

# Oral health-related knowledge, practice and their associated factors among mothers in a rural municipality of Eastern Nepal

Ujwal Gautam,<sup>1</sup> Ashish Shrestha,<sup>2</sup> Tarakant Bhagat,<sup>3</sup> Santosh Kumari Agrawal,<sup>4</sup> Ram Bilakshan Sah<sup>5</sup>

<sup>1</sup>Senior Resident, <sup>2</sup>Professor, <sup>3,4</sup>Associate Professor, <sup>5</sup>Additional Professor

<sup>1-4</sup>Department of Public Health Dentistry, College of Dental Surgery, B. P. Koirala Institute of Health Sciences, Nepal

<sup>5</sup>School of Public Health and Community Medicine, B. P. Koirala Institute of Health Sciences, Nepal

## ABSTRACT

**Introduction:** Oral Health status in children has been shown to be related with oral health patterns learned through the childhood. The children acquire health behaviors from their mothers.

**Objective:** This study aims to assess the oral health related knowledge and practice among mothers in a rural municipality of Eastern Nepal and explore the factors associated with these outcomes.

**Methods:** A randomly selected 268 women either pregnant or having children of less than 6 years of age were interviewed in April-June, 2019 to assess their knowledge and practice regarding oral health. Data was entered using Epidata 3.1. Response on knowledge and practice were presented as frequency and proportion and compared with different maternal variables using inferential statistics.

**Results:** Mean age of the participating women was 25.9 years (SD 5.3). Three participants were pregnant (primigravida). Majority (96.7%) of respondents reported brushing their teeth at least once a day. Only 9.3% reported using fluoridated toothpaste for their children. Similarly, majority (69.4%) of participants had knowledge about wiping baby's gums after breastfeeding or after letting child bottle feed. Literacy was found to significantly influence the participants' brushing frequency, brushing technique, practice of brushing or wiping their child's teeth and gums.

**Conclusions:** Oral health related knowledge among mothers and their practice were found to be unsatisfactory across several domains. Further, these outcomes were found to be influenced by several maternal characteristics. Assessing knowledge-practice gap on oral health resulting from maternal characteristics can provide a basis for providing training to women on necessary parenting skills.

**Keywords:** Knowledge, maternal, Nepal, oral health, practice.

## INTRODUCTION

Improving child's oral health requires understanding complex interaction between family, culture, and community.<sup>1</sup> The risk of developing caries is found to be related with oral health patterns learned during the

childhood. Understanding of parenting factors can help to identify protective factors of parenting which in turn can be used to develop evidence-based interventions.<sup>2</sup> Parents, in particular, play a significant role in providing proper guidance and instilling positive attitude towards oral health, therefore, playing an important role in promoting positive health behaviour in children.<sup>3,4</sup>

Parental modelling is known to be an established novel behaviour among children.<sup>5</sup> Women in particular have more central role in families in many parts of the world; and are regarded as a primary model for behaviour. Parental oral health behaviour has shown to influence children's gingival health and dental caries directly and/or indirectly through its effect on children's oral health behavior.<sup>5-7</sup> Further, a pregnant woman's knowledge and action concerning her oral health is critical to the oral

## Correspondence

Dr. Ujwal Gautam

Senior Resident, Department of Public Health Dentistry,  
B. P. Koirala Institute of Health Sciences, Nepal

Email: [ujwal.gautam@gmail.com](mailto:ujwal.gautam@gmail.com)



## Citation

Gautam U, Shrestha A, Bhagat T, Agrawal S K, Sah B R. Oral health-related knowledge, practice and their associated factors among mothers in a rural municipality of Eastern Nepal. *J Nepal Assoc Pediatr Dent.* 2022;3(2):1-9.

health of her child and can be considered as a key factor for caries prevention.<sup>8,9</sup> It has been assumed that as knowledge improves, it leads to healthy practices.<sup>10</sup> This study seeks to identify the oral health related knowledge and practice among mothers in a rural municipality of Eastern Nepal and look into the factors that influence these outcome.

