n	%		
A	32	100%	43	100%	–	–
Total	32	100%	43	100%		

In question number 8,9 and 10 the percentage of mothers opting for one single option was a whole 100 percent.

Discussion

Dental caries is generally known as a most common infectious disease in children. Caries risk is defined as the probability of an individual developing at least a few caries lesions during a specific period. Caries risk assessment is a part of primary prevention strategy and an important step in decision-making and treatment planning while early detection is a part of secondary prevention.[10,19]

The parents, especially mother, is the leading figure for children. She has an essential role in the children's character building, including oral health. Mother is usually the primary role model for children, their attitude and knowledge toward oral health. Many studies mention about the positive correlation between attitudes and knowledge of mother and children's oral health status. The study conducted by Sajadi et al. States that there was no significant relationship between the child's

quality of life relating to oral health and father's level of education, compare with mother's level of education. [18]

There are many important factors in the incidence of dental caries, but the main one is the etiologic factor. Caries risk assessment is a very complex issue because of its multifactorial Etiology and its interaction between risk factors. Caries risk assessment can be done based on clinical examination and other factors which are not seen on clinical examination but contribute to dental caries. Questionnaire is the instrument of choice to obtain information about individual caries risk factors that are not found on clinical examination. [20]

The outcome of the study is a validated questionnaire package which can assist clinicians to predict children's caries risk, by assessing mother's knowledge and attitude through interviews. This questionnaire can be used as a guidance that will help a dentist to diagnose the patient's cariogenic profile. Question items are conducted based on literature review which is considered contribute to dental caries. The requirements of questionnaire have also been fulfilled that are relevant to the purpose and hypothesis; easy to ask; easy to answer; data could be processed.

Based on recent journal searches, research on parental attitudes and knowledge about oral health of their children, especially of primary teeth, is actively conducted in India. Research by Vittoba Setty and Srinivasan in Bengaluru, India, shows that 39% of parents who care and understand about primary teeth in children. In addition, studies by Sultan et al. In Kashmir, India, show that there are about 32.6% of parents who understand the importance of primary teeth. [28-30]. The parents suggest that primary teeth are temporary and unimportant because it will be replaced by permanent teeth

Decayed teeth require treatment to eliminate infection and restore tooth function. The teeth restoration will re-establish the anatomy and preserve tooth structure, restore tooth function such as masticatory, phonetic, esthetic, and space-maintainer function in dental arch, and to provide good oral hygiene. Similar with study by Subramaniam et al. (2016), restoring carious teeth will repair significantly children's occlusal bite forces. [4,7,24]

According to Kay and Blinkhorn, the reason for tooth extraction is generally divided into several categories: caries, orthodontic, exfoliation, periodontal disease, general health, economy, prolonged retention, patient request, and other reasons. Unrestorable dental caries is the main consideration of tooth extraction. This is in accordance with the study by Alsheneifi and Hughes (2001) who investigated the reasons of primary teeth extraction in children aged 3–5 years in the US and found that 53% of primary teeth extraction was due to caries. Focal infection theory mention that systemic disease can be caused by microorganisms from the dental infection in origin. [25-27]

The source of mutans streptococci (**MS**) infection in infants and toddlers has been extensively studied in recent years. Maternal transmission has been documented as a method by which children are initially inoculated with MS.

Early studies demonstrated fidelity of maternal transfer to be as high as 71% in a cohort of Birmingham, AL, children and as low as 43% in Toronto, Ontario children. Emanuelsson found 55% maternal transmission and no paternal transmission in Swedish families. Other studies show that MS are readily acquired from non-maternal sources in certain populations. De Soet et al. Reported that cleft palate populations receiving obturators early in life

demonstrate maternal transmission in only 38% of 21 mother/child pairs.

Clinically, MS transmission patterns within the population of children experiencing S-ECC are of interest, since these patterns may explain characteristics shared with children at high risk of S-ECC who would benefit from early prevention. Strategies for the prevention or delay of maternal transmission of cariogenic bacteria have been recommended by the CDC and are written into oral health policies of paediatric health care organizations. This strategy, however, is predicated on maternal transmission of MS being the primary means by which S-ECC children acquire cariogenic bacteria.

