

Wipe it off! The easiest way!

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A B S T R A C T

Introduction Early Childhood Caries (ECC) may develop due to nocturnal breast/bottle feeding habits, together with poor oral hygiene. One of the main aim in babies' dental treatments is preventive care, which involves the education of parents/guardians and/or caregivers. The purpose of this study was to evaluate the efficacy of tooth wipes in plaque removal in 8-16 month old infants.

Material and Methods: The sample size comprised of 60 infants. The subjects were divided into four groups (1) Oral hygiene performed by gauze [n=15], (2) Oral hygiene performed by tooth brush [n=15], (3) Oral hygiene performed by tooth wipe [n=15], (4) Oral hygiene performed by tooth brush and tooth wipe [n=15]. Dental plaque scores were analysed utilising the modification of Quigley and Hein index. Assessment of baby and parental satisfaction parameters were evaluated by a questionnaire.

Results: Intragroup comparison shows tooth wipes alone and tooth brush and tooth wipe when used in conjunction gives significant results.

Conclusion: Tooth wipes may be considered as an effective and acceptable method of plaque removal.

Key words: Infant, Tooth Wipes, Plaque, Oral Hygiene

INTRODUCTION

When a child is born, his oral cavity is free from all types of micro organisms. But this is for a very short period only. Soon there is colonisation of micro organisms. This period is referred to as the 'window of infectivity'. It can be defined as the time of initial colonisation of the infant's oral environment with cariogenic bacteria, Streptococci mutans.¹ This is of great clinical importance because earlier the colonisation of a young child's mouth, the greater is the risk of developing caries.² Although earlier studies have reported that the window of infectivity for mutans Streptococci occurs at a mean age of 27 months³, more recent investigations have shown that over 30% of infants before 6 months of age are already infected with mutans Streptococci.⁴

A significantly higher percentage of children with early childhood caries (ECC) have a history of early colonisation by mutans Streptococci coupled with frequent bottle habit or nocturnal bottle and breast feeding practices.⁵

The first step to success-fully achieving healthy habits is to assure parents of their teaching role in relation to their child's oral hygiene.⁶

According to Ismail,⁷ there are 3 general approaches used to prevent ECC:

1 educating mothers about the disease;

- 2 examination and preventive measures in dental clinics; and
- 3 development of appropriate feeding/dietary and self-care habits at home.

Unfortunately, parental knowledge alone is often not sufficient to influence a change in unhealthy behaviors. One study found that 40% of mothers of ECC babies admitted knowing about the potential harmful effects that may result from putting infants to bed with a bottle containing milk, yet they continued the habit.⁸

Regarding early dental examination and application of preventive measures, the problem for most children continues to be a lack of access to care.⁹

Oral hygiene habits should be encouraged from a very early age. Nowadays, infants oral hygiene is of growing importance in dentistry; dentists advise parents to carry out tooth cleaning in infants with either a gauze, wet cloth, or toothbrushes.¹⁰

All these methods vary according to different philosophies, but they all should be effective, safe, easy to use by parents and caregivers and also well accepted by babies. It can be observed that not all methods comply with the last two requirements.¹¹ Recently, a new tooth wipe has been developed. Soft, textured, natural xylitol based bamboo wipes. Fluoride free, paraben free and sugar free. Helps

removes plaque.¹² This tooth wipe aims at minimising the difficulties that mothers/guardians may have when carrying out the babies' tooth cleaning, especially at bedtime.¹³

To the best of our knowledge, very scarce data is available on the use, efficacy or preference of such wipes in relation to conventional gauze or toothbrushes.¹⁴

In light of this, the aim of this study was evaluate the efficacy of tooth wipes in plaque removal in 8-16 month old infants.

MATERIAL AND METHOD

The sample for the study were from government medical college and hospital sector 32 chandigarh. Informed consent was obtained from each child's parent or legal guardian.

The sample size comprised of 60 infants. The subjects were divided into four groups (figure-1-4)

- oral hygiene performed by gauze (n=15)
- oral hygiene performed by tooth brush (n=15)
- oral hygiene performed by tooth wipe (n=15)
- oral hygiene performed by tooth brush and tooth wipe (n=15)

Inclusion criteria:

- No significant medical histories.
- At least two anterior teeth in the upper or lower arch should be present.
- Age 8 – 16 months .

