

Maternal Knowledge, attitude and practices regarding oral health of preschool children in Udupi taluk, Karnataka, India

Deepak K Singhal^{1*}, Shashidhar Acharya², Arun S Thakur³

1. Reader, Department of Public Health Dentistry, Manipal College of Dental sciences, Manipal, Manipal University, Karnataka, India.
2. Professor and Head, Department of Public Health Dentistry, Manipal College of Dental sciences, Manipal, Manipal University, Karnataka, India.
3. Senior Lecturer, Department of Public Health Dentistry, Government Dental College, Shimla, Himachal Pradesh, India.

Abstract

Dental Caries is most prevalent dental affliction of childhood. The oral health of the preschool children is linked to maternal oral health related knowledge, attitude and practices. This study assessed and compared the maternal knowledge, attitude and practices regarding oral health of 3-5 year old anganwadi and day care centre children in Udupi taluk.

A cross-sectional questionnaire survey was conducted among 825 mothers of pre-school children, 422 from anganwadi centers and 403 from day care centre of Udupi. Data was collected using a structured proforma.

Among the anganwadi mothers, 53.6% had low knowledge, 69.2% exhibited negative attitude and 61.4% follow poor practices regarding deciduous dentition of their preschool children. Among the day care centre mothers, majority of mothers of day care children had either medium (40.7%) or high (42.4%) knowledge scores. More than two-third of day care mothers (68.2%) had positive attitude and 62.8% of day care mothers had good practice scores

Even though day care mothers had better knowledge, positive attitude and follow good practices as compared to anganwadi mothers, still there is a need to enlighten and make them aware regarding the importance of deciduous dentition.

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Introduction

Oral diseases qualify as major public health problems owing to their higher prevalence and significant social impact on individual's life¹. Oral health is considered as fundamental to general health and well-being of individual. A healthy oral cavity enables an individual to speak, eat and socialize without experiencing any active disease, discomfort or embarrassment².

Dental Caries is the most prevalent dental affliction of childhood. Despite credible scientific advances and the fact that caries is preventable, disease continues to be a major public health problem. In developing countries, changing

lifestyles and dietary patterns are markedly increasing the caries incidence^{3,4}. Unfortunately, many children are afflicted with dental caries at an early age. Children with rampant dental caries may also have other associated health problems, ranging from local infections to oral pain that manifests as difficulty eating and sleeping, reduced growth and altered behavior⁵. There is sufficient evidence in the literature indicating that children who have dental caries are more likely to experience caries along their continuum of childhood, so oral health care should be given the due priority as it determines the oral health status of future generations⁶.

Pre-school period is the critical time when skills, attitudes, deleterious oral habits, patterns and risk factors for oral diseases establish in this innocent segment of the society. Pre-school children provide the earliest opportunity where a comprehensive clinical examination is possible and they are not only fast learners and anxious to acquire new skills, they are also at risk for the

*Corresponding author:

Dr. Deepak Kumar Singhal
Department of Public Health Dentistry, Manipal College of Dental sciences, Manipal
Manipal University, Karnataka, India.
E-mail: singhal_deepak05@yahoo.co.in

development of oral health problems⁷.

Since these early years of the life involve primary socialization, it is critical to initiate basic oral health habits at this stage, so that the appropriate oral health behavior can be established at appropriate time and maintained into adult life⁸. Family is the first level which can influence the overall development and behavior of the child. Growing children need proper guidance from the mothers or caregivers for healthy growth, upkeep and hygiene of the oral cavity⁹. Dental health education begins from footsteps of awareness of parents regarding oral health. Hence their oral health knowledge and attitude towards dental care acts as a significant predictor of their children's oral health. Since mother act as a role model for children, therefore, aim of the present study was to assess and compare the knowledge, attitude and practices regarding oral health among the mothers of preschool children in Udupi Taluk, Karnataka.