Attention to public health in recent decades underscores the need for increased understanding of how social, cultural, and environmental factors may affect caries risk in children. Several recent studies, many stated about the importance of meaningful relationships between sociocultural factors. Sucrose is regarded as the main factor in dental caries. Sugar food product such as cakes, dessert, candy, soft drinks, jam, and dried fruits contains added sucrose. Dietary containing sugar will diffuse into plaque and is fermented into lactic acid and other acids or can be stored as intracellular polysaccharides by bacteria. This will result in a decrease of ph and create suitable environment for aciduric and acidogenic bacteria. This in line with the Vipelholm's study describes the association between the types of sugar with caries increment. The low incidence of caries is found in the participant with almost sugar-free diet. The frequency of sugar intake affects the progression of caries. The sticky sugar consumption between meals will cause highest caries progression. [35-36]

Conclusion

Most of the mothers were aware of the deleterious effects of eating sugary foods and not brushing twice a day. The questionnaire provided a clear analysis of all the risk factors affecting the incidence of dental caries in children and how maternal knowledge plays an important role in it.

Acknowledgment

This paper is the result of support, guidance and hard work of many people. I extend my sincere thanks to Dr Prashanth ST sir and Dr Amitha HA for guiding me throughout. I would like to thank my head of department and principal to provide me with the opportunity to conduct the study.

References

1. Kemparaj U, Chavan S, Shetty NL. Caries risk assessment among school children in Davangere city using cariogram. Int J Prev Med 2014; 5:664-71.
2. Saravanan M, Lokesh S, Polepalle T. Prevalence, severity and associated factors of dental caries in 3–6-year-old children – A cross sectional study. Int J Dent Sci Res 2014; 2:5-11.
3. Direktorat Kesehatan Gigi. Kementerian Kesehatan Republik Indonesia. Pedoman Pelayanan Kesehatan Gigi Dan Mulut Indonesia Sehat; 2010. Available from: http://www.depkes.go.id/. [Last accessed on 2016 Jun 09].
4. Colak H, Dülgergil CT, Dalli M, Hamidi MM. Early childhood caries update: A review of causes, diagnoses, and treatments. J Nat Sci Biol Med 2013; 4:29-38.
5. Basavaraj P, Khuller N, Khuller RI. Caries risk assessment and control. J Oral Health Community Dent 2011; 5:58-63.

6. Bahar A. Paradigma Baru Pencegahan Karies Gigi. Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia; 2011. P. 59-74.
7. Premkumar S. Manual of Pediatric Dentistry. 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2014. P. 171-220.
8. Ramos-Gomez F, Crystal YO, Ng MW, Tinanoff N, Featherstone JD. Caries risk assessment, prevention, and management in pediatric dental care. Gen Dent 2010; 58:505-17.
9. Hurlbutt M. CAMBRA: Best practices in dental caries management. Academy of Dental Therapeutics and Stomatology, Chesterland: Peer Review Publications; 2011.
10. Harris R, Nicoll AD, Adair PM, Pine CM. Risk factors for dental caries in young children: A systematic review of the literature. Community Dent Health 2004;21 1 Suppl:71-85.
11. Hirooka LB, Mestriner-Junior W, Mestriner S. Dental caries in mother-child pairs from Xingu. Braz J Oral Sci 2014; 13:43-6.
12. Nourijelyani K, Yekaninejad MS, Eshraghian MR, Mohammad K, Rahimi Foroushani A, Pakpour A. The influence of mothers' lifestyle and health behavior on their children: An exploration for oral health. Iran Red Crescent Med J 2014;16: e16051.
13. Moimaz SA, Fadel CB, Lolli LF. Social aspects of dental caries in the context mother-child pair. J Appl Oral Sci 2014; 22:73-8.
14. Tickle M, Milsom KM, Humphris GM, Blinkhorn AS. Parental attitudes to the care of the carious primary dentition. Br Dent J 2003; 195:451-5.
15. Cabral RN, Hilgert LA, Faber J, Leal SC. Caries risk assessment in schoolchildren – A form based on cariogram software. J Appl Oral Sci 2014; 22:397-402.
16. Tamaki Y, Nomura Y, Katsumura S, Okada A, Yamada H, Tsuge S, et al. Construction of a dental caries prediction model by data mining. J Oral Sci 2009; 51:61-8.
17. Dahlan MS. Statistik Untuk Kedokteran Dan Kesehatan Seri 1 Edisi Ke-6. Jakarta: Penerbit Epidemiologi Indonesia; 2015. P. 241-3.
18. Sajadi FS, Pishbin L, Azhari SH. Impact of oral and dental health on children's and parents' quality of life based on early childhood oral health impact scale (ECOHIS) index. Int J Dent Sci Res 2015; 3:28-31.
19. Vanobbergen J, De Visschere L, Daems M, Ceuppens A, Van Emelen J. Sociodemographic determinants for oral health risk profiles. Int J Dent 2010; 2010:938936.
20. Zukanovic A. Caries risk assessment models in caries prediction. Acta Med Acad 2013; 42:198-208.
21. Sheiham A. Dental caries affects body weight, growth and quality of life in pre-school children. Br Dent J 2006; 201:625-6.
22. Mishu MP, Hobdell M, Khan MH, Hubbard RM, Sabbah W. Relationship between untreated dental caries and weight and height of 6- to 12-year-old primary school children in Bangladesh. Int J Dent 2013; 2013:629675.
23. Damle SG, Patil A, Jain S, Damle D, Chopal N. Effectiveness of supervised toothbrushing and oral health education in improving oral hygiene status and practices of urban and rural school children: A comparative study. J Int Soc Prev Community Dent 2014; 4:175-81.
24. Subramaniam P, Girish Babu KL, Ifzah. Effect of restoring carious teeth on occlusal bite force in children. J Clin Pediatr Dent 2016; 40:297-300.

