



## RESEARCH ARTICLE

### EVALUATING INFANT ORAL HEALTH CARE KNOWLEDGE AND AWARENESS AMONG NURSING MOTHERS IN HUBLI-DHARWAD CITY: A QUESTIONNAIRE STUDY

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#### ARTICLE INFO

##### Article History:

Received 27<sup>th</sup> February, 2016  
Received in revised form  
25<sup>th</sup> March, 2016  
Accepted 04<sup>th</sup> April, 2016  
Published online 31<sup>st</sup> May, 2016

##### Key words:

Infant,  
Oral Hygiene Practices,  
Nursing Mother,  
Bottle Feeding.

#### ABSTRACT

Dental caries according to Center for Disease Control and Prevention is a chronic and preventive disease which is 32 times more likely to occur in infants of low socioeconomic status, whose mothers have a low education level, and who consume sugary foods (Alshehri *et al.*, 2015). Oral health care therefore, in infancy itself is the foundation on which a life time of preventive education and dental care can be built up in order to help acquire optimal oral health. The first step of infant oral health care is the preventive oral health behavior of parents since they would influence their children's behaviour in adapting to the preventive oral health practices as they grow along. Mothers are undoubtedly the primary source of early education in children with regard to a good oral health. It is also an important aspect of general health in infants and children as it impacts the quality of life and health outcomes. Hence, timely delivery of educational information to nursing mothers whose infants are at high risk for developing caries is the ultimate goal of early assessment aiding in implementation of preventive strategies. This study was done to assess the nursing mother's knowledge and awareness about the oral health of their infants. The study was conducted at a local medical college and hospital through an 18-item questionnaire which was distributed among 150 nursing mothers of Hubli-Dharwad region by the researcher. Response was recorded by likert and multiple choice questions written in both English and Kannada. The results were analysed using Pearson chi-square test. The study showed that people lacked awareness about important oral hygiene measures. Although The parents with their lack of awareness about the pedodontist, had a fair idea about oral hygiene maintenance among infants. This knowledge can be further improved by conducting 'oral health care awareness programs'. They are very important to secure healthy oral condition among infants. Therefore, accumulative effort by both the medical and dental health care professionals should be initiated towards achieving it.

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Citation: Prashant Battepati, Apurva Rao, B., Anand Tavargeri, Rajesh T Anegundi, Shruthi Patil, and Vijay Trasad. 2016. "Evaluating infant oral health care knowledge and awareness among nursing mothers in Hubli-Dharwad city: A questionnaire study", *International Journal of Current Research*, 8, (05), 31768-31773.

## INTRODUCTION

A good oral health contributes positively to the overall physical, mental and social well-being of an individual by allowing them to enjoy their lives without experiencing pain, discomfort or embarrassment. Thereby, making oral health care an inevitable task which the parent has to start performing on the infant as early as possible and make them aware of its importance. Young children's oral health maintenance and outcomes are influenced by their parent's knowledge and beliefs (AAPD., 2014). One of the consequences of improper hygiene maintenance is dental caries which apart from the

possibilities of vertical and horizontal transmission, is very much depended on the local factors of oral cavity. Dental caries is considered a chronic, infectious but preventable disease. Therefore, infant oral health is the foundation on which a lifetime of preventive education and dental care can be built upon in order to help acquire optimal oral health into child and adulthood. An improved access to oral health care can be provided by preventive dental counseling and anticipatory guidance in oral hygiene for mothers of children aged 6 months to 5 years. This is possible as new mothers are apt to be more receptive to the behavioral change and self-management goals requisite to a long-term strategy for maintaining their own and their offspring's oral health (PK Shivaprakash *et al.*, 2009). American Academy of Pediatric Dentistry (AAPD) recommends that infants should consult the

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dentist within 6 months of getting their first tooth or by their first birthday (Nagarajappa et al., 2013). It is the initial visit that recommends regular visits to the dentist, based on the child's oral health (Nagarajappa et al., 2013). Taking into consideration the pivotal role a mother plays in an infant's life, a study was conducted to assess the knowledge and awareness about the oral health maintenance and practices among the nursing mothers in the Dharwad region about infant oral health care. The objective of the study was to assess the knowledge and awareness and at the same time to know the oral hygiene measures practiced by them.

