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Correlation of Oral Health Knowledge with Practices and Utilization of Dental Services Among Saudi Adults– A Pragmatic Study

Rania Rashad Omar Omar Taha*[1], Fatimah Saad Almrwani[2], Hoda Abdulnasser Alhelali[3]

[1]*Assistant professor, Department of Restorative Dentistry, Ibn Sina National College, Jeddah, Saudi Arabia*
[2]*General Dentist, Ibn Sina National College, Jeddah, Saudi Arabia*
[3]*General Dentist, Ibn Sina National College, Jeddah, Saudi Arabia*
**Corresponding Author*
Rania Rashad Omar Omar Taha ORCID id: 0009-0007-8633-6726 Email id: raniamaster@ibnsina.edu.sa

ABSTRACT

Background: Perceived oral health, a significant component that influences oral hygiene practices and the utilization of dental services, varies globally. Although evidence suggests that oral health knowledge is a substantial contributing factor to the utilization of dental services, there is a paucity of literature correlating oral health knowledge with practices and the utilization of oral health services.

Objectives Therefore, this study aimed to Correlate Oral Health Knowledge with Practices and utilization of Dental services among Saudi adults.

Methods: Patients visiting the outpatient department of a college in the Kingdom of Saudi Arabia took part in this exploratory survey. Data were collected via a pre-tested, structured questionnaire administered in both English and Arabic. The software used to analyze the variables was SPSS 20.

Results: Regarding the oral health knowledge domain, the majority demonstrated knowledge about the causative factors for dental caries and gum disease, as well as the importance of fluoride. However, a deeper understanding of what plaque is remains unknown to half of them. About half of them brushed twice and used mouthwash, but only 13.8% brushed for the stipulated time. Employed individuals (p = .046, OR = 4.51), Higher education (p = .038, OR = 7.58), awareness about tooth decay (p = .006, OR = 10.47) and gum disease (p = .000, OR = 23.40) and their source of receiving oral hygiene instruction boosts is a strongest predictor which highly increases likelihood of dental visit.

Conclusion: The positive correlation between oral health knowledge, oral hygiene practices, and utilization of dental services is well demonstrated. Stakeholders should customise future oral health policies to focus on enhancing oral health knowledge by reducing the inequity gap in education, unemployment, and other related factors, thereby improving behavioural routines and utilization patterns.

KEYWORDS: Oral health; health knowledge; practices; Dental services; Saudi Arabia.

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INTRODUCTION

Oral health is a crucial component of overall health; yet, many individuals lack adequate knowledge and fail to practice proper oral hygiene. Perceived oral health is a significant component that drives oral hygiene practices and the utilization of dental services.[1]

According to the World Dental Federation, although oral health disease is a public health problem, among the micro-principal factors, lack of oral health knowledge is a significant contributing factor to self-oral health behaviour and underutilization of health services. Looking at this perspective, when searching for evidence of the association between oral health knowledge and associated factors of practices and utilization in the present population, we are astonished to find that this area is under-researched, especially among adults.[2] Additionally, a recent systematic review conducted in this target population found that the majority of the included studies were conducted in school children, college students, and high-risk groups. Further, many of the studies only reported descriptive statistics.[2]

Numerous studies have revealed that decreased oral health knowledge may be a primary factor preventing the utilization of dental services. However, the correlation between healthcare utilization and oral health knowledge, as well as the need for care, remains a topic of controversy. Several studies have assessed the oral health knowledge and practices among various target populations in Saudi Arabia.[3,4]

Furthermore, the utilization of dental services has also been evaluated. However, none of the studies assessed whether there is any association between oral health knowledge and factors affecting the utilization of dental services. Hence, our study aimed to evaluate oral health knowledge, Practices, and factors affecting the utilization of Dental services among Saudi adults.[5]

By understanding the current state of oral health knowledge and the patterns of dental care utilization, we can develop targeted interventions to improve oral health outcomes comprehensively.[6]

Hence, we attempted to investigate the level of oral health knowledge and practices, as well as factors affecting the utilization of dental services, among adult patients in Saudi Arabia.