25. Mukhopadhyay S, Roy P. Extraction of primary teeth in children: An observational study. J Cranio Maxillary Dis 2015; 4:57-61.
26. Alsheneifi T, Hughes CV. Reasons for dental extractions in children. Pediatr Dent 2001; 23:109-12.
27. Olsen I, van Winkelhoff AJ. Acute focal infections of dental origin. Periodontol 2000 2014; 65:178-89.
28. Vittoba Setty J, Srinivasan I. Knowledge and awareness of primary teeth and their importance among parents in Bengaluru City, India. Int J Clin Pediatr Dent 2016; 9:56-61.
29. American Academy of Pediatric Dentistry. Guideline on cariesrisk assessment and management for infants, children, and adolescents. Clin Pract Guidel 2014; 37:132-9.
30. Sultan S, Ain TS, Gowhar O. Awareness of mothers regarding oral health of their children in Kashmir, India. Int J Contemp Med Res 2016; 3:2169-71.
31. Jain R, Oswal KO, Chitguppi R. Knowledge, attitude and practices of mothers toward their children's oral health: A questionnaire survey among subpopulation in Mumbai (India). J Dent Res Sci Dev 2014; 1:40-5.
32. Kamil MA, El-Ameen NM, Madkhaly SH, et al. Knowledge and attitude of Saudi mothers towards health of primary teeth. J Dent Oral Hyg 2015; 7:107-12.
33. Oredugba F, Agbaje M, Ayedun O, et al. Assessment of mother's oral health knowledge: Towards oral health promotion for infant and children. J Sci Res Health 2014; 6:908-15.
34. Fisher-Owens SA, Gansky SA, Platt LJ, Weintraub JA, Soobader MJ, Bramlett MD, et al. Influences on children's oral health: A conceptual model. Pediatrics 2007;120: e510-20.
35. Axelsson P. Diagnosis and Risk Prediction of Dental Caries. Illinois: Quintessence Publishing Co.; 2000. P. 44-5.
36. Van Loveren C, Lingström P. Diet and dental caries. In: Fejerskov O, Nyvad B, Kidd E, editors. Dental Caries. The Disease and its Clinical Management. 3rd ed. Oxford: Willey Blackwell; 2015. P. 134-5.
37. Nightingale KJ, Chinta SK, Agarwal P, et al. Toothbrush efficacy for plaque removal. Int J Dent Hyg 2015; 12:251-6.
38. Grover D, Malhotra R, Kaushal SJ, et al. Toothbrush 'a key to mechanical plaque control'. Indian J Oral Sci 2012; 3:62-8.
39. Berg JH, Slayton RL. Early Childhood Oral Health. New Jersey: Willey Blackwell; 2016. P. 221-40.
40. Chin JR, Kowolik JE, Stookey GK. Dental caries in the child and adolescent. In: Dean JA, editor. Dentistry for the Child and Adolescent. 10th ed. St. Louis: Elsevier; 2016. P. 155-71.