

KNOWLEDGE AND AWARENESS LEVEL OF ORAL HYGIENE MEASURES IN PROSTHODONTICS PATIENTS IN SAUDI ARABIA

Abdulrahman J. Alhaddad¹, Souhaila Memish^{*2}, Khalid AlFuryah³, Abdulaziz AlQahtani⁴, Almaha Ali⁴, Sondos Malakah⁵, Hadeel AlAshram⁴, Abdulrahman AlGhamdi⁶, Samar H. Abuzinadah⁷, Khames T. Alzahrani⁸.

¹Associate Professor and Consultant of Prosthodontics, Oral and Maxillofacial Prosthodontics Department, King Abdulaziz University, Faculty of Dentistry, Jeddah, Saudi Arabia.

²General Dentist, King Abdul-Aziz University, Jeddah, Saudi Arabia.

³Dental Intern, Qassim University, Buraydah, Saudi Arabia.

⁴Dental Student, King Khalid University, Abha, Saudi Arabia.

⁵Dental Student, Ibn Sina National College, Jeddah, Saudi Arabia.

⁶Dental Intern, King Abdul-Aziz University, Jeddah, Saudi Arabia.

⁷Associate Professor and Consultant of Restorative and Digital Dentistry, Restorative Dentistry Department, King Abdul-Aziz University, Faculty of Dentistry, Jeddah.

⁸BDS, PGD Endo from Stanford University, Saudi Board of Endodontic SR, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

***Corresponding author:** Souhaila Memish; **Email:** Souhailamemish@gmail.com

Abstract

Introduction: Dental hygiene is the habit of maintaining and improving the health of teeth and gums. The effectiveness of oral hygiene on dental prostheses plays a crucial role in the gingival health and the surrounding structures. Numerous factors may influence a patient's behavior and desire to proceed with necessary prosthodontic treatment. **Objectives:** This Study Aims to assess the knowledge and awareness level of patients about the proper hygiene measures according to the type of prostheses received in Saudi Arabia. **Methodology:** A cross-sectional study from July to December 2024, used standardized questionnaires distributed online Through social media including participants consisting of all Saudi adults aged 18 and above from both genders. the target sample size for this study was a minimum of participants (384), the margin of error is set at (5%), and the standard deviation of (95%). **Results:** The study investigated the knowledge and awareness of oral hygiene measures among prosthodontic patients in Saudi Arabia, involving 507 participants with an average age of 31.7 years. Findings revealed a preference for fixed prostheses, with 62.3% opting for crowns, bridges, or veneers. While 74% received clear oral hygiene instructions from dentists, 40.8% did not seek further information on cleaning techniques. Alarmingly, only 20.9% demonstrated a high knowledge level regarding oral care, and 75.9% exhibited low awareness of hygiene measures. The study highlighted significant correlations between knowledge and factors such as age, social status, and occupation, emphasizing the need for improved patient education. **Conclusion:** In conclusion, the findings of this study underscore the urgent need for targeted educational interventions to enhance the knowledge and awareness of oral hygiene measures among prosthodontics patients in Saudi Arabia.

Keywords: Awareness, Hygiene, Prostheses, Saudi Arabia.

Introduction:

As a branch of dentistry that deals with the diagnosis, treatment, planning, repair, and preservation of oral function, convenience, and appearance (1), prosthodontics is also known as dental prosthetics or prosthetic dentistry (2). Dental prostheses are typically used to restore the appearance and function of severely broken teeth (3). Individuals' general well-being and quality of life have a strong connection with their oral health (4). It has been proven that oral health and overall wellness are equally important (5). The "reflection" of overall wellness is oral health; however, the state of both oral and overall wellness depends on a complex interplay of numerous factors, such as