## METHODS

The study has been performed in accordance with the Declaration of Helsinki. Ethical approval for the study was obtained from the Institutional Review Committee (IRC), B. P. Koirala Institute of Health Sciences, Dharan (Ref. no. 454/075/076; Code no. Institutional Review Committee/1490/019).

### *Study design*

It was a community based cross-sectional study conducted at a rural area in a municipality of Siraha District of Eastern Nepal. The study was conducted from April, 2019 to July, 2019.

### *Study sample*

Considering 95% CI and 5% absolute precision, sample size of 268 was calculated for the study was calculated from response regarding awareness on importance of primary teeth.<sup>11</sup> Women aged 18 years and above either pregnant or having children below 6 years of age were included in the study. Households were randomly selected using systematic random sampling from a randomly selected ward of Lahan Municipality in Siraha district of Eastern Nepal. Social mapping was made where the significant identifying character was identified as a landmark to guide for random selection of the houses. Sampling interval (n) was determined by sample size and number of households in the ward. The first house was randomly selected at a point of significant landmark and then each n<sup>th</sup> house was systematically selected at one direction. A female individual satisfying the inclusion criteria was selected from the sampled household and included in the study. If the house had more than one female, lottery was done to select one participant. For missing individual in the house, next n<sup>th</sup> house was selected.

### *Study variables*

The questionnaires were administered by face-to-face interview. Participants were required to read and fully

understand the research purpose and risks involved (if any) before consenting to participate. Questionnaire on maternal factors like demographic profile included age, age at birth of the first child, number of children, mother's educational level and mother's employment status were recorded. Educational level was recorded as illiterate, primary, secondary, higher secondary, graduate and above; occupational status measured as working or non-working. These responses were dichotomised for analysis using inferential statistics.

Oral health related knowledge and practice was assessed using structured questionnaire. Practice domain included 8-item questionnaire on practice patterns regarding oral hygiene measures, dental attendance and nutritional practices. The practices were first recorded and then dichotomised as positive or negative patterns. Knowledge was measured using 13 item questionnaires relating to general knowledge of oral health, including the value of fluoride in dental caries prevention, preventive measures, importance of primary teeth and participants regard on oral health. The questionnaire was pretested. The questionnaires were derived from previous published literatures<sup>9,12-14</sup> with necessary modification considering the lifestyle and cultural factors of the population. The questionnaires, in those studies, were used as a valid and reliable instrument to measure the respective knowledge and practice domains. The questionnaire was translated to native Nepali and Maithili language and back translation was again done using standard World Health Organisation guideline. The final questionnaire was, then, refined for face and content validity by considering the variability of response, understandability and ambiguity using experts in the related field.

### *Statistical analysis*

Data were entered in Epidata 3.1 and exported to Statistical Package for Social Sciences software (SPSS) Version 11.5 software for statistical analysis. Descriptive statistics of the study population were presented as median (ranges) and mean (standard deviation) for continuous variables. The normality of distribution of quantitative variables were tested by Shapiro Wilk test. Categorical variables were expressed as frequency (proportion). Bivariate analysis was used to test the association of knowledge domain and practice domain with different maternal variables.

## RESULTS

A total of 268 women were enrolled in the study. The mean age of the participating women was 25.9 years (SD 5.3). The mean age for birth of first child was 19.3 years (SD 2.6). Meanwhile, three participants were pregnant

(primigravida). Sociodemographic characteristics of the participants is shown below in detail in Table 1.

The responses of participants for various knowledge and practice domains are presented in Table 2 and Table 3 respectively.

**Table 1. Sociodemographic characteristics of the participants [n=268].**

Mean $\pm$ SD age of the respondent (in years)		25.9 $\pm$ 5.3
Mean $\pm$ SD age at the birth of first child (in years)		19.3 $\pm$ 2.6
Number of children [n (%)]		
	0 ( <i>pregnant</i> )	3 (1.1%)
	1	79 (29.5%)
	2	100 (37.3%)
	3	57 (21.3%)
	4	20 (7.5%)
	5	7 (2.6%)
	6	2 (0.7%)
Mother's Educational level [n (%)]		
	<i>Illiterate</i>	142 (53%)
	<i>Primary</i>	53 (19.8%)
	<i>Secondary</i>	49 (18.3%)
	<i>Higher Secondary</i>	17 (6.3%)
	<i>Graduate and above</i>	7 (2.6%)
Mother's Working status [n (%)]		
	<i>Working</i>	46 (17.2%)
	<i>Not working</i>	222 (82.8%)