**MATERIALS AND METHODS**

**Source of data**

The subjects for the study were selected from the pediatric ward of a local medical college and hospital.

**Method of collection of data**

A single examiner was trained and calibrated to conduct a cross sectional study in Hubli-Dharwad region. The questionnaire consisted of 18 questions and was framed both in english and Kannada (regional) language for ease of understanding.

**Method of performing the study**

It was distributed among 150 nursing mothers in the pediatric ward of a local medical college and hospital. All the responses were recorded using Likert scale or multiple choice closed-ended questions. The data obtained were then statistically analysed using Pearson chi-square test. We hypothesized that the nursing mothers were not well aware of the infant oral health care practices.

**RESULTS**

All the responses of the 150 mothers have been depicted in the table segregated based on education and occupation. Based on education of the mother, it was seen that most of the parents(mothers) were not aware of the existence of a pedodontist. Mostly because about 49% of the mothers felt that the milk teeth were not as important as the permanent teeth. Although, this was in contrast to about 53% who knew that a relationship did exist between both primary and permanent dentition and about the same percentage of people agreed of milk teeth being more prone for caries. Majority of the mothers felt that the carious teeth should be treated as soon as possible. When the knowledge of the mothers were evaluated about the oral hygiene practices, most of them(43%) felt it should be initiated after the eruption of the first tooth and should be performed atleast twice in a day(62%). When asked about the oral hygiene aids used by them, a major portion of the sample (62%) were not aware of the existence of a pedodontic brush. A mixed response was obtained when asked about the use of toothpastes along with tooth brushes. They favoured using the pastes after the completion of third year of the child mainly because by then the children learn to spit out by themselves. Also, the mothers felt the need to change the brush once in 6 months (66%). However, only a few were not sure concerning the age for monitoring their children during brushing. When asked about the feeding patterns affecting the child's teeth, the mothers promptly agreed (52%). However, many did feel strongly that night time breast/bottle feeding could not cause or have any affect on the teeth (58%). More than half of the participants felt the need for a regular dental check-up knowing that oral health can directly have an affect on the general health of the infant. The study was concluded on a very positive note because 74% of the mothers in the study did want to improve their existing knowledge about the oral hygiene practices.

**Based on education of mothers**

**Table 1. Response to the questions according to the mother's education**

QUESTIONS	EDUCATION																	
	PRIMARY			MIDDLE SCHOOL			HIGH SCHOOL			INTERMEDIATE			GRADUATE/POSTGRADUATE			ILLITEF		
	A(%)	SA(%)	D(%)	A(%)	SA(%)	D(%)	A(%)	SA(%)	D(%)	A(%)	SA(%)	D(%)	A(%)	SA(%)	D(%)	A(%)	SA(%)	
Milk teeth are important as perm. Teeth	3.30	2.0	2.70	8.0	4.0	15.30	12.70	4.0	15.30	6.0	3.30	10	5.30	2.70	4.0	0	0	
Relationship btwn perm. N deci teeth	1.30	0.70	6.0	10.70	3.30	13.30	10.70	3.30	18.0	5.30	4.0	10	4.70	2.70	4.70	0	0	
Higher risk of dental decay	3.30	0.70	4.0	15.30	1.30	10.70	16.70	3.30	12.0	10	3.30	6.0	7.30	1.30	3.30	0	0	
Should be treated as early as possible	7.30	0	0.70	22.0	2.0	3.30	24.0	2.0	6.0	16.0	1.30	2.0	9.30	1.30	1.30	0.70	0	
Feeding patterns affect	4.0	2.0	2.0	14.70	2.0	10.70	15.30	2.0	14.70	9.30	3.30	6.70	9.30	1.30	1.30	0	0	
Night time feeding (breast/bottle)	2.70	0	5.30	7.30	2.0	18.0	9.30	3.30	19.30	8.0	1.30	10	8.0	0.70	3.30	0	0	
Regular dental check-up	5.30	0	2.70	10.70	2.0	14.70	16.70	4.0	11.30	10.70	1.30	7.30	8.0	0	4.0	0	0	
Use of pain killers is better	1.30	0	6.70	10	3.30	14.0	6.70	1.30	24.0	5.30	2.0	12.0	2.70	0.70	8.70	0	0	
Oral health can influence general health	6.0	0.70	1.30	10	2.70	14.70	14.70	2.0	15.30	10.70	2.70	6.0	10	1.30	0.70	0	0	
Efforts should be made by the parents	7.30	0	0.70	16.0	2.70	8.70	23.30	6.0	2.70	16.0	2.0	1.30	10	0.70	1.30	0.70	0	

