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Knowledge, Attitude and Practice on Oral Health among Patients Visiting Dental Center: A Cross-Sectional Study

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Introduction: Oral health is a vital component of overall health and quality of life. Poor knowledge, negative attitudes, and inadequate practices regarding oral hygiene contribute significantly to the global burden of dental diseases, especially in low- and middle-income countries.

Objective: To assess the knowledge, attitude, and practice of oral health among patients attending a dental centre in Nepal.

Methods: A cross-sectional study was conducted among 353 patients attending a dental centre. Data were collected using a structured questionnaire covering socio-demographic characteristics, oral health knowledge, attitude, and practices. Descriptive statistics, chi-square tests, and logistic regression were applied to assess associations between socio-demographic variables and knowledge, attitude, and practice outcomes.

Results: The mean age of participants was 36.65 ± 15.88 years, with almost equal gender distribution. Overall, participant's demonstrated good knowledge of oral health, with 92.1% recognizing the importance of brushing twice daily, 88.1% acknowledging the harmful effect of sugary foods, and 76.8% aware of the impact of dental diseases on general health. Attitudes were generally positive, with 85.8% agreeing that oral health is as important as general health, and 91.8% recognizing the harms of tobacco and alcohol.

Conclusion: The study highlights generally good knowledge and positive attitudes toward oral health, but suboptimal practices persist, particularly regarding toothbrush replacement and frequency of brushing. Targeted health education and behavioral interventions are recommended to bridge the gap between knowledge and practice for improved oral health outcomes.

Keywords: Attitude; health literacy; oral health; knowledge; practice.

INTRODUCTION

Oral health is an integral part of general health and well-being, influencing nutrition, communication, self-esteem, and overall quality of life.[1] Despite significant advancements in dental care, oral diseases such as dental caries, periodontal disease, and oral cancers remain highly prevalent worldwide.[2]

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Nearly 3.5 billion people are affected by oral diseases, with disproportionate burdens in low- and middle-income countries where access to preventive and curative services is often limited.[3] In developing countries, including Nepal, oral health has traditionally received less attention compared to other health priorities.[4] Studies have shown that inadequate awareness regarding proper brushing techniques, fluoride use, harmful effects of sugar and tobacco consumption, and irregular dental visits are major barriers to good oral hygiene.[5] Furthermore, cultural beliefs, socioeconomic factors, and limited availability of oral health education programs exacerbate these challenges.[6]

Knowledge reflects awareness and understanding of preventive measures, attitude indicates personal beliefs and perceptions toward oral hygiene, while practice represents the actual behaviour that influence oral health status.[6,7] Together, these domains provide valuable insights into community oral health behaviour. This study aimed to assess the knowledge, attitude, and practice regarding oral health among patients visiting a dental centre, and to explore the socio-demographic factors associated with KAP outcomes.

METHODS

A descriptive cross-sectional study design was adopted to evaluate the knowledge, attitude, and practice (KAP) regarding oral health among patients visiting a dental centre. The study setting was an outpatient dental clinic that provides preventive,

diagnostic, and therapeutic oral health services to a diverse group of patients. We included the patients visiting at our center from 29 April 2025 to 1 September 2025. The study population consisted of patients attending the dental outpatient department during the study period. A total of 353 participants were included. Patients aged 18 years and above, of both sexes, and willing to provide informed consent were considered eligible. Patients who were critically ill, cognitively impaired, or unwilling to participate were excluded.

The sample size was calculated using the single proportion formula, considering an expected prevalence of oral health awareness from previous studies, with 95% confidence level and 5% margin of error. $n=z^2\ pq/d^2$ (where n=sample size, z=1.96,considering 95% CI, p=0.67 (prevalence rate =33%)[8], q=0.33, d=margin of error, ie,5%=0.05, non-response rate=5%).

An additional margin was included to account for possible non-responses, leading to a final sample size of 353.

We included the patients of age ≥18 years visiting at our center. We excluded the patients with cognitive impairment, autism, Alzheimer's disease and the patients who decline to participate in the study. A convenient sampling technique was applied. Eligible patients attending the dental centre during the data collection period were approached consecutively until the required sample size was reached. Data were collected using a structured, pre-tested questionnaire that was prepared in English and translated into the local language for better comprehension. The pretesting of the question was done in 10% of the population and if any corrections were needed was done accordingly. The tool was developed after literature review and consultation with dental public health experts.