**Table 2. Response of participants regarding practice questionnaire [n=268].**

PRACTICE	n (%)	95% CI
How often do you brush your own teeth?		
<i>Never</i>	1 (0.4%)	0% - 1.1%
<i>Sometimes</i>	8 (3%)	1.1% - 5.2%
<i>Once a day</i>	214 (79.9%)	75% - 84.3%
<i>Twice or more a day</i>	45 (16.8%)	12.3% - 21.6%
Which brushing motion you use to brush your teeth?		
<i>Vertical</i>	56 (20.9%)	15.7% - 25.7%
<i>Horizontal</i>	110 (41%)	35.1% - 47%
<i>Combination of both</i>	102 (38.1%)	32.5% - 44%
Are your child's teeth brushed using a toothpaste containing fluoride? (n = 265)		
<i>Yes</i>	25 (9.4%)	6% - 13.2%
<i>No</i>	19 (7.2%)	4.2% - 10.6%
<i>Don't know</i>	221 (83.4%)	78.5% - 87.5%

How often are your child's teeth and gums brushed or wiped? (n = 265)			
	<i>Never</i>	36 (13.6%)	9.8% - 18.1%
	<i>Sometimes</i>	34 (12.8%)	9.1% - 17%
	<i>Once a day</i>	169 (63.8%)	58.1% - 69.1%
	<i>Twice or more a day</i>	26 (9.8%)	6.4% - 13.6%
How often does your child eat or drink sweet or sugary food? (n = 265)			
	<i>Rarely</i>	27 (10.2%)	6.8% - 14.3%
	<i>Never or at least once per week but not every day</i>	67 (25.3%)	19.6% - 30.2%
	<i>At least once daily</i>	46 (17.4%)	12.8% - 21.9%
	<i>More than once daily</i>	125 (47.2%)	41.5% - 53.2%
Did you give sweet milk in the bottle to your child? (n = 265)			
	<i>Yes</i>	48 (18.1%)	14% - 22.6%
	<i>No</i>	217 (81.9%)	77.4% - 86%
Do you use the same spoon as your child? (n = 265)			
	<i>Yes</i>	216 (81.5%)	76.6% - 86%
	<i>No</i>	49 (18.5%)	14% - 23.4%
During the past year, has your child been to a dentist or dental clinic for a routine checkup or cleaning? (n = 265)			
	<i>Yes</i>	29 (10.9%)	7.2% - 14.7%
	<i>No</i>	236 (89.1%)	85.3% - 92.8%

**Table 3. Response of participants regarding knowledge questionnaire [n=268].**

		n (%)	95% CI
Do sugary foods and drinks cause cavities?			
	<i>Yes</i>	233 (86.9%)	82.8% - 91%
	<i>No</i>	15 (5.6%)	3% - 8.2%
	<i>Don't know</i>	20 (7.5%)	4.5% - 10.8%
Does sharing food from the same spoon with family members spread cavity germs?			
	<i>Yes</i>	141 (52.6%)	46.6% - 58.8%
	<i>No</i>	51 (19%)	14.6% - 23.9%
	<i>Don't know</i>	76 (28.4%)	23.1% - 34%
Is it important to wipe a baby's gums after he or she drinks from the breast or bottle?			
	<i>Yes</i>	186 (69.4%)	63.8% - 75.4%
	<i>No</i>	33 (12.3%)	8.6% - 16.4%
	<i>Don't know</i>	49 (18.3%)	13.4% - 23.5%
Is it okay to let a baby sleep with a bottle of milk?			
	<i>Yes</i>	108 (40.3%)	34.7% - 46.6%
	<i>No</i>	116 (43.3%)	37.3% - 49.6%
	<i>Don't know</i>	44 (16.4%)	11.9% - 20.9%
Do you believe cleaning baby teeth is not important as they fall out anyway?			
	<i>Yes</i>	102 (38.1%)	32.5% - 44.4%