**Table 2. Response of the mothers to questions**

	PRIMARY(%)		MIDDLE SCHOOL(%)		HIGH SCHOOL(%)		INTERMEDIATE(%)		GRADUATE/POSTGRADUATE(%)		ILLITERATE(%)	
	Y	N	Y	N	Y	N	Y	N(%)	Y	N	Y	N
Dentists who specialize in giving dental care	3.30	4.70	7.30	20	12.00	20	9.30	10	4.70	7.30	0	0.70
Special toothpastes are available	3.30	4.70	10	17.30	7.30	24.60	8.70	10.70	4.70	7.30	0	0.70

**Table 3. Response of the mothers to questions**

	PRIMARY(%)				MIDDLE SCHOOL(%)				HIGH SCHOOL(%)				INTERMEDIATE(%)				GRADUATE/POSTGRADUATE(%)				ILLITERATE(%)			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
How do you clean	1.30	1.30	4.70	0.70	10	4.00	10.70	2.70	6.70	6.00	11.30	8.00	4.70	2.00	8.00	4.70	5.30	2.00	3.30	1.30	0	0	0.70	0

a=Use brush  
 b=Use a cloth/cotton to clean  
 c=Making them drink water  
 d=Brush along with paste

**Table 4. Response of the mothers**

	PRIMARY				MIDDLE SCHOOL				HIGH SCHOOL				INTERMEDIATE				GRADUATE/POSTGRADUATE				ILLITERATE					
	A(%)	B(%)	C(%)	D(%)	A(%)	B(%)	C(%)	D(%)	A(%)	B(%)	C(%)	D(%)	A(%)	B(%)	C(%)	D(%)	A(%)	B(%)	C(%)	D(%)	A(%)	B(%)	C(%)	D(%)		
oral health care should be initiated	1.30	4.00	2.70	0	5.3	12.7	0	0	8.00	1.30	6.70	0	10	0.70	5.30	7.30	6.70	0	6.00	3.30	2.70	0	0	0.70	0	0

A=Right from birth  
 B=Immediately after the first tooth erupts  
 C=When all milk teeth erupt  
 D=When all permanent teeth erupt

	PRIMARY(%)				MIDDLE SCHOOL(%)				HIGH SCHOOL(%)				INTERMEDIATE(%)				GRADUATE/POSTGRADUATE(%)				ILLITERATE(%)		
	aa	bb	cc	dd	aa	bb	cc	dd	aa	bb	cc	dd	aa	bb	cc	dd	aa	bb	cc	dd	aa	bb	cc
child should be monitored while brushing	2.70	2.70	1.30	1.30	6.70	11.30	6.00	3.30	7.30	14.70	8.00	2.00	1.30	1	6.00	2.00	2.70	5.30	2.70	1.30	0	0	0.70

aa=Till all the milk teeth erupt  
 bb=When permanent teeth start to erupt  
 cc=Till all permanent teeth erupt  
 dd=Not sure

**Table 5. Response to question from mothers**

	PRIMARY(%)			MIDDLE SCHOOL(%)			HIGH SCHOOL(%)			INTERMEDIATE(%)			GRADUATE/POSTGRADUATE(%)			ILLITERATE(%)		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Toothpaste for children after what age	2.00	3.30	2.70	10	10.70	6.70	8.70	10	13.30	7.30	8.00	4.00	2.00	6.00	4.00	0.70	0	
Tooth brush must be changed	1a	1b	1c	1a	1b	1c	1a	1b	1c	1a	1b	1c	1a	1b	1c	1a	1b	1c
	2.00	6.00	0	11.30	15.30	0.70	8.00	22.00	2.00	4.70	12.70	2.00	3.30	8.70	0	0	0	0.70

I=Once in a day  
 2=Two times in a day  
 3=More than two times in a day  
 I=Immediately after first tooth erupts  
 II=After three years  
 III=Don't know