Materials and methods

A cross-sectional questionnaire survey was conducted among the mothers of pre-school children attending Anganwadi and day care centers in Udupi Taluk located in southwestern part of Udupi District, Karnataka, India. There are total of 510 Anganwadis in Udupi Taluk. The list of Anganwadis and Day care centres in Udupi Taluk was obtained from Child Development Project Officer (CDPO). The anganwadi schools and day care centre were selected randomly. By using cluster sampling from the selected Anganwadi and Day care centre, all the eligible mothers present on the day of survey and who were willing to participate were included in the study.

A structured proforma was designed for data collection. Mothers' oral health-related knowledge, attitude and practices was assessed using pre-tested questionnaire¹⁰⁻¹². It consisted of 23 questions, 10 pertaining to knowledge, 6 assessing attitude and 7 related to practices regarding oral health. This questionnaire was translated to local language kannada and validity was checked using back-translation method, involving blind re-translation into English. The validity of translation was verified by experts in both languages. This structured questionnaire was pilot tested among 30 mothers to assess the validity and reliability. Content validity and face

validity of questionnaire was assessed and ascertained with the help of expert opinion. Test retest reliability of questionnaire was evaluated at the interval of 15 days which yielded Intra-class correlation coefficient=0.85.

Before commencing the survey, ethical clearance was obtained from ethical committee of Kasturba Hospital, Manipal (IEC 057/2010). The official permission for conducting survey was obtained from all concerned authorities. The questionnaire was distributed to mothers when they came to pick or drop their children to school. Mothers filled up the proforma on their own. Data obtained was analyzed using SPSS software version 16.0. Comparison of questionnaire responses between mothers of anganwadi and day care centre was done using Chi-square test. A P-value of less than 0.05 was considered as statistically significant. Total knowledge, attitude and practices scores were calculated based on number of positive responses for each question. For statistical analysis purpose, these scores, depending on the number of correct responses obtained were graded on an ordinal scale. The maternal total knowledge score ranged from 0-10 and were categorized into **low** (score were ≤ 3), **medium** (score 4 and 5) and **high** (score >5) knowledge categories. The total attitude score ranged from 0-6 and were categorized into having negative (score ≤ 2) and positive (score >2) attitude. The total practice scores ranged from 0-7. This was categorized into good (score >4) and poor (score ≤ 4) practices.

Results

A total of 900 mothers of pre-school children participated and 825 mothers (422 Anganwadi and 403 Day Care centre children's mothers) returned the completed questionnaire constituting the response rate of 91.66%. Forms with missing data were not considered for data analysis.

Knowledge:

53.6% of mothers of anganwadi children had low knowledge score while majority of mothers of day care children had either medium (40.7%) or high (42.4%) knowledge scores (Table 1). Table 2 shows that the mothers of day care children's had significantly better knowledge ($p < 0.001$) than mothers of anganwadi children for all questions regarding oral health related knowledge, except

“eating sweets and chocolates” as a cause of tooth decay ($p=0.085$).

Majority (94%) of mother of day care children knew that it is necessary to clean the teeth every day while only 69.7% of anganwadi mothers knew about it. 73.2% of day care mothers knew that they should brush their child's teeth twice per day as compared to 57.1% of anganwadi mothers. Only 43.1% of anganwadi mothers knew small toothbrush is best for young children and majority did not know about use of pea size toothpaste for children.

Around 2/3rd of anganwadi mothers were not aware about the presence of fluoride and its role in their child's toothpaste. 90.5% anganwadi mothers reported that their child never used a sweetened baby bottle or infant feeder at night, while 82.9% day care mothers reported this. 70.5% of day care mothers considered improper cleaning of the teeth as the cause of tooth decay as compared to only 38.9% of anganwadi mothers. Infrequent visits to dentist were not considered as the cause of tooth decay by majority of anganwadi (94.1%) and day care mothers (98.8%). 29.4% of anganwadi mothers and 24.1% of day care mothers considered “eating sweets and chocolates” as the cause of tooth decay which was not significantly different.