	<i>No</i>	103 (38.4%)	32.5% - 44%
	<i>Don't know</i>	63 (23.5%)	18.3% - 28.7%
Should teeth be brushed using a fluoridated toothpaste?			
	<i>Yes</i>	25 (9.3%)	6% - 12.7%
	<i>No</i>	12 (4.5%)	2.2% - 7.1%
	<i>Don't know</i>	231 (86.2%)	81.7% - 90.3%
Should teeth be brushed regularly?			
	<i>Yes</i>	261 (97.4%)	95.1% - 98.9%
	<i>No</i>	2 (0.7%)	0% - 2.2%
	<i>Don't know</i>	5 (1.9%)	0.4% - 3.7%
How many times a day should a child's teeth be brushed?			
	<i>At least once</i>	137 (51.1%)	45.1% - 57.1%
	<i>Twice or more a day</i>	107 (39.9%)	34% - 45.9%
	<i>Don't know</i>	24 (9%)	5.6% - 12.7%
Is General body health related to oral health?			
	<i>Yes</i>	117 (43.7%)	38.4% - 49.6%
	<i>No</i>	30 (11.2%)	7.5% - 15.3%
	<i>Don't know</i>	121 (45.1%)	39.6% - 50.7%
What is the importance of oral health compared to general health?			
	<i>Same important</i>	58 (21.6%)	17.2% - 27.2%
	<i>More important</i>	18 (6.7%)	3.7% - 10.1%
	<i>Less important</i>	25 (9.3%)	6% - 12.7%
	<i>Don't know</i>	167 (62.3%)	56.3% - 68.3%
Do dental caries complications related to primary teeth affect permanent teeth?			
	<i>Yes</i>	178 (66.4%)	60.8% - 72%
	<i>No</i>	27 (10.1%)	6.7% - 13.8%
	<i>Don't know</i>	63 (23.5%)	18.7% - 29.1%
Do you believe there is no need to go to the dentist unless children have a problem with their teeth?			
	<i>True</i>	203 (75.7%)	70.5% - 81%
	<i>False</i>	30 (11.2%)	7.5% - 15.3%
	<i>Don't know</i>	35 (13.1%)	9% - 17.5%
Do you believe baby teeth are not that important as they do not stay in your child's mouth very long?			
	<i>True</i>	74 (27.6%)	22.4% - 33.2%
	<i>False</i>	109 (40.7%)	35.1% - 46.3%
	<i>Don't know</i>	85 (31.7%)	26.1% - 37.3%

Literate women were more likely to brush twice or more times a day (OR=2.1; 95% CI=1.1-4.1) and perform correct technique (OR=1.8; 95% CI=1.1-2.9). Same was true for brushing or wiping their child's teeth and gums (OR=3.4; 95% CI=1.4-8.4). On the contrary, literate women were less likely to 'never give' sweet milk in bottle to the child

(OR=0.5; 95% CI=0.3-0.9). Moreover, literate women were more likely to believe that it is not okay to let their baby sleep with a bottle of milk (OR=2.6; 95% CI=1.6-4.3) and brush using fluoridated toothpaste (OR=2.6; 95% CI=1.1-6.3). Literacy was also found to positively influence their knowledge on frequency for daily brushing

of their child's teeth (OR=2.9; 95% CI=1.7-4.8) and knowledge regarding relation of general body health to oral health (OR=2.4; 95% CI=1.4-3.9).

Women having more than two children were less likely to practice proper brushing technique (OR=0.5; 95% CI=0.3-0.8). Similarly, women with more than two children were less likely to report that their child rarely consumes sweet or sugary food (OR=0.1; 95% CI=0-0.5) and, also, less likely to share spoon with their child (OR=0.4; 95% CI=0.2-0.8). Similarly, working women were more likely to agree that teeth should be brushed using fluoridated toothpaste (OR=2.5; 95% CI=1-6.3). Similarly, such women are more likely to understand the fact that oral health is equally important compared to general health (OR=2.3; 95% CI=1.1-4.6).

## DISCUSSION

The study found that the participating mothers' oral health knowledge and practice on various aspects was less than ideal. Several responses on knowledge and practice were found to be associated with various maternal characteristics.