The questionnaire consisted of four domains: Socio-demographic profile consists of age, gender, ethnicity, religion, and family type. Knowledge items includes 10 questions related to dental caries, fluoride use, brushing, oral hygiene, dietary practices, and dentition. Attitude items consists of 7 questions statements exploring perceptions about the importance of oral health, harmful habits, and preventive practices. Practice items with 12 questions, related to brushing frequency, method, duration, use of cleaning aids, and dental visits. Face-to-face interviews were conducted by trained data collectors to ensure clarity and completeness. Pretesting was carried out in a similar population to refine the tool and ensure reliability.

Each correct knowledge response was scored "1" and incorrect/don't know responses were scored "0". For attitude, positive responses were considered "good attitude," and for practice, responses consistent with recommended oral health behaviour were considered "good practice." The total scores were dichotomized into good and poor categories using mean cut-off values. Data were coded and entered into SPSS version 26 for statistical analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize variables. The association of socio-demographic variables with knowledge, attitude, and practice was tested using the Chi-square test. To identify independent predictors, binary logistic regression analysis was performed. Odds ratios (OR) with 95% confidence intervals (CI) were calculated, and a p-value <0.05 was considered statistically significant.

The study protocol was approved by the Institutional Review Committee of Madan Bhandari Academy of Health Sciences (Approval number: IRC-73 081/082). Written informed consent was obtained from all participants prior to data collection. Participation was voluntary, and confidentiality and anonymity were maintained throughout the study. Data were used solely for research purposes.

RESULTS

A total of 353 participants were included in the study with a mean age of 36.65 ± 15.88 years. The gender distribution was nearly equal (49% male and 51% female). In terms of ethnicity, Brahmin (41.1%) formed the largest group, followed by Chhetri (20.1%), Madhesi (18.4%), Janjati (17.3%), and others (3.1%). The majority were Hindus (87.5%), followed by Buddhists (5.1%), Christians (4.8%), and Muslims (2.5%). Most respondents belonged to nuclear families (72.2%), while 25.5% lived in joint families and 2.3% in extended families (Table 1).

Table 1: Socio-demographic characteristics and responses among the study participants.

Particulars	Number (n)	Percent (%)
Age (Mean± SD) in years	36.65±15.888	
Gender		
Male	173	49
Female	180	51
Ethnicity		
Brahmin	145	41.1
Chhetri	71	20.1
Janajati	61	17.3
Madhesi	65	18.4
Others	11	3.1
Religion		

Hindu	309	87.5
Buddhist	18	5.1
Muslim	9	2.5
Christian	17	4.8
Family Type		
Nuclear	255	72.2
Joint	90	25.5
Extended	8	2.3

Most participants demonstrated good knowledge regarding oral health. A majority recognized the importance of brushing twice daily (92.1%), rinsing after meals (89.2%), and the harmful effect of sugary foods and drinks on teeth (88.1%). More than three-fourths (76.8%) believed that dental diseases affect general health, and 81.6% knew that brushing, flossing, and avoiding sugar help prevent oral diseases. Knowledge about fluoride was moderate; 68.3% knew toothpaste contains fluoride, and 66.6% acknowledged its role in strengthening teeth. Most respondents correctly identified 32 permanent teeth in adults (73.7%) and 20 deciduous teeth in children (79%).(Table 2)

Table 2: Responses among the study participants.

Knowledge		
In order to keep our teeth healthy, it is necessary to brush after meal in the morning and at night daily		
Yes	325	92.1
No	28	7.9
Do you think that it is always necessary to rinse our mouth after each meal?		
Yes	315	89.2
No	35	9.9
Don't know	3	0.8
Do you think that Foods and drinks with sugar such as sweets, chewing gums, and soft drinks destroy our teeth?		
Yes	311	88.1
No	29	8.2
Don't know	13	3.7
Do you think that the dental diseases impact the general body health?		
Yes	271	76.8
No	43	12.2
Don't know	39	11
Is it possible to prevent oral diseases by brushing, flossing and avoiding sugar?		
Yes	288	81.6
No	44	12.5
Don't know	21	5.9
Brushing our teeth prevent dental decay. Is it true?		
Yes	317	89.8
No	25	7.1
Don't know	11	3.1
Is it true that our toothpaste contain fluoride?		
Yes	241	68.3
No	36	10.2
Don't know	76	21.5
Do you think using fluoride/ (fluoride contain toothpaste) strengthens the teeth?		
Yes	235	66.6
No	33	9.3
Don't know	85	24.1
How many permanent teeth are present in a healthy adult?		
28	93	26.3
32	260	73.7
How many milk teeth are present in a healthy child?		
10	35	9.9
20	279	79
28	26	10.2
32	3	0.8
Attitude		
Caring for your mouth is as important as caring for other parts of the body.		
Yes	303	85.8