Exclusion criteria:

- Any medical history
- Age above 16 months

Efficacy of plaque removal

The parent and the dentist were placed in a knee – to – knee position. A few droplets of a plaque disclosing agent were applied directly on to all tooth surfaces to disclose the plaque, baseline index was assessed. The parents were then randomly assigned a cleaning method.¹¹

The gauze or the tooth wipes were both used in a similar way. The mother or caregiver wrapped the gauze/tissue on their index finger. They then placed the wrapped finger in the baby's oral cavity and rubbed the baby's teeth and gums with the gauze or tissue.¹²

Soft bristled kids tooth brush was used as the dental cleaning technique. A tooth brush was given to each caregiver. No tooth pastes were advocated because washing the mouth of the infant after brushing was practically impossible and also there was a chance that the infant might swallow the tooth paste . Caregivers were told to try to clean their infant's teeth as thoroughly as they could.¹³

After performing the dental cleaning technique, the plaque scores were again recorded.

Dental plaque scores were analysed utilising the Turesky modification of Quigley and Hein index (PI).¹¹

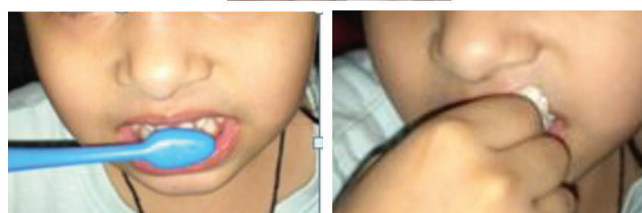
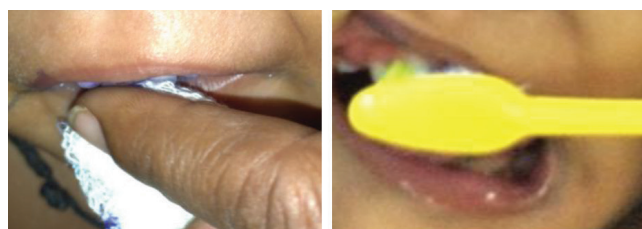


Figure-1: Oral hygiene performed by gauze (n=15); **Figure-2:** Oral hygiene performed by tooth brush (n=15); **Figure-3:** Oral hygiene performed by tooth wipe (n=15), **Figure-4a and 4b:** Oral hygiene performed by tooth brush and tooth wipe (n=15).

The scoring utilised was as follows:

- 0 – No plaque
- 1 – Separate flecks of plaque at the cervical margin
- 2 – A thin band of plaque at the cervical margin
- 3 – A band of plaque wider than 1mm but covering less than one third of the crown
- 4 – Plaque covering at least one third but less than two third of the crown
- 5 – Plaque covering more than two third of the crown

Assessment of baby and parental satisfaction

Parents/ caregivers of the infants were asked to score two parameters: parental satisfaction and baby perceived acceptance of the baby regarding the use of cleaning method. These parameters were evaluated by a questionnaire. Each of the two criteria was scored using the following scale:

- 1 – Very dissatisfied
- 2 – Dissatisfied
- 3 – Satisfied
- 4 – Neutral satisfied
- 5 – Very satisfied

The satisfaction questionnaire was recorded by all parents based on their own and their infant's dental cleaning experience.

RESULTS

Sixty infants were analysed for plaque index scores. Before and after dental plaque indices for each dental cleaning method are described in Table 1.

Table 1 shows plaque score before: no significant difference

was seen at baseline (P=.257) plaque score after: shows significantly reduced plaque levels (P<0.034). Tooth wipes alone (.4000) and tooth brush in conjunction with tooth wipes (.4000) shows significant reduced plaque score followed by gauze (.8000) and tooth brush (.9333).

Intragroup comparison shows tooth wipes alone and tooth brush and tooth wipe when used in conjunction gives significant results (0.0000) (Table 2).

Table 3 shows high patient satisfaction with tooth wipes (3.3333), followed by tooth brush, tooth brush + tooth wipe and gauze (p=.017). It also shows high baby's perceived acceptance with tooth wipes (3.000), followed by tooth brush+tooth wipe, tooth brush and gauze equally (p=.016).

Plaque score (before) / plaque score (after)				
	Mean	P value	Mean	P value
Gauze	1.5333	.257	.8000	.034
Tooth brush	1.8667		.9333	
Tooth wipes	1.4000		.4000	
Toothbrush + tooth wipes	1.8000		.4000	.6333
Total	1.6500			

Table-1: Plaque score before and after

DISCUSSION

This study's results suggest that the tooth wipe provides an effective method of plaque removal. Tooth wipes alone and tooth brush in conjunction with tooth wipes shows significant reduced plaque score followed by gauze and tooth brush.