Almost all (96.7%) of the respondents reported brushing their teeth at least once a day. Similar number (97.4%) of respondents also agreed that brushing should be done regularly. A study in Chepang children in Nepal showed 56% of them cleaned their teeth regularly.<sup>15</sup> While study in Biratnagar, Nepal showed 62.96% participants using the brush to clean their teeth twice or more.<sup>16</sup> Majority (76.8%) respondents in our study reported that their child's teeth were brushed or wiped at least once a day. Most of the Women (86.2%), in our study, didn't know about fluoridated toothpaste and only 9.3% reported using fluoridated toothpaste for their children. However, this might not depict the real scenario for use of fluoridated toothpaste. Most of them might be using fluoridated toothpaste unknowingly. A study showed that 60.9% of the Moroccan Women were aware that fluoride has a beneficial effect.<sup>12</sup> Similar response was obtained among American pregnant women among whom 86.8% had knowledge that fluoride prevents cavities.<sup>9</sup> This could be due to the fact that majority (84.1%) of the respondents in that study had formal education above eighth grade. Nearly half of the respondents had answered negatively regarding knowledge of fluoride toothpaste and were

illiterate. Illiterate women were less likely to brush teeth twice or more daily their own teeth and their child's teeth as well. Similarly, illiterate women were more likely to believe it is okay letting baby sleep with bottle of milk. Lack of education have shown to be associated with less chances of dental knowledge.<sup>17</sup> Lack of knowledge about oral and dental health was strongly related to women with lower education among women in post-natal ward in Australia.<sup>18</sup> Another study in Ghana<sup>19</sup> emphasized on strong association between mother's year of formal education and health knowledge. Knowledge about child's oral health was relatively higher in mother with higher educational qualification in an Indian study.<sup>20</sup> LeVine et al has shown that literacy plays a part in health behavior change. Study conducted in urban and rural women of school-aged children in Nepal has shown that even small doses of conventional schooling, though delivered indifferently, can impact literacy and education up to primary schooling can substantially increase the impact by influencing the health behavior. Moreover, it has been emphasized, effect of school experience might not be same for all literacy skills, some may be stronger and clearer than others.<sup>21</sup> This might explain why education has selectively influenced the knowledge and practice outcomes in our study.

Non-working women seemed to have lack of knowledge in regards to importance of oral health as compared to general health. Deprivation associated with low socioeconomic status was found to be a significant contributing factor for lack of dental knowledge among UK parents with young children.<sup>17</sup> Similar finding was seen among pregnant Australian women.<sup>18</sup>

Majority (69.4%) of the participants had knowledge about wiping baby's gums after breastfeeding or after letting child bottle feed. This is in contrast to the findings in native American women where 54.1% did not know that it is important to wipe infants' gingivae after they drink from breast or bottle.<sup>9</sup> Nearly three quarters (72.8%) of the women, however, responded that their child's teeth and gums were brushed or wiped at least once.

Most (80.6%) of the women shared spoon with their child although just over half of the respondents (52.6%) agreed that sharing spoon spread germs. This is in contrast to other studies where majority of the respondents had



inadequate knowledge regarding the fact that sharing utensils spread germs causing caries.<sup>20,22</sup> These studies have recommended dental care providers to address the issue regarding early acquisition of caries causing Mutans S. at early stage of life by educating women to alter saliva-sharing activities. Feeding practice in the study population is generally done by mother and her child sharing food from same utensil which is culturally ingrained. This might explain the disparity in knowledge and practice among the respondents in this regard.