This study aims to assess the level of oral health knowledge and practices, as well as the factors affecting the utilization of dental services, among adult patients in Saudi Arabia. Hence, the primary objectives were to assess the level of oral health knowledge, practices, and the factors affecting the utilization of dental

services among the adult population using a pretested questionnaire. The secondary objective was to determine whether there is an association between oral health knowledge, practices, and factors influencing the utilization of dental services in our target population.

MATERIALS AND METHODS

The present study is a cross-sectional survey conducted among adult patients reporting to the Department of Restorative Dentistry, Ibn Sina National College, Jeddah, Saudi Arabia in the period of January 2025 to July 2025.

Recruitment and informed consent

The ethical approval to conduct this study was obtained from the Institutional Ethics Committee. Participants were recruited through a random sampling technique, and only those who gave informed consent were enrolled in the investigation.

Sample Size Calculation

The ample sample size of the present study was computed using the formula, $N = (Z\alpha + Z\beta)PQ/l2$

With P=60% (Based on the Review)2 and a permissible error at 5%, gave the sample size of N =384. Hence, a total of 384 participants were enrolled in the present survey.

Data Collection Instrument

A structured questionnaire was developed to collect data on socio-demographic information, including age, gender, education level, occupation, and income. The second part examined oral hygiene practices, including brushing frequency, duration, and technique, as well as flossing frequency and the use of mouthwash. The third part of the questionnaire assessed oral health knowledge, which included their frequency of visits to the Dentist, understanding of dental caries, and periodontal disease. The last part evaluated the utilization of dental services. The face validity of the questionnaire was assessed by administering it to twenty participants who did not form part of the sample size. The content and construct validity inputs were obtained from the department experts. The reliability was assessed by administering the questionnaire to ten participants at least ten days apart to the patients with a recall appointment, and Cronbach's alpha was found to be 0.79.

Questionnaire administration

The paper-based questionnaire was administered to the target population visiting the Department as outpatients. Furthermore, the participants' anonymity was maintained.

Statistical Analysis

The data was analyzed using SPSS version 22.0. Descriptive statistics were used to summarise demographic characteristics and oral health knowledge, practices, and utilization of oral health services. The mean oral health score was calculated by assigning a score of 1 for every correct option and 0 for all other options. A cut-off value of 3 and above was coded as good oral hygiene, and below as poor oral health knowledge. The maximum score for all correct options was 5.

Univariate analysis was performed for patients with good or poor oral health knowledge using Chi-square tests. Logistic regression was performed to identify factors associated with oral health knowledge and practices, as well as factors affecting the utilization of dental services. A value less than 0.05 was considered statistically significant.

RESULTS

Oral Health Knowledge

Table1: Descriptive characteristics of the sample

Descriptives	Frequency N	Percent %	
Age			
18-24 Years	146	38.0	
25-34 Years	137	35.7	
35-44 years	70	18.2	
45-54 years	22	5.7	
55 years and older	9	2.3	
Gender			
Male	62	16.1	
Female	322	83.9	
Education			
Senior High school or lower	71	18.4	
Bachelor's degree or higher	313	80.9	
Employment			
Unemployed	201	52.3	