The results are in accordance to the findings of study done by Almeida et al. 2007 in which a novel infant Tooth Wipe provides an effective method of plaque removal.¹¹ Similarly, Saharkhizan et al. 2010 suggested tooth wipe is as effective as the manual toothbrush and can be used for marinating oral hygiene.¹⁵ In another study, Abanto et al 2012 concluded that tooth wipes are effective in removing biofilm from babies anterior teeth and are best accepted by mothers, caregivers and babies and The effectiveness of tooth wipes in successful removal of plaque was also proven in the study done by S Bhat et al (2014).¹³

The tooth wipes are made from compressed fibre towellete which was saturated with a palatable aqueous solution which included glycerine and xylitol .Soft, textured, natural bamboo wipes. Fluoride free, paraben free and sugar free. Helps removes plaque. In addition they are Disposable, helps massage tender gums, textured for

Multiple Comparisons				
Dependent Variable: Plaque score (after) Tukey HSD				
(I) Type of oral hygiene used	(J) Type of oral hygiene used	Mean Difference (I-J)	Std. Error	Sig.
Gauze	tooth brush	-.13333	.22111	.931
	tooth wipes	.40000	.22111	.280
	Tooth brush + tooth wipes	.40000	.22111	.280
tooth brush	gauze	.13333	.22111	.931
	tooth wipes	.53333	.22111	.086
	tooth brush + tooth wipes	.53333	.22111	.086
tooth brush+ tooth wipes	gauze	-.40000	.22111	.280
	tooth brush	-.53333	.22111	.086
	tooth wipes	.00000	.22111	1.000
tooth wipes	gauze	-.40000	.22111	.280
	tooth brush	-.53333	.22111	.086
	tooth brush+ tooth wipes	.00000	.22111	1.000

Table-2: Intra group comparison (turkey post hoc test to compare differences in 2 groups)

Descriptives					
		N	Mean	Std. Deviation	P value
Parent satisfaction	gauze	15	2.6667	.61721	.017
	tooth brush	15	2.8667	.63994	
	tooth wipes	15	3.3333	.48795	
	Tooth brush + tooth wipes	15	2.8666	.51640	
	Total	60	2.9333	.60693	
Baby perceived acceptance	gauze	15	2.4000	.50709	.016
	tooth brush	15	2.4000	.50709	
	tooth wipes	15	3.0000	.65465	
	tooth brush + tooth wipes	15	2.4667	.63994	
	Total	60	2.5667	.62073	

Table-3: Parent satisfaction and baby perceived acceptance based on type of oral hygiene method used

plaque removal, neutral flavoured, ideal for on the go gum and tooth cleaning, biodegradable and easy to use.¹¹

Mutans streptococci are found in dental plaque, and mechanical removal theoretically reduces mutans streptococci levels and further dental caries susceptibility.¹⁴ According to a study, there was a 25% reduction in mutans streptococci infection in young children after a single dental health education session and tooth brushing instruction.¹⁵ Furthermore, optimal preventive measures, including antimicrobial regimens, have also been effective in reducing bacterial counts.¹⁶

This investigation's finding demonstrated that parents were more satisfied with the tooth wipes, followed by tooth brush, tooth brush + tooth wipe and gauze. This might be due to the fact that tooth wipes are easy to use and more comfortable.¹²

Similarly, the infants' perceived acceptance was significantly higher with tooth wipes followed by tooth brush+tooth wipe, tooth brush and gauze equally. The fact that the wipes allow the mother to provide smoother and more soothing oral sensory movements in the infant's mouth might have influenced this result.¹³

Based on this study, the introduction of the infant tooth wipe cleaning method in high caries risk babies of 8 – 16 months of age can be considered effective and supports the anticipatory guidance to address the individual's risk factors for early childhood caries earlier and provide the necessary intervention.¹¹

The primary healthcare providers play a major role in introducing concepts of early childhood preventive dental care to the child's parents as part of their overall child care and anticipatory guidance. Infants in the first years of life make their first healthcare visits to medical clinics than dental clinics.¹⁷ This investigation clearly demonstrates that the tooth wipes can be appropriately recommended by physicians and other non-dental healthcare providers as an effective dental cleaning intervention.¹⁸

CONCLUSION

Based on this study's results, the following conclusions can be made:

Tooth wipes provide an acceptable, competent, time saving and efficient method of plaque removal for infants. Tooth wipes are highly accepted by infants and their caregivers.

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