Participants agreeing on sugary foods and drinks causing caries formed the majority (86.9%). However, nearly half of the respondents (46.6%) reported their child eating/drinking sweet or sugary food more than once a day. This could be because knowledge is not necessarily perceived in the same way by all individuals. Personal characteristics, beliefs and change the information within a particular cognitive and attitudinal framework.<sup>23</sup> Moreover, this also implicates the necessity of proper parenting. Parents should recognize the responsibility to guide their knowledge to implement effective preventive strategies for child's health problem.<sup>24</sup> Parenting practice has been suggested to be an important factor in caries preventive programs as significant relationship between parenting practice and childhood dental caries.<sup>25</sup> Good knowledge regarding role of diet among participants was also seen in other studies.<sup>9,13,20</sup>

Having less children (two or less) was significantly associated with frequent consumption of sweet or sugary drinks and sharing of spoon with child. Nepalese family structure is similar to Indian and other South Asian families identified by sense of collectivism. Collectivism is reflected in the cooperation among family members, decision making and putting family views, needs, goals and priorities above individual needs. Beliefs and practices reflected in individuals are the embeddedness to that collectivism.<sup>26</sup> Appropriate interventions are required to ensure acceptance and adoption of health promotion programs considering all related cultural factors.<sup>27</sup> Similarly, when asked if mothers had fed sweet milk to the child, majority (81%) responded negatively. This was similar to the responses by American mothers.<sup>9,13</sup> Likewise, more than half the respondents either answered no or didn't know when asked if it's okay to let a baby sleep with a bottle of milk suggesting their lack of knowledge

regarding the matter.

Two-third (61.9%) of the respondents seemed unsure regarding importance of cleaning baby teeth as they believe baby teeth will fall out anyway. Just more than one third regarded baby teeth are important though they don't stay for long. Similar findings were reported by Ravishankar et al.<sup>20</sup> This is in contrast to the findings by Boggess et al.<sup>9</sup> However, 66.4% of the respondents still agree that dental caries complications related to primary teeth affect permanent teeth. This suggests the respondents had lack of knowledge regarding importance of deciduous dentition.

Nearly half the respondents seemed to have no idea regarding the importance of oral health and its relation with general health. This is in contrast to other study findings. Almost all (88.1%) reported not being to a dental clinic for their child's checkup. Majority (75.7%) believed that there is no need for one unless children have a problem. Utilization of dental services seems to be a concern in the study population. This could be due to lack of accessible and affordable care facility besides lack of knowledge regarding the importance of regular visits.

It can be safely assumed that not knowing something can logically explain not doing something. Knowledge barrier precedes and to some extent creates barrier to practice.<sup>23</sup> However, there are rare evidence on close relationship between changes in knowledge and changes in behavior.<sup>10</sup> Maternal knowledge had shown to be a strong predictor for child's oral hygiene behavior.<sup>28</sup> Studies have shown that maternal knowledge and behaviour regarding oral health significantly affects the child's oral health status.<sup>5,11,29</sup>

Nepal has a provision for female community health volunteers (FCHVs) who are involved in health promoting activities and delivery of health services. They motivate communities for family planning and teach the importance of child spacing, oral rehydration therapy and immunization besides providing basic care and record keeping of pregnancy. Oral hygiene and brushing instructions can be included in training program for FCHVs for dissemination of preventive oral health education.<sup>30</sup> Basic community oral health care services can be made available at Primary health care level and health professional working at the level by increasing

their knowledge and skills of social and behavioural aspects of health, planning, administration, management, educational aspects and epidemiology. This can facilitate in disseminating the knowledge to the population, especially target groups like pregnant mothers.<sup>31</sup>

The socio-demographics of the rural area under study was found to be a representative sample of the whole region. Participants might have responded to the questionnaire more favorably to the practice questionnaire leading to socially desirable bias. It was, however, ensured to keep the bias minimum by addressing the practice-based questions first to avoid leading answers.

## CONCLUSIONS

This study found lack of adequate oral health related knowledge and practice among surveyed mothers. Mothers' educational status, working status and number of children were found to influence few outcomes related

to knowledge and practice. Further studies are necessary to examine causal relation between mother's oral health related knowledge and practice with oral health status outcomes of children. Meanwhile there should be an immediate concern on strategies to disseminate the knowledge regarding oral health and address the factors associated. Knowledge-practice gap resulting from social conditions can be another barrier that can be overcome by ensuring social equity.

## ACKNOWLEDGMENTS

Dr. Abanish, Dr. Krishna, Dr. Resham, Dr. Jyoti, Dr. Sangita for their help in field visits and preparing the manuscript.