Employed	183	47.6	
Frequency of visiting the dentist			
Once a year	118	30.7	
Twice a year	62	16.1	
Every six months	54	14.1	
Less often/Never	150	39.1	
Main causes of tooth decay			
Sugar consumption	16	4.1	
Poor oral hygiene	12	3.1	
Genetic factors	7	1.8	
All of the above	313	81.5	
Others (improper brushing,Smoking)	36	9.3	
Main causes of gum disease			
Poor oral hygiene	62	16.1	
Smoking	24	6.2	
Hormonal changes	10	2.6	
All of the above	272	70.8	
Others (Genetics, Smoking)	16	4.1	
Do you know plaque			
No	196	51	
Yes	188	49	
Do you know the importance of fluoride			
No	108	28.1	
Yes	276	71.9	
Frequency of brushing teeth			
Once	116	30.2	
Twice	219	57	
Three or more times	49	12.8	
Time taken to brush teeth			
Less than a minute	108	28.1	
1 to 2 minutes	208	54.2	
2 to 3 minutes	61	15.9	
More than 3 minutes	7	1.8	
Do you floss your teeth			
No	280	72.9	
Yes	104	27.1	
Do you use mouthwash?			
No	125	32.6	
Yes	259	67.4	
If yes, how often			
Daily	119	45.9	
Weekly	24	9.2	
Occasionally	116	44.7	
Barriers preventing you from seeking dental care			
Cost	173	45.1	
Lack of dental insurance	22	5.7	
Fear of dental procedures	72	18.8	
Others (Discomfort,Shyness,Time,Nothing)	117	30.5	
Visited the dentist			
No	109	28.4	

Yes	275	71.6	
If yes, for what			
Extraction of teeth	14	5.1	
Filling of teeth	42	15.3	
Cleaning of teeth	32	11.6	
All of the above	156	56.7	
Others procedures	31	11.3	
If no, why			
No problem	43	39.4	
Inaccessibility to the clinic	18	16.5	
High cost	38	34.8	
Fear of treatment	10	9.1	
Dentist you visit usually			
Government	77	20.1	
Private	260	67.7	
Both	47	12.2	
Oral hygiene instructions received from			
Parents/friends	58	11.7	
Dentist	151	30.5	
Media	67	13.5	
All of the above	108	21.8	

Regarding oral health knowledge, only 14% knew that they should visit the Dentist every six months. When asked, "What is the main cause of tooth decay?" about half of the study participants declared that sugar consumption is the cause. Regarding the principal cause of gingival disease, about 43.2% of the surveyed population believed that poor oral hygiene was the chief cause of gingivitis. However, about half of the recipients, when interrogated, have no idea what plaque is. Notably, the majority (71.9%) replied that they were well acquainted with the importance of fluoride when assessed for their knowledge of this double-edged sword.

Oral Hygiene Practices

More than half of the participants (56.8%) reported brushing their teeth twice; however, only a third (33.8%) brushed within the recommended time. The majority (72.9%) did not practice flossing their teeth, although more than half of the participants (56%) had a regular habit of using mouthwash. However, among the respondents who used mouthwash, about half had a habit of using it occasionally.

Factors affecting the utilization of dental services

Among the factors affecting the utilization of oral health care services, cost (45.1%) is the primary factor preventing them from meeting their felt needs. We, the authors, posed an open-ended question to assess the other hampering factors, as the next major response option was 'others'. Elaborating on 'Others', the majority answered that the cost factor, along with the lack of insurance, was the main issue. Notably, Fear of the Dentist is the least obstacle (18.8%) preventing the population from visiting the Dentist.

Among the participants, more than two-thirds (94%) of the surveyed population have visited a dentist either for restorations (14.1%) or oral prophylaxis (10.4%) treatment. Further, most of the surveyed population visited the private practitioners (67.7%).

People who had not visited the Dentist, i.e., about 39.4%, responded that they did not see a dentist because they did not have any oral cavity problems. However, about 35% did not visit the Dentist because of the cost factor.

Regarding oral hygiene instructions, the majority reported having received their information from the Dentist. Notably, the next primary source was social media (13.5%)

Oral Health Knowledge and Oral Hygiene Practices

Comparing the participants' oral health knowledge with their practices revealed a statistically significant difference in the use of adjuvant oral health aids, such as dental flossing ($p = 0.045$) and mouthwash usage ($p = 0.011$). There is no significant association between the frequency of brushing ($p = 0.898$), the time spent brushing ($p = 0.388$), and oral health knowledge.