Attitude:

More than two-third of day care mothers (68.2%) had positive attitude as compared to 30.8% of anganwadi mothers only. (Table 3) Attitude towards deciduous dentition is shown in table 4 which was significantly better in mothers of day care children as compared to mothers of anganwadi children. Approximately 3/4th of day care mothers considered decay in baby teeth as important whereas 51.7% of anganwadi mothers disagreed. 40.4% day care mothers responded that their child should visit the dentist when 1st milk tooth erupts as compared to only 19.2% of anganwadi mothers. 17.3% of anganwadi mothers reported that their child had visited a dentist while 34.0% of day care mothers reported this.

Approximately half of the day care and 29.9% of anganwadi mothers reported that it is important to visit the dentist for regular check-up. Only 27.5% of anganwadi mothers reported that they would prefer to get their child's decayed tooth filled, while 38% of day care mothers reported it. More than half (55.8%) of the day care mothers considered taking care of milk teeth

as important while only 38.9% of anganwadi mothers considered it so.

Practice:

Only 38.6% of anganwadi mothers had good practice scores while 62.8% of day care mothers had good practice scores (Table 5). The responses of mothers to what they practice for their child's oral health is shown in Table 6. Significantly higher number of day care mothers brushed their child's teeth twice or more per day using toothbrush and toothpaste as compared to anganwadi mothers ($p<0.001$). Majority of the children in both the groups, 95.3% anganwadi children and 93.1% day care children, consumed sweets other than during the meal times.

Significantly more number of day care children ate sweets/chocolates less than 2 times per day when compared to anganwadi children. 54.7% of anganwadi and 56.1% of day care children rinsed regularly after every meal. The difference between the two groups was not statistically significant ($p=0.699$). Significantly more number of day care mothers reported that they changed their child's toothbrush within 6 months as compared to 70.4% of anganwadi mothers. Only 42.9% of anganwadi mothers used fluoridated toothpaste while 64.5% of day care mothers reported use of fluoride containing toothpaste.

Discussion

Parents especially mothers are role model and decision maker for their children, so the habits adopted during childhood when the child is totally dependent on the mother are powerful means of establishment of novel behavior in children. The maternal support and involvement is very important in maintaining good oral health of the child. A young child's dental environment is complex as parental knowledge, attitudes and beliefs affect child oral health¹³.

Hence, this survey provides some useful insight into the views of mothers' knowledge, attitude and practices regarding oral health using a self-administered, structured questionnaire. It has been argued that although questionnaires do not measure actual behavior patterns, but instead provide information about what people think they do, they can measure the beliefs and knowledge of subjects^{14,15}. The main advantage of self-administered questionnaire is that it is free of interviewer effects thereby eliminating that as a source of bias¹⁶.

Mothers' knowledge

In the present study, majority of mothers knew that it is necessary to clean the teeth every day, however, tooth brushing frequency of twice or more per day was not common. These findings were less as compared to those reported by Naidu RS et al¹¹ but similar to those reported by Blinkhorn et al¹⁰, Szatko F et al¹² and Petersen PE et al¹⁷.

In our study, less than half of study participant did not know that small toothbrush is best for young children. This finding was less as compared to that reported by Naidu RS et al¹¹ and Blinkhorn et al¹⁰. Majority of the mothers in our study did not know about use of pea size toothpaste for children. Pea size amount of toothpaste is recommended for tooth brushing for small children to reduce the chances of ingestion of higher dose of fluoride. The larger amount of toothpaste does not improve the effect of the mechanical cleaning or the preventive effect of fluoride¹¹.

In the present study, about 50% of mothers did not know that child's toothpaste contains fluoride which is used to prevent tooth decay. In the study done by Szatko F et al¹², 71% of mothers were aware that the toothpaste used by their child contained fluoride and 79% knew that fluoride is used to prevent tooth decay. The inaccurate factual knowledge and low awareness among the mothers regarding the amount of toothpaste to be used, the presence and role of fluoride in toothpaste and how much it should contain, is of concern and this could be due to mothers' low level of education. This reflects the need to increase the awareness about the presence of fluoride in tooth paste.