**Conflict of Interest:** None

## REFERENCES

- Mouradian WE, Ramos-Gomez F. Beyond Access: The Role of Family and Community in Children's Oral Health. *Journal of Dental Education*. 2007;71(5):13. [[PubMed](#) | [DOI](#)]
- Hooley M, Skouteris H, Bogatin C, Satur J, Kilpatrick N. Parental influence and the development of dental caries in children aged 0–6 years: A systematic review of the literature. *Journal of Dentistry*. 2012 Nov;40(11):873–85. [[PubMed](#) | [DOI](#)]
- Chen X, Hastings PD, Rubin KH, Chen H, Cen G, Stewart SL. Child-rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: A cross-cultural study. *Developmental Psychology*. 1998;34(4):677–86. [[PubMed](#) | [DOI](#)]
- Amin MS, Harrison RL. Understanding Parents' Oral Health Behaviors for Their Young Children. *Qualitative Health Research*. 2009 Jan;19(1):116–27. [[PubMed](#) | [DOI](#)]
- Okada M, Kawamura M, Kaihara Y, Matsuzaki Y, Kuwahara S, Ishidori H, Miura K. Influence of parents' oral health behaviour on oral health status of their school children: an exploratory study employing a causal modelling technique. *Int J Paediatr Dent*. 2002 Mar;12(2):101–8. [[PubMed](#) | [DOI](#)]
- Blinkhorn AS. Influence of social norms on toothbrushing behavior of preschool children. *Community Dentistry and Oral Epidemiology*. 1978 Oct;6(5):222–6. [[PubMed](#) | [DOI](#)]
- Astrom AN, Jakobsen R. The effect of parental dental health behavior on that of their adolescent offspring. *Acta Odontologica Scandinavica*. 1996 Jan;54(4):235–41. [[PubMed](#) | [DOI](#)]
- Al-Ateeq MA, Al-Rusaies AA. Health education during antenatal care: the need for more. *Int J Womens Health*. 2015 Feb 18;7:239–42. [[PubMed](#) | [DOI](#)]
- Boggett KA, Urlaub DM, Moos MK, Polinkovsky M, El-Khorazaty J, Lorenz C. Knowledge and beliefs regarding oral health among pregnant women. *The Journal of the American Dental Association*. 2011 Nov;142(11):1275–82. [[PubMed](#) | [DOI](#)]
- Yoder PS. Negotiating Relevance: Belief, Knowledge, and Practice in International Health Projects. *Medical Anthropology Quarterly*. 1997 Jun;11(2):131–46. [[PubMed](#) | [DOI](#)]
- Shetty RM, Deoghare A, Rath S, Sarda R, Tamrakar A. Influence of mother's oral health care knowledge on oral health status of their preschool child. *Saudi J Oral Sci*. 2016;3(1):12–6. [[Full text](#) | [DOI](#)]
- Chala S, Houzmali S, Abouqal R, Abdallaoui F. Knowledge, attitudes and self-reported practices toward children oral health among mother's attending maternal and child's units, Sale, Morocco. *BMC Public Health*. 2018 May 11;18(1):618. [[PubMed](#) | [DOI](#)]
- Heaton B, Crawford A, Garcia RI, Henshaw M, Riedy CA, Barker JC, Wimsatt MA; Native Oral Health Project. Oral health beliefs, knowledge, and behaviors in Northern California American Indian and Alaska Native mothers regarding early childhood caries. *J Public Health Dent*. 2017 Sep;77(4):350–359. [[PubMed](#) | [DOI](#)]
- Gussy MG, Waters EB, Riggs EM, Lo SK, Kilpatrick NM. Parental knowledge, beliefs and behaviours for oral health of toddlers residing in rural Victoria. *Aust Dent J*. 2008 Mar;53(1):52–60. [[PubMed](#) | [DOI](#)]
- Prasai Dixit L, Shakya A, Shrestha M, Shrestha A. Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. *BMC Oral Health*. 2013 May 14;13:20. [[PubMed](#) | [DOI](#)]
- Dali M, Laleet R. A study on oral health knowledge, attitude and practice among population of SiswaniJahada VDC in Biratnagar city, Nepal—A questionnaire survey. *Asian Pacific Journal of Health Sciences*. 2014 Apr;1(2):51–6. [[Full text](#) | [DOI](#)]



17. Williams NJ, Whittle JG, Gattrell AC. The relationship between socio-demographic characteristics and dental health knowledge and attitudes of parents with young children. *British Dental Journal*. 2002 Dec 7;193(11):651–4. [[PubMed](#) | [Full text](#) | [DOI](#)]
18. Thomas NJ, Middleton PF, Crowther CA. Oral and dental health care practices in pregnant women in Australia: a postnatal survey. *BMC Pregnancy Childbirth*. 2008 Apr 21;8:13. [[PubMed](#) | [DOI](#)]
19. Greenaway ES, Leon J, Baker DP. Understanding the association between maternal education and use of health services in Ghana: exploring the role of health knowledge. *J Biosoc Sci*. 2012 Nov;44(6):733–47. [[PubMed](#) | [DOI](#)]
20. Suresh BS, Ravishankar TL, Chaitra TR, Mohapatra AK, Gupta V. Mother's knowledge about pre-school child's oral health. *J Indian Soc Pedod Prev Dent*. 2010 Oct-Dec;28(4):282–7. [[PubMed](#) | [DOI](#)]
21. LeVine RA, LeVine SE, Rowe ML, Schnell-Anzola B. Maternal literacy and health behavior: a Nepalese case study. *Soc Sci Med*. 2004 Feb;58(4):863–77. [[PubMed](#) | [DOI](#)]
22. Sakai VT, Oliveira TM, Silva TC, Moretti AB, Geller-Palti D, Biella VA, Machado MA. Knowledge and attitude of parents or caretakers regarding transmissibility of caries disease. *J Appl Oral Sci*. 2008 Mar-Apr;16(2):150–4. [[PubMed](#) | [DOI](#)]
23. Sligo FX, Jameson AM. The knowledge behavior gap in use of health information. *Journal of the American Society for Information Science*. 2000;51(9):858–69. [[FullText](#) | [DOI](#)]
24. Hoghughi M. The importance of parenting in child health. Doctors as well as the government should do more to support parents. *BMJ*. 1998 May 23;316(7144):1545. [[PubMed](#) | [DOI](#)]
25. de Jong-Lenters M, Duijster D, Bruist MA, Thijssen J, de Ruiter C. The relationship between parenting, family interaction and childhood dental caries: a case-control study. *Soc Sci Med*. 2014 Sep;116:49–55. [[PubMed](#) | [DOI](#)]
26. Medora NP. Strengths and Challenges in the Indian Family. *Marriage & Family Review*. 2007 Aug 27;41(1–2):165–93. [[FullText](#) | [DOI](#)]
27. Kreuter MW, Lukwago SN, Bucholtz DC, Clark EM, Sanders-Thompson V. Achieving Cultural Appropriateness in Health Promotion Programs: Targeted and Tailored Approaches. *Health Education & Behavior*. 2003 Apr;30(2):133–46. [[PubMed](#) | [DOI](#)]
28. Soltani R, Eslami AA, Mahaki B, Alipoor M, Sharifirad Gh. Do Maternal Oral Health-Related Self-Efficacy and Knowledge Influence Oral Hygiene Behavior of their Children? *Int J Pediatr* 2016; 4(7): 2035–42. [[FullText](#)]
29. Poutanen R, Lahti S, Tolvanen M, Hausen H. Parental influence on children's oral health-related behavior. *Acta Odontologica Scandinavica*. 2006 Jan;64(5):286–92. [[PubMed](#) | [DOI](#)]
30. Acharya LB, Cleland J. Maternal and child health services in rural Nepal: does access or quality matter more? *Health Policy Plan*. 2000 Jun;15(2):223–9. [[PubMed](#) | [DOI](#)]
31. van Palenstein Helderma W, Mikx F, Begum A, Adyatmaka A, Bajracharya M, Kikwilu E, Rugarabamu P. Integrating oral health into primary health care--experiences in Bangladesh, Indonesia, Nepal and Tanzania. *Int Dent J*. 1999 Aug;49(4):240–8. [[PubMed](#) | [DOI](#)]