1a-when it frays  
 1b- once in 6 months  
 1c- once in 6-12 months

**Table 6. Response of mothers according to their education**

	PRIMARY(%)			MIDDLE SCHOOL(%)			HIGH SCHOOL(%)			INTERMEDIATE(%)			GRADUATE/POSTGRADUATE(%)			ILLITERATE(%)		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
How frequently one should clean	0.70	6.00	1.30	6.70	13.30	7.30	4.00	18.70	9.30	0.70	15.30	3.30	1.30	6.70	4.00	0	0.70	0
Toothpaste for children after what age	PRIMARY(%)			MIDDLE SCHOOL(%)			HIGH SCHOOL(%)			INTERMEDIATE(%)			GRADUATE/POSTGRADUATE(%)			ILLITERATE(%)		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
	2.00	3.30	2.70	10	10.70	6.70	8.70	10	13.30	7.30	8.00	4.00	2.00	6.00	4.00	0.70	0	0
Tooth brush must be changed	PRIMARY(%)			MIDDLE SCHOOL(%)			HIGH SCHOOL(%)			INTERMEDIATE(%)			GRADUATE/POSTGRADUATE(%)			ILLITERATE(%)		
	Ia	Ib	Ic	Ia	Ib	Ic	Ia	Ib	Ic	Ia	Ib	Ic	Ia	Ib	Ic	Ia	Ib	Ic
	2.00	6.00	0	11.30	15.30	0.70	8.00	22.00	2.00	4.70	12.70	2.00	3.30	8.70	0	0	0	0.70

I=Once in a day  
 2=Two times in a day  
 3=More than two times in a day  
 I=Immediately after first tooth erupts  
 II=After three years  
 III=Don't know

Ia-when it frays  
 Ib- once in 6 months  
 Ic- once in 6-12 months

**Based on occupation of the mothers**

**Table 7. Response based on occupation**

	Home maker(%)			Service/professional(%)		
	A	Sa	D	A	Sa	D
Milk teeth are important as perm. Teeth	32.70	16.00	46.70	2.70	0	2.00
Relationship btwn perm. N deci teeth	31.30	14.00	50	1.30	0	3.30
Higher risk of dental decay	51.30	10	34.00	2.00	0	2.70
Should be treated as early as possible	76.00	6.70	12.70	4.00	0	0.70
Feeding patterns affect	49.30	10.70	35.30	3.30	0	1.30
Night time feeding (breast/bottle)	33.30	7.30	54.70	2.00	0	2.70
Regular dental check-up	49.30	7.30	38.70	2.70	0	2.00
Use of pain killers is better	24.70	7.30	63.30	2.00	0	2.70
Oral health can influence general health	48.00	9.30	38.00	3.30	0	1.30
Efforts should be made by the parents	71.30	10.70	13.30	2.70	0.70	1.30

**Table 8. Response based on occupation**

	Home maker(%)		Service/professional(%)	
	Y	N	Y	N
Dentists who specialize in giving dental care	34.70	60.70	2.00	2.70
Special toothpastes are available	31.30	64.00	2.70	2.00

**Table 9. Response based on education**

	Home maker(%)			Service/professional(%)		
	1	2	3	1	2	3
How frequently one should clean	13.30	60.70	21.30	0	0.70	4.00
Toothpaste for children after what age	I			I		
	II	III	30	2.00	1.30	1.30
Tooth brush must be changed	Ia			Ia		
	Ib	Ic	4.70	Ib	Ic	0
	27.30	63.30	2.00	2.70	0	

I=Once in a day  
 2=Two times in a day  
 3=More than two times in a day  
 I=Immediately after first tooth erupts  
 II=After three years  
 III=Don't know

Ia-when it frays  
 Ib- once in 6 months  
 Ic- once in 6-12 months

Table 10. Response based on occupation

	Home maker(%)				Service/professional(%)			
	A	B	C	D	A	B	C	D
Oral health care should be initiated	24.00	39.30	30	2.00	1.30	3.30	0	0
	A	B	C	D	A	B	C	D
How do you clean	28.00	14.00	35.30	18.00	0	1.30	3.30	0
	aa	bb	cc	dd	aa	bb	cc	dd
Child should be monitored while brushing	20	42.70	22.70	10	0.70	2.00	2.00	0