A lower proportion of participants (9.5% in Anganwadi and 17.1% in day care) reported using a sweetened feeding bottle or infant feeder for their child at night as compared to participants in Trinidad¹¹ and Belgium¹⁸. Various studies have been reported that "poor infant feeding practices" as the marker of high caries risk among preschool children^{12,19,20}.

Knowledge related to the cause of tooth decay was found to be significantly more in day care mothers as compared to anganwadi mothers. The poor knowledge regarding the cause of dental caries was in contrast to study done in Poland by Szatko F et al¹², but was in agreement with those of other studies^{21,22} which reported gross discrepancies between the

knowledge and actual practices. This low knowledge regarding the etiology of caries indicate the need for more effective oral health education program for mothers which should be started as early as possible.

Mothers' attitude

Previous studies have shown that mothers' positive attitudes towards dental health, oral hygiene practices and dental attendance patterns exert a powerful influence on the dental health of their children^{21,23}. Most participants in our study felt that decay in baby teeth is important but less than one-half wanted a baby tooth to be filled, suggesting that awareness of the role of the deciduous dentition and methods available to restore them is low. Similar findings were reported by Blinkhorn et al¹⁰ and Naidu RS et al¹¹.

The age of the child at first visit to the dentist appears to be an essential factor in predicting dental caries in pre-school children. Caries prediction models show that the earlier a child visits the dentist, the greater the likelihood of them being caries free later in childhood¹⁹. An early first dental visit provides the dentists with an opportunity to introduce systemic fluorides if needed and to advise parents and children regarding proper oral hygiene maintenance as well as dietary control. Many mothers remained unaware of the need to begin early regular dental care. Most of them had not visited the dentist may be because of the difficulty in finding time to take their children to the dentist and lack of interest in oral health. In the present study, the lower proportion of participants who felt that the first dental visit should be when the first teeth appear is of concern as early attendance at the dentist is recommended to allow preventive advice and monitoring. Similar findings were reported by Naidu RS et al¹¹. In the study by Sultan et al none of the parents were aware about the timing of the first dental visit²⁴. A small proportion (17.3% of Anganwadi and 34.0% of day care children) had reported that their child had visited a dentist previously. Similar findings were reported by Shenoy R et al²⁵.

Various studies had reported that a substantial proportion of children and mothers did not visit a dentist regularly and did not consider milk teeth important^{17,22,23,26,27}. Similar findings were obtained in our study. In a study done in Pakistan by Khan H et al²² parents rarely brought their children for routine check-up. A randomized controlled trial by Blinkhorn AS et al¹⁰ in the UK

showed that visits to a trained dental health educator for mothers of pre-school children at risk of caries, increased parental knowledge and improved attitudes toward the dental health of their offspring.

Mothers' practices

Attitudes appear to be causally related to practices and seem to be products of behavior rather than predecessors. Good dental health practices are normative where dental health values are accepted as part of the family life style¹⁰.

In the present study, 3/4th of day care mothers and 2/3^d of anganwadi mothers reported of brushing their child's teeth twice or more per day. This finding shows higher percentage of mothers reporting this in anganwadi group as compared to Shenoy R et al study²⁵.

The possibility of social desirability bias while answering the questionnaire can't be ruled out. Majority of mothers reported the use of toothbrush and toothpaste for cleaning of the child teeth which in line with findings reported in studies done by Hood et al²¹, Shenoy R et al²⁵, Dini EL et al²⁸ Reang T²⁹ and Garbin C et al³⁰. Majority of preschool children consumed sweets other than during the meal times and ate sweets/chocolates less than 2 times per day. These findings are in line with studies done by Shenoy R et al²⁵ and Declerck D¹⁸. In the present study, 54.7% of anganwadi and 56.1% of day care children rinsed regularly after every meal. In the study done by Shenoy R et al²⁵, 74.10% anganwadi and 82.10% kindergarten children reported to rinse after every meal.