Oral Health Knowledge and utilization of dental services

Utilization of dental services, when compared with participants having good and poor oral health knowledge, reveals a significant difference in the reason for not visiting the Dentist ($p = 0.000$) and the type of Dentist they visited ($p = 0.007$). However, visiting a dentist, treatment received, and the individual from whom they have received instructions did not demonstrate any statistically significant difference ($p > 0.05$)

Mean scores of Oral Health Knowledge, Oral hygiene Practices, and utilization of dental services

The mean scores based on sound and poor oral health knowledge were 3.08, 1.75; 1.66, 1.44; and 1.70, 1.65, respectively, in the Oral Health Knowledge, Oral Hygiene Practices, and Utilization of Dental Services domains.

Relationship among knowledge, practices, and utilization of dental services

A positive correlation was observed among knowledge and practices, and utilization of dental services scores. However, only oral hygiene practices demonstrated a statistically significant p-value ($P < 0.001$). Table 4 presents the field-wise correlation data.

Table 3: Domain-wise Comparison of mean Orah health knowledge, oral hygiene practices and utilization of health services scores

Domain	Knowledge Score	N	Mean	Std. Deviation	Std. Error Mean	t	p value
Oral health knowledge	good	167	3.08	1.01	0.08	13.44	0.00
	poor	216	1.75	0.93	0.06		
Oral health practice	good	167	1.66	1.09	0.08	2.03	0.04
	poor	216	1.44	0.98	0.07		
Oral health utilization	good	167	1.70	0.52	0.04	0.95	0.35
	poor	216	1.65	0.55	0.04		

*p < 0.05 is statistically significant

Table 4: Correlation between knowledge, practices, and utilization of dental services scores

Variable	Correlation coefficient (r)	p value
Knowledge-Practice	0.27	0.00
Knowledge- Utilization	0.08	0.10
Practice- Utilization	0.02	0.00

*p < 0.001 is statistically significant

Table 5 presents an interpretation of a logistic regression model, assessing how various demographic, knowledge, and behavioural variables predict the factors influencing the practice and utilization of dental services based on the type of dental visit.

Table 5: Logistic Regression Analysis of dental visit with Oral Health Knowledge , oral hygiene practices and utilization of dental services

	S.E.	OR	P value
Age	.456	1.621	.290
Gender	1.046	4.554	.147
Employment	.756	4.509	.046*
Education	.977	7.580	.038*
Frequency of visiting the Dentist	3.017	1.414	.909
Main cause of tooth decay	.858	10.470	.006*
Main cause of gum disease	.803	23.398	.000*
Plaque means	.945	8.754	.022*
Frequency of brushing	.709	.235	.041*
Time taken for Brushing	.866	2.011	.420
Flossing	1.010	.666	.687
Mouthwash	.648	1.675	.426
Obstacle for visiting the dentist	.256	.623	.064
Visited the dentist	1.157	.258	.242
Type of dentist	.655	.721	.617
Oral instructions received	.247	1.950	.007*

*p < 0.05 is statistically significant

Employed individuals (p = .046, OR = 4.51) are 4.51 times more likely to utilize dental services. Higher education (p = 0.038, OR = 7.58) significantly increases the odds. Awareness of sugar consumption as the leading cause (p = .006, OR = 10.47) and poor oral hygiene as the leading cause of gum disease (p = .000, OR = 23.40) boosts the odds 10 times and 23 times the frequency of visiting the Dentist. Receiving oral hygiene instruction nearly doubles the odds of utilizing health services. Other variables (e.g., AGE, GENDER) were not statistically significant.

DISCUSSION

In 2021, Sahab DA et al.6 performed a study among a representative sample of Saudi Arabians and found that 39% of them flossed and 48% used mouthwash. On the other hand, our participants reported using mouthwash more frequently and flossing less frequently. This practice may be due to a fear of using dental floss, which could damage their gums, or it could be because of a dentist's prescription or social media promotion. Another study conducted among adult patients in Saudi Arabia by Almassri, O et al in 201911 reported a lower usage of dental floss (14%), and 23% used mouthwash. Thus, our population is showing a catching trend in floss usage.

The majority of participants in our study were female. This is in line with the fact that gender differences exist in the utilization of oral health services, as reported by Rajeh et al in 2022.7 Although the evidence suggests that utilization of dental services increases with age in our study, the number of participants belonged to the elderly age group. This may be because of the increased perceived need of the participants.