A=Right from birth
B=Immediately after the first tooth erupts
C=When all milk teeth erupt
D=When all permanent teeth erupt
a=Use brush
b=Use a cloth/cotton to clean
c=Making them drink water
d=Brush along with paste
aa=Till all the milk teeth erupt
bb=When permanent teeth start to erupt
cc=Till all permanent teeth erupts
dd=Not sure

## DISCUSSION

A mother's knowledge and efficacy plays an integral part in an infant's life (Finlayson *et al.*, 2005). It is important for the mother to have adequate knowledge about the right oral health practices which will be imbibed by the infants. Educating the mother peri-natally that is as early as during her pregnancy can facilitate reinforcement of good oral health habits along with vigilant preventive efforts for the infant. Good oral hygiene in the early years of an individual is associated with a decrease in caries experience in later life (Weintraub *et al.*, 1990). Providing dental treatment, emergency or elective, to primary teeth affected by caries is important for the children to resume their daily activities. In this study, about 53% of the nursing mothers felt that primary teeth are at a greater risk of being affected by caries with 80% agreeing for immediate dental treatment for teeth affected by caries whereas in a study done in England only 47% of the participants preferred restoration of the carious primary teeth (Blinkhorn *et al.*, 2001). The results were in contrast to the study done in Poland where about two thirds of the mothers felt it unnecessary to take care of the deciduous dentition and in a study done by Mani, about 62% did not feeling the need to restore those (Mani *et al.*, 2010).

Inculcating basic oral hygiene habits in children like making them drink water and rinsing mouth after each feed with water should be practiced from a young age (Mani *et al.*, 2010). In a study conducted in Malaysia, about 42% of the participants encouraged drinking of plain water after each feed (Mani *et al.*, 2010) as against only 39% of participants in our study. Initial counseling of the parents especially the mother should be on their and the child's diet. Initially, breast feeding is the prime source of nutrition which later on may be replaced by bottle feeding. Proper feeding methods and patterns should be explained to the mother owing to the cariogenicity of the feed.

78% knew that sugary foods and drinks should be limited to meal-times which does emphasize on the importance of following a proper feeding pattern (Blinkhorn *et al.*, 2001). In this study, although 52% mothers agreed on the affect of feeding pattern on the child's oral health but contrary to their belief about 58% of the nursing mothers did indulge in night time breast or bottle feeding without realising its consequences. 71% and 56% of them disagreed that dental caries is caused by frequent/prolonged feeding and nighttime feeding (Mani *et al.*, 2010). This mainly occurs because of the lack of awareness about sugars in milk and that of a common cultural practice of bottle and breast feeding immediately prior the bed time and of soothing a child when they wake up at night. A study conducted in Poland showed about 54% of mothers assisting their children during brushing with greater percentage among mothers with higher education (Szatko *et al.*, 2004). In a study done by Mani *et al.*, although half of them knew the inability of children to efficiently clean teeth without assistance yet 53% never or seldom assisted the children in brushing their teeth (Mani *et al.*, 2010). Whereas this study showed only 25% of mothers wanting to favor monitoring while brushing up to the eruption of all permanent teeth and showed no association with either education or occupation.

Oral health influences the general health of the individual by affecting their day to day activities like eating, speaking and along with it their quality of life (Petersen *et al.*, 2003). Because this study surveyed nursing mothers from one region, the results may not be applicable to all nursing mothers in other regions thus emphasizing the need to conduct similar surveys in a larger region including larger population. In spite of these assumptions, the differences found among the groups are likely to approximate the true differences. The study showed that the nursing mothers although aware of a few right infant oral health practices, were not aware of channelizing and

applying them in the right direction in every day practice. The wrong practices of oral hygiene might be mainly because of various cultural practices followed in the region which remains rooted in spite of the knowledge imparted to the nursing mothers. Since physicians/pediatricians are the first ones who come in contact with expectant mothers and mothers of infants alike it is therefore, both the general health care professionals and dentists who should make a cumulative effort to increase awareness among the nursing mothers regarding the preventive practices and facilities available to be implemented thereby making the child free of caries and help lead a health life. Also an attempt to conduct regular oral health promotion education programs with main stress being laid on dietary practices and preventive measures.

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