Majority of mothers changed their child's toothbrush within 6 months but less than 50% reported the use of fluoride containing toothpaste. However in the study carried out by Vidal OP et al³¹, 94% of subjects used fluoridated toothpaste. This could be either due to lack of awareness about the availability of such toothpastes for children in the market or inability to afford two different toothpastes for a single family.

Majority of Anganwadi mothers had low knowledge, negative attitude and follow poor practices for maintenance of oral health of the deciduous dentition of their child. This could be due to their low education and poor socio-economic status of the mothers as most of them reside in rural areas. While majority of day care mothers had medium or high knowledge, positive

attitude and good practices for oral health of their child.

Conclusions

The mothers of preschool children seemed to have appropriate knowledge on some oral health related topics, but limited knowledge on others. Parents, especially mothers function as role models for their children. Even though day care mothers had better knowledge, positive attitude and follow good practices as compared to anganwadi mothers, still there is a need to enlighten and make them aware regarding the importance of deciduous dentition.

There is a great need to plan and conduct the appropriate oral health programs targeting the two different groups through the strategies tailored according to their understanding and requirements. More emphasis should be provided on improving the level of knowledge, which would reflect in their oral health behavior. Health education should focus on parental responsibility for oral health, and the mothers should be encouraged to give practical and emotional support to their children with regard to oral hygiene habits.

Limitations:

The major limitation of this questionnaire survey could be the social-desirability bias. Bias in self-reporting is well known and some mothers tend to over-reporting "good behavior" or under-reporting "bad" or undesirable behavior. The response rate of 91.66 % was acceptable.

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Declaration of Interest

The authors report no conflict of interest.

Knowledge categories	Anganwadi school children	Day care centre / play school children	Total	P value
Low (0-3)	226(53.6%)	68(16.9%)	294 (35.6%)	<0.001**
Medium (4-5)	161 (38.2%)	164 (40.7%)	325(39.4%)	
High (More than 5)	35 (8.3%)	171 (42.4%)	206(25.0%)	
Total	422(100.0%)	403(100.0%)	825(100.0%)	

*P<0.05 as statistically significant, **p<0.01 as highly significant

Table 1. Comparison of oral health-related knowledge scores of anganwadi and day care mothers.

Knowledge	Responses	Anganwadi school children	Day care centre / play school children	P value
Is it necessary to clean your teeth every day?	Yes	294(69.7%)	379(94.0%)	<0.001**
	No	128 (30.3%)	24 (6.0%)	
Do you know you should brush your child's teeth twice or more per day?	Yes	241(57.1%)	295(73.2%)	<0.001**
	No	181(42.9%)	108 (26.8%)	
Is a small toothbrush best for a young child?	Yes	182(43.1%)	250(62.0%)	<0.001**
	No	240(56.9%)	153(38.0%)	
Do you know you should place pea size toothpaste on the brush for a child?	Yes	82 (19.4%)	195 (48.4%)	<0.001**
	No	340 (80.6%)	208 (51.6%)	
Do you know if your child's toothpaste contains fluoride?	Yes	155(36.7%)	261 (64.8%)	<0.001**
	No	267 (63.3%)	142 (35.2%)	
Do you know fluoride is used to prevent tooth decay?	Yes	158 (37.4%)	206 (51.1%)	<0.001**
	No	264 (62.6%)	197 (48.9%)	
Has your child ever used a sweetened baby bottle or infant feeder at night?	Yes	40(9.5%)	69(17.1%)	0.001**
	No	382 (90.5%)	334 (82.9%)	
Does "eating sweets and chocolates" cause tooth decay?	Yes	124(29.4%)	97(24.1%)	0.085
	No	298 (70.6%)	306 (75.9%)	
Does improper cleaning of the teeth causes tooth decay?	Yes	164 (38.9%)	284 (70.5%)	<0.001**
	No	258 (61.1%)	119 (29.5%)	
Do infrequent visits to dentist for check-up causes tooth decay?	Yes	25 (5.9%)	5 (1.2%)	<0.001**
	No	397 (94.1%)	398 (98.8%)	
Total		422 (100%)	403 (100%)	

*P<0.05 as statistically significant, **p<0.01 as highly significant.

