Research Article **ISSN: 2349 – 7114**

Asian Journal of Research in Pharmaceutical Sciences and Biotechnology

Journal home page: www.ajrpsb.com

https://doi.org/10.36673/AJRPSB.2021.v09.i03.A11

ASSOCIATION BETWEEN CAREGIVERS TO PREVENT CONVENTIONAL HERIDITY MECHANISM DENTAL CARIES AMONG PRE-SCHOOL CHILDREN IN CHENNAI - A CROSS SECTIONAL STUDY

Shruthi[1], M. Rajmohan[1], R. Sindhu[1], M. Sasikala[2], Lubna Fathima[3], D. Prabu*[1], M. R. Prashanthy[1]

[1*]Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai, Tamil Nadu, India.
[2]Department of Public Health Dentistry, S. M Dental Clinic, Tiruvallur, Tamil Nadu, India.
[3]Department of Public Health Dentistry, Madha Dental College and Hospital, Kundrathur, Tamil Nadu, India.

ABSTRACT

Objective: The aim is to investigate the effect of trying to prevent conventional hereditary mechanism and Dental caries in pre-school children. This is because of the fact that caries are mostly transmitted from their mother to children before birth itself. This study also deals with investigating the association of caregiver behaviour measures so as to prevent conventional hereditary mechanism among preschool children. **Methods:** Children between 3-6 yrs. were selected for collecting the sample because of the fact that young children are more prone to caries development given by WHO. Various methods were followed to investigate the vertical transmission prevention. Initially data were collected from oral examinations of children. Variables like absence of maternal utensils sharing, mouth to mouth feeding were used to prevent vertical transmission. **Results:** Data sample for 200 children were analysed. This shows caregivers who practised vertical transmission prevention had better oral health behaviours. This study shows that behaviours of the care givers is not that much effective in reducing dental caries among preschool children. **Conclusion:** There is no significant association between behaviours to prevent conventional hereditary mechanism and dental caries among pre-school children.

KEYWORDS

Behaviour, Caregivers, Children and Dental caries.

Author for Correspondence:
Prabu D,
Department of Public Health Dentistry,
SRM Dental College,
Ramapuram, Chennai, Tamil Nadu, India.

Email: researchphdsrm@gmail.com

INTRODUCTION

Dental caries is a worldwide disease, in which it plays an important role in general health where oral health is considered as a main part of them. This Dental caries have three main factors they are Host, microflora (Bacteria) and Environment. These are the three factor which are essential for the development of caries[1]. In this paper we describe

about the spread of Dental caries through vertical transmission.

In India, the vertical transmission which plays an important role in spreading of oral diseases. Especially in dentistry the spread of streptococcus mutants (MS) is more common. Pregnancy factors which has the high influence in the devolvement of Streptococcus mutants in infants[2]. This will finally end up in causing dental caries in children. The spread of oral organisms were contributed by various factors which were discussed below. In order to prevent the vertical transmission "Association between caregivers to prevent vertical transmission and dental caries" was done.

There was an main reason in controversial result in this study, this because the study did not include certain main cofounders such as socioeconomic scale of the people. This socioeconomic status of a population which clearly satisfies all the need.

The reason for these controversial results is that they did not few others factors are also used as covariates such as introducing sweets to the children and their frequency. This has been considered due to the fact restricting the intake of carbohydrates especially sugars had significant effect on caries prevalence in children[3]. Caregivers smoking habit also influencing dental caries in children[4]. Therefore this study highlights the prevention of vertical transmission and the spread of dental caries. This study also deals with educating the caregivers and children about severity of dental caries.

MATERIAL AND METHODS

This survey was done between January 2012 and July 2012. The main subject of this study is obtained from oral examination of children between 3-6years and a self-administered questionnaire from parents. The study was conducted in Chennai. Chennai city was divided into 4 zones (North, South, East, and West). In each 4 zone, a private consultant of children's hospital was selected for this study. 50 samples were collected in each zone. A total of 200 samples were collected. Data collection was done by giving a questionnaire pattern in which caregivers were asked to fill it. Children oral health status was examined by DMFT index. The self-administered questionnaires were administered to prevent conventional hereditary mechanism, dietary history, oral health behaviour, socioeconomic status and socio-demographic factors such as age and gender.

Socio demographic pattern such as sex, month of the child, birth order, whether the children is living with their grandparents or not, going nursery or not and their caregivers smoking status. Socioeconomic status of the child parents were taken using kuppuswamy scale.

Data Analysis

All data were analysed by statistical report Logistic regression analysis was used for the relationship between caregivers for the prevention of conventional hereditary mechanism and caries experience. The model used here are by 4 steps for their covariates

Model 1: child gender and age (months)
Model 2: model1+dietary factors
Model 3: model2+oral health behaviours
Model 4: model3+sociodemographic factors.