Regarding oral hygiene knowledge, although the majority knew that visiting the Dentist once every six months is essential. At least half of the participants were unaware of what plaque is. Furthermore, more than two-thirds of the respondents neither knew their optimal brushing time nor flossed their teeth. Although oral health awareness is available on various platforms, and the majority report receiving oral hygiene instructions from their Dentist, oral health knowledge remains insufficient, necessitating steps to promote awareness and understanding among the population. Investigating patients' enabling and barrier factors in the utilization of dental services is a key factor for understanding individuals' oral health behaviour and treatment-seeking behaviour.

The mean oral health knowledge percentile of the present study was similar to the mean oral scores of similar work done in the Jeddah region.7

Furthermore, another study conducted in Jazan city by Quadri FA et al in 2017,8 who revealed that 48% of participants reported an incident within the last six months; however, the authors did not specify the frequency of these reports. This discrepancy may be because of the oral health condition of the representative sample. Author also reported that an individual's educational level is a significant predictor of dental service utilization. This suggests that oral health programs and policies targeting the less educated should be tailored to maximize their benefits

Sahab DA et al in 2022,9 survey of secondary data analysis for the Kingdom of Saudi Arabia revealed that, on average, about 20% visited their Dentist at least once a year, and our study is in par with the data reported.

Regarding periodontal diseases, more than two-thirds of the population from the Al-Ahsa region found poor oral hygiene as major contributing factor, akin to the study by Ahmed et al in 2023.10

A study done by Alshahrani et al in 20213 reported that 34% of their participants brushed their teeth twice daily. In our work 54% reported brushing twice, which may indicate better oral hygiene practices in the population.

Almassri, O et al in 2019,11 revealed in a multivariate analysis that participants with good oral health knowledge about oral diseases had increased the odds of their enabling self-oral hygiene practices and treatment-seeking behaviour. Hussain MB in 201812 mentioned in his study about the utilization of dental services and their association with oral health knowledge, it was found that socioeconomic status, education, and receiving oral hygiene instructions from a dentist increase the likelihood of seeking oral health treatment and promoting good oral hygiene practices.

Additionally, a recent multinational Cochrane systematic review by Worthington HV in 201913 declared that the Overall usage of floss and mouthwash was low to very low certainty.

Further, compared with various studies conducted in the Asian Pacific region, only a few subjects reported using dental floss for interdental cleaning according to the studies conducted by Al Johara A et al in 201014 and Bommireddy VS et al in 2017.15 In our study, perceived need, along with tooth ailments, were the primary factors influencing the decision to seek dental treatment. Among the barriers, the cost factor is the primary factor, followed by dental insurance and fear of the Dentist. This view is similar to that presented by authors elsewhere. However, studies conducted earlier reported that the proximity of a dental clinic is also a factor contributing to underutilization.15,16 This indicates increased availability of health services to the target population.

Recommendations and limitations of the study

In our study, the majority of participants were female; therefore, further multicenter studies with an equal gender distribution are warranted for generalizability. As this is a cross-sectional survey, spurious associations can be expected. Furthermore, social desirability bias can encourage participants to respond positively to binary questions, necessitating the use of objective assessment methods to ensure accurate results. Furthermore, a multicenter prospective study is warranted to assess the stable predictors and enablers of oral hygiene practices and utilization of dental care.

CONCLUSION

This study provided more profound insights into the oral health knowledge, practices, and barriers to the utilization of dental services among the adult patient population in the target area. A positive correlation exists between oral health knowledge, oral hygiene practices, and the utilization of dental services. Regarding the predictors, oral health knowledge, including oral hygiene, brushing, and adjuvant practices such as flossing, was higher in individuals with higher knowledge scores. Further education, employment and receiving oral hygiene instructions from a Dentist increased the utilization of oral health services. Stakeholders should customise future oral health policies, focusing on enhancing oral health knowledge by reducing the inequity gap in education, unemployment, and other related factors to improve behavioural routines and utilization patterns.

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