Table 2. Distribution of study population according to mothers' knowledge.

Attitude categories	Anganwadi school children	Day care centre / play school children	Total	P value
Negative attitude(0-2)	292 (69.2%)	128 (31.8%)	420(50.9%)	<0.001**
Positive attitude (>2)	130 (30.8%)	275 (68.2%)	405(49.1%)	
Total	422(100.0%)	403(100.0%)	825(100.0%)	

*P<0.05 as statistically significant, **p<0.01 as highly significant.

Table 3: Comparison of oral health-related attitude scores of anganwadi and day care mothers.

Attitude	Responses	Anganwadi schoolchildren	Day care centre/ play school children	P value
Is decay in baby teeth important?	Yes/ important	204 (48.3%)	297 (73.7%)	<0.001**
	No/not important	218 (51.7%)	106 (26.3%)	
When should a child first visit the dentist?	when they get their 1st baby tooth	81(19.2%)	163(40.4%)	<0.001**
	when they have all their baby teeth/ other	341(80.8%)	240 (59.6%)	
Has your child previously visited a dentist?	Yes	73 (17.3%)	137(34.0%)	<0.001**
	No	349 (82.7%)	266 (66.0%)	
Is it important to visit dentist for regular checkup?	Yes	126(29.9%)	195(48.4%)	<0.001**
	No	296 (70.1%)	208 (51.6%)	
Would you prefer to get the tooth filled, if your child had decay in a baby tooth?	Yes	116 (27.5%)	153 (38.0%)	0.001**
	No	306 (72.5%)	250 (62.0%)	
Is it important to take care of milk teeth as they are going to shed?	Yes	164(38.9%)	225(55.8%)	<0.001**
	No	258(61.1%)	178(44.2%)	
Total		422 (100%)	403 (100%)	

* p<0.05 as statistically significant, **p<0.01 as highly significant.

Table 4. Distribution of study population according to mother's attitudes.

Practice categories	Anganwadi schoolchildren	Day care centre/ play school children	Total	P value
Poor (0-4)	259 (61.4%)	150 (37.2%)	409(49.6%)	<0.001**
Good (more than 4)	163 (38.6%)	253 (62.8%)	416(50.4%)	
Total	422(100.0%)	403(100.0%)	825(100.0%)	

*P<0.05 as statistically significant, **p<0.01 as highly significant.

Table 5. Comparison of oral health-related practices scores of anganwadi and day care mothers.

Practices	Responses	Anganwadi schoolchildren	Day care centre / school children	P value
Are you cleaning your child teeth \geq 2 per day?	Yes	264 (62.6%)	297 (73.7%)	0.001**
	No	158 (37.4%)	106 (26.3%)	
How does your child clean his/her teeth?	toothbrush and toothpaste	336(79.6%)	390(96.8%)	<0.001**
	others aids	86 (20.4%)	13 (3.2%)	
When does your child consume sweets?	at meals	20(4.7%)	28(6.9%)	0.176
	other time	402(95.3%)	375(93.1%)	
How many times does your child eat sweets/chocolates in a day?	Less than 2 times per day	308 (73.0%)	346 (85.9%)	<0.001**
	More than 2 times per day	114 (27.0%)	57 (14.1%)	
Does your child regularly rinse after every meal?	Yes	231 (54.7%)	226 (56.1%)	0.699
	No	191 (45.3%)	177(43.9%)	
When do you change toothbrush for your child?	Within 6 months	297 (70.4%)	386(95.8%)	<0.001**
	> 6 months	125 (29.6%)	17(4.2%)	
Do you use fluoridated toothpaste for brushing?	Yes	181(42.9%)	260(64.5%)	<0.001**
	No	241 (57.1%)	143 (35.5%)	
Total		422 (100%)	403(100%)	

*P<0.05 as statistically significant, **p<0.01 as highly significant.

Table 6. Distribution of study population according to mother's practices.

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