RESULTS AND DISCUSSION

This survey was conducted by oral examinations and questionnaire to 200 childrens and caregiver in each direction of Chennai-Tamil Nadu, India.

In this survey out of 200 children, 52 children had experienced caries who practised behaviour to prevent conventional hereditary mechanism. So as to decreased in caries prevalence of children who practised behaviour to conventional hereditary mechanism. This shows there was significant association between caregiver behaviours and cause of dental caries in children.

Table No.1 shows p value of children who practised vertical transmission prevention and dental caries (0.025)
Child attending any nursery school (0.044)
Tooth brushing (0.07)
Frequency of brushing (0.004)
Introducing sweet (0.003)
Sweet frequency (0.003)

Time for a child to sleep (0.059).

The first two models are statistically significance as the p-value is less than 0.05

Table No.2 shows association between vertical transmission prevention behaviour and caries experience with covariates. In this table, behaviour to prevent vertical transmission and dental caries with non-adjusted modelOR-1.12 and 95% CI (0.97-1.89) and p value (0.036).

After adjusting with sex and age in months there is marked reduction in the significance (OR model 1=1.01), 95% CI (0.94-1.84) and p value (0.049)

In the same way, model 2 shows (OR=0.94), 95% CI (0.89-1.65) and p value (0.355)

Model 3 shows (OR=0.91), 95% CI (0.87-1.43) and p value (0.401).

Model 4 shows (OR=0.84), 95% CI (0.81-1.40) and p value (0.475).

All these value suggests that there was reduction in the OR value and 95% CI value with considering the covariates. There is no statistical significant is evident.

Discussion

This research was conducted for investigating the association between caregivers to prevent vertical transmission and dental caries. Many studies had proven that caries is the main cause for dental pain in childhood[5]. But the result suggests that there are no significant associations. In this cross sectional study, we include other health behaviours and sociodemographic factors into considerations.

Other variables like smoking status of caregivers, commencement of tooth brushing, when to start giving sweets and frequency of givings weets are also included. Among all these factors, maternal sharing of utensils plays a major role in initiation of dental caries because MS play role in causing dental caries. Many studies suggested that mode of delivery of infants in caesarean section have high risk of caries prevalence than vaginally delivered infant[2].

The next factor coming into role is socioeconomic status (SES). People with high SES had good health behaviours than with lower SES[6]. It has been reported that parents' behaviour and attitude towards oral health are associated with the child's dental health[7]. When to start giving sweets and its frequency also plays a significant role causing dental caries. This factor shows significant results due to the fact that in young children, early MS colonization, plaque accumulation, diet and mother's education have been shown to be strongly associated with caries development[8] which is similar to this study.

When to start tooth brushing and its frequency shows significant results in causing dental caries[9].

Smoking status of the caregivers also shows significant results but the previous study did not show any significance about this factor. This was told in detail in introduction part. The previous study reported that there was no significant association between smoking status of caregivers and child caries experience which is not similar to this study[4].

Breast feeding termination does not show any significance in children causing caries. Usually breast feeding is recommended by healthcare professionals and paediatricians to be continued as long as mutually desired by mother and child[10].

Our results suggest that people with higher SES was tried to prevent vertical transmission and they had low caries prevalence rate. Deducing inequalities plays an important role in oral policy issue[11]. This includes age, tooth brushing frequency, water fluoride level were significantly correlated to at least one carious score[12] which shows results similar to this study. It was also stated that the severity of caries progression occurs with who they are in close contact and mothers with high caries activity in their saliva. This occurs because initially caries does not colonize the deciduous teeth and they spreads from the surroundings[13].

Table No.1: Frequency distribution of individual charecterstics

S.No	Individual Characters		Behavior to prevent conventional heriditory mechanism		Total	Chi - Square (p- value)
			Yes	No		
1	Birth order of the child	First Born	63	53	116	0.062
		Second Born	35	38	73	
		Third Born or later	7	3	10	
2	Child Living with grandparents	Yes	53	52	105	0.723
		No	14	13	27	
		Temporarily	38	29	67	
3	Child Attending any nursery school	Attending	75	67	142	0.044
		not attending	19	15	34	
		any home education	11	12	23	
4	sharing maternal utensils	Once in a week	12	10	22	0.012
		Daily	10	6	16	
		never done	83	78	161	
5	mouth - mouth feeding	Once in a week	6	3	9	0.018
		Daily	6	4	10	
		never done	93	87	180	
6	Breast Feeding Terminated	12 to 18 months	57	63	120	0.018
		more than 24 months	40	29	69	
		no breast feeding	8	2	10	
7	When to start tooth brushing	12 to 18 months	56	51	107	0.07
		18 to 24 months	43	34	77	
		more than 24 months	6	9	15	
8	Frequency of brushing	less than once a day	11	9	20	0.004
		once in a day	83	72	155	
		more than twice a day	11	13	24	
9	start giving sweet	12 to 18 months	34	42	76	0.003
		18 to 24 months	61	42	103	
		more than 24 months	10	10	20	
10	Frequency of giving sweets	less than a week	20	16	36	0.003
		one - three day a week	64	64	128	
		every day	21	14	35	
11	Time for children to go to bed	before 22 hours	25	24	49	0.059
		after 22 hours	51	45	96	
		Irregularly	29	25	54	
12	Smoking status of caregiver	Smoking since long time	10	20	30	0.04
		Smoking started after marriage	49	32	81	
		no smoking	46	42	88	
13	Child experienced any caries	only one tooth	6	9	15	0.025
		more than two tooth	18	19	37	
		no caries	81	66	147	
14	Restoration done on the tooth	only one tooth	3	1	4	0.42
		more than two tooth	1	4	5	
		no restoration done	101	89	190	
		no smoking	46	42	88	