No	27	7.6
Don't know	23	6.5
Good oral health is related to the good general health.		
Yes	295	83.6
No	37	10.5
Don't know	21	5.9
We should use our own toothbrush while brushing.		
Yes	308	87.3
No	26	7.4
Don't know	29	5.4
Using a same toothbrush for a long period is bad for our dental health.		
Yes	278	78.8
No	26	9.3
Don't know	42	11.9
Gutka/Paan/Pinky/Supari/Tobacco chewing and Smoking/Alcohol is a bad habit for the oral health hygiene.		
Yes	324	91.8
No	17	4.8
Don't know	12	3.4
Regular visit to the dentist is necessary for our better dental health.		
Yes	283	80.2
No	58	16.4
Don't know	12	3.4
Are you afraid of going to the dentist?		
Yes	128	36.3
No	223	63.7
Practice		
How often do you brush your teeth?		
Once a day	162	45.9
Twice a day	178	50.4
Occasionally	10	2.8
Never	3	0.8
Do you use other's toothbrush to brush your teeth?		
Never	257	72.8
Most of the times	37	10.5
Sometimes	59	16.7
In which method do you prefer to brush your teeth?		
Vertical	19	5.4
Horizontal	167	47.3
Circular	35	9.9
Mixed	132	37.4
What type of brush do you use?		
Hard	16	4.5
Soft	172	48.7
Medium	69	19.5
Never noticed	96	27.2
How long do you brush your teeth?		
Less than 3 mins	99	28
3-5 mins	184	52.1
More than 5 mins	70	19.8
Do you rinse your mouth with water after each meal?		
Yes	295	83.6
No	57	16.1
Never	1	0.3
Mention a toothpaste that you use to brush your teeth.		
Danta kanti Patanjali	60	17
Pepsodent	67	19
Close up	28	7.9
Colgate	150	42.5
Dabur lal	9	2.5

Sensodyne	39	11
What do you use for cleaning your teeth?		
Mouthwash	128	36.3
Dental floss	83	23.5
Toothpick	133	37.7
Others	9	2.5
How often do you change your tooth brush?		
When useless	172	48.7
Once 3 months	56	15.9
Once 6 months	96	27.2
Once a year	29	8.2
When was your last dental visit?		
0-6 months	136	38.5
7-12 months	156	44.2
More than a year	61	17.3
Why do you usually visit the dentist?		
Pain/Treatment	198	56.1
Tooth cleaning	155	43.9
What is the frequency of consumption of these food items? (Pinky/Madhu/Supari/Panparag)		
Sometimes	265	75.1
Often	55	15.6
A lot	33	9.3
What is the frequency of consumption of these food items? (Chocolates/Sweets/Candies)		
Sometimes	239	67.7
Often	48	48
A lot	66	18.7

Bivariate analysis revealed that knowledge was significantly associated with gender (p=0.035), ethnicity (p<0.001), and religion (p=0.007). Logistic regression showed that gender had a borderline significant effect (OR=1.94, p=0.053), while ethnicity and religion were not independent predictors (Table 3).

Table 3: Knowledge towards oral health among the study participants.

Characteristics	Knowledge		p-value
	Good knowledge	Bad Knowledge	
Gender			
Male	146 (84.4%)	27 (15.6%)	0.035
Female	165 (91.7%)	15 (8.3%)	
Ethnicity			
Bhramin	127 (87.6%)	18 (12.4%)	<0.001
Chhetri	64 (90.1%)	7 (9.9%)	
Janjati	61 (100%)	0	
Madhesi	55 (84.6%)	10 (15.4%)	
Others	4 (36.4%)	7 (63.6%)	
Religion			
Hindu	274 (88.7%)	35 (11.3%)	0.007
Buddhist	18 (100%)	0	
Muslim	5 (55.6%)	4 (44.4%)	
Christian	14 (82.4%)	3 (17.6%)	
Family Type			
Nuclear	224 (87.8%)	31 (12.2%)	0.575
Joint	79 (87.8%)	11 (12.2%)	
Extended	8 (100%)	0	

Overall, attitudes were positive. Most participants believed that oral health is as important as general health (85.8%), and good oral health contributes to good general health (83.6%). The majority emphasized using personal toothbrushes (87.3%), avoiding prolonged use of the same brush (78.8%), and recognized the harmful effects of tobacco, alcohol, and betel nut chewing (91.8%). Furthermore, 80.2% agreed that regular

dental visits are necessary, although 36.3% expressed fear of visiting the dentist.

Attitude was significantly associated with gender (p<0.001), ethnicity (p<0.001), and religion (p=0.025). On logistic regression, gender emerged as an independent predictor of positive attitude (OR=4.17, p=0.001), while ethnicity and religion showed no independent effect (Table 4).

Table 4: Attitude towards oral health among the study participants.

Characteristics	Attitude		p-value
	Good attitude	Bad attitude	
Gender			
Male	145 (83.8%)	28 (16.2%)	<0.001
Female	172 (95.6%)	8 (4.4%)	
Ethnicity			
Bhramin	134 (92.4%)	11 (7.6%)	<0.001
Chhetri	58 (81.7%)	13 (18.3%)	
Janjati	61 (100%)	0	
Madhesi	57 (87.7%)	8 (12.3%)	
Others	7 (63.6%)	4 (36.4%)	
Religion			
Hindu	276 (89.3%)	33 (10.7%)	0.025
Buddhist	18 (100%)	0	
Muslim	6 (66.7%)	3 (33.3%)	
Christian	17 (100%)	0	
Family Type			
Nuclear	225 (88.2%)	30(11.8%)	0.244
Joint	84 (93.3%)	6 (6.7%)	
Extended	8 (100%)	0	

Daily oral health practices varied among participants. Half of the respondents brushed twice daily (50.4%), while 45.9% brushed once daily. The horizontal brushing method (47.3%) was most common, followed by mixed (37.4%) and circular (9.9%) techniques. Regarding toothbrush type, 48.7% used soft brushes, 19.5% medium, and 4.5% hard, while 27.2% had never noticed the type. Brushing duration was 3–5 minutes in 52.1%, less than 3 minutes in 28%, and more than 5 minutes in 19.8%.

In terms of supplementary practices, 83.6% rinsed their mouth after meals, 37.7% used toothpicks, 36.3% mouthwash, and 23.5% dental floss. Nearly half (48.7%) replaced their toothbrush only when it became unusable, while 27.2% did so every six months and 15.9% every three months.

Dental visits were irregular: 44.2% visited in the last 7–12 months, 38.5% within 6 months, and 17.3% more than a year ago. The most common reasons for consultation were pain/treatment (56.1%) and tooth cleaning (43.9%). Consumption of tobacco-related products was reported "sometimes" by 75.1%, while 67.7% consumed sweets/chocolates occasionally.

Bivariate analysis showed that oral health practice was significantly associated with ethnicity (p=0.019) and family type (p=0.005), but not with gender or religion. Logistic regression did not reveal any significant independent predictors (Table 5).

Table 5: Oral health practices among the study participants

Characteristics	Practice		p-value
	Good practice	Bad practice	
Gender			
Male	2 (1.2%)	171 (98.8%)	0.169
Female	6 (3.3%)	174 (96.7%)	
Ethnicity			
Bhramin	8 (5.5%)	137 (94.5%)	**0.019**
Chhetri	-	71 (100%)	
Janjati	-	61 (100%)	

Madhesi	-	65 (100%)	
Others	-	11 (100%)	
Religion			
Hindu	8 (2.6)	301 (97.4%)	0.761
Buddhist	-	18 (100%)	
Muslim	-	9 (100%)	
Christian	-	17 (100%)	
Family Type			
Nuclear	2 (0.8%)	253 (99.2%)	0.244
Joint	6 (6.7%)	84 (93.3%)	
Extended	-	8 (100%)	

DISCUSSION

This cross-sectional study assessed the knowledge, attitude, and practice (KAP) of oral health among patients attending a dental centre. The findings revealed that while most participants demonstrated good knowledge and positive attitudes regarding oral health, gaps remain in translating this knowledge into regular and effective practices.

The socio-demographic characteristics of the participants reflected a relatively balanced representation of gender, with almost equal proportions of males and females. The mean age was 36.6 years, indicating a young to middle-aged population that is generally at higher risk for developing oral diseases due to lifestyle habits, dietary changes, and inconsistent preventive practices. Similar demographic profiles have been observed in previous oral health KAP studies conducted in South Asia, suggesting that the burden of oral diseases is not limited to specific subgroups but affects a wide range of individuals.[9]

The majority of respondents demonstrated adequate knowledge of oral health. Over 90% recognized the importance of brushing twice daily, while nearly 88% identified sugary foods and drinks as harmful to teeth. These findings are consistent with studies conducted in low-middle income countries, which have reported high awareness levels regarding the link between sugar consumption and dental caries.[8] Awareness about the preventive role of brushing and flossing was also high in this study (81.6%), reflecting the impact of increased health information availability through education, media, and dental consultations.

However, knowledge regarding fluoride was comparatively lower. Only 68.3% were aware that toothpaste contains fluoride, and 66.6% believed fluoride strengthens teeth. This knowledge gap is notable because fluoride is one of the most effective and accessible measures to prevent dental caries.[10] Previous studies have also reported poor awareness regarding fluoride, highlighting the need for targeted education on the benefits of fluoridated toothpaste.[11] Additionally, while most participants correctly identified the number of permanent and deciduous teeth, a considerable proportion provided incorrect responses, suggesting gaps in basic oral health knowledge.

The majority of respondents expressed positive attitudes toward oral health. Most agreed that oral health is as important as general health and acknowledged the harmful effects of tobacco, alcohol, and betel nut chewing. These findings are encouraging, as positive attitudes often serve as a foundation for adopting preventive behaviors. The belief that regular dental visits are necessary (80.2%) further reflects a proactive outlook among participants.

Despite this, more than one-third (36.3%) reported fear of visiting the dentist, which is consistent with global reports of dental anxiety as a barrier to seeking care.[12] Dental fear not only delays treatment but also contributes to worsening oral conditions and greater treatment needs.[13] Addressing dental fear through patient education, reassurance, and improving the clinical environment could help reduce this barrier.[14] Significant associations exist between attitude and socio-demographic factors such as gender, ethnicity, and religion. Logistic regression identified gender as an independent predictor of positive attitude, with females more likely to report favorable attitudes. This finding aligns with previous research suggesting that women generally demonstrate higher health consciousness and are more likely to adopt preventive measures compared to men.[15]

Although knowledge and attitudes were generally favorable, oral health practices were less satisfactory. Only 50.4% reported brushing twice daily, while nearly half brushed only once per day. This finding indicates a gap between knowledge and practice, similar to results from other studies where brushing twice daily is recommended but not consistently practiced.[16] The horizontal brushing technique was most common, despite evidence that circular or modified Bass

techniques are more effective in plaque removal. Furthermore, while 83.6% rinsed after meals and over half brushed for 3-5 minutes, almost half of the respondents replaced their toothbrush only when it became unusable, rather than at recommended three-month intervals. Use of adjunctive oral hygiene aids such as floss and mouthwash was limited. Toothpick use was more common, which may reflect cultural practices but is not a recommended method for maintaining gingival health. These findings underscore the persistence of unhealthy or less effective oral hygiene practices despite good knowledge and positive attitudes.

The association of KAP outcomes with socio-demographic factors suggests that oral health interventions should be tailored to specific groups. For instance, men and individuals from certain ethnic or religious backgrounds may require focused educational efforts to improve their attitudes and practices. This study has some limitations. The cross-sectional design prevents causal inferences between socio-demographic variables and KAP outcomes. The use of convenient sampling may limit generalizability, as participants attending a dental center may have higher awareness compared to the general population. Self-reported practices are also subject to recall and social desirability bias. Despite these limitations, the study provides valuable insights into patient behaviour and highlights critical areas for intervention.

CONCLUSION

This study found that patients demonstrated good knowledge and positive attitudes toward oral health, yet their practices were suboptimal. Irregular toothbrush replacement, inadequate brushing frequency, and limited use of effective oral hygiene aids were the main gaps identified. Interventions focusing on behavioral change, reinforcement of preventive practices, and reducing dental fear are essential to bridge the gap between knowledge and practice and to improve overall oral health outcomes.

Dental visits were largely problem-driven, with more than half seeking care for pain or treatment rather than preventive check-ups. This “treatment-oriented” approach to oral health care is common in low and middle income countries, where preventive dental visits are less emphasized due to cost, access, or awareness barriers. The results highlight the importance of strengthening oral health education programs that not only raise awareness but also emphasize the practical aspects of oral hygiene. Strategies such as community-based awareness campaigns, school dental health programs, and counseling during dental visits could help improve daily practices. Additionally, targeted interventions addressing dental fear, particularly among adults, could encourage more regular preventive visits.

Conflict of interest: None

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