Table No.2

S.No		Behaviors to prevent vertical transmission			
		Yes	No	95% CI	P Value
1	Non-Adjusted or	Referent	1.12	0.97-1.89	0.036
2	Model 1	Referent	1.01	0.94-1.84	0.049
3	Model 2	Referent	0.94	0.89-1.65	0.355
4	Model 3	Referent	0.91	0.87-1.43	0.401
5	Model 4	Referent	0.84	0.81-1.40	0.475

CONCLUSION

In conclusion, there is no significant association between behaviours to prevent conventional hereditary mechanism and dental caries among pre-school children. Certain factors show significant results which can be prevented by developing caregiver behaviours and child oral hygiene practise.

ACKNOWLEDGEMENT

The authors wish to express their sincere gratitude to Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai, Tamil Nadu, India for providing necessary facilities to carry out this research work.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

BIBLIOGRAPHY

1. Kopycka-Kedzierawski D T, Billings R J. A longitudinal study of caries onset in initially caries-free children and baseline salivary mutans streptococci levels: A Kaplan-meier survival analysis, *Community Dentistry and Oral Epidemiology,* 32(3), 2004, 201-209.
2. Li Y, Caufield W P, Dasanayake A P, Wiener W H, Vermund S H. Mode of delivery and other maternal factors influence the acquisition of streptococcus mutans in infants, *J Dent Res,* 84(9), 2005, 806-811.
3. Kristoffersson K, Birkhed D. Effects of partial sugar restriction for 6 weeks on numbers of streptococcus mutans in saliva and interdental plaque in man, *Caries Res,* 21(1), 1987, 79-86.
4. Kim Seow W. Environmental, maternal and child factors which contribute to early childhood caries: A unifying conceptual model, *Int J Pae Dent,* 22(3), 2012, 157-168.
5. Boeria G F, Correa M B, Peres K G, Santos I S, Matijasevrich A *et al*. Caries is the main cause for dental pain in childhood-findings from a birth cohort, *Caries Res,* 46(5), 2012, 488-495.
6. Wakaguri S, Aida J, Osaka K, Morita M, Ando Y. Association between caregivers to prevent vertical transmission and dental caries, *Caries Res,* 45(3), 2011, 281-286.
7. Goettoms M L, Ardenghi T M, Romano A R, Demarco F F, Torriani D D. Information of maternal dental anxiety on the child's dental caries, *Caries Res,* 46(1), 2012, 3-8.
8. Jana Olak, Reet Mandar, Sara Karjalainen, Eva Soderling, Mare Saag. Dental health and oral mutans Streptococci in 2-4 year-old-Estonian children, *Int J Paediatr Dent,* 17(2), 2007, 92-97.
9. Chadha G M, Kakodhar P, Chaugule V, Nimbalkar V. Dental survey of institutionalized children with autistic disorder, *Int J Clin Pedi Dent,* 5(1), 2012, 29-32.
10. Agarwal M, Ghousia S, Konde S, Raj S. Breastfeeding: Nature's safety Net, *Int J Clin Paediatr Dent,* 5(1), 2012, 49-53.
11. Aida J, Ando Y, Oosaka M, Niiki K, Morita M. Contributions of social context to inequality in dental caries: A multilevel analysis of Japanese 3 yr old children, *Community Dent Oral Epidemiology,* 36(2), 2008, 49-156.

12. Wang X, Willing M C, Marazita M L, Wendell S, Warren J J, Broffitt B, Smith B, Busch T *et al*. Genetic and environmental factors associated with dental caries in children: The Iowa Fluoride Study, *Caries Res,* 46(3), 2012, 177-184.
13. Berkowitz R J, Turner J, Green P, Maternal salivary levels of Streptococcus mutans and primary oral infection of infants, *Arch Oral Biol,* 26(2), 1981, 147-149.

Please cite this article in press as: Prabu D *et al*. Association between caregivers to prevent conventional heridity mechanism dental caries among pre-school children in Chennai - A cross sectional study, *Asian Journal of Research in Pharmaceutical Sciences and Biotechnology*, 9(3), 2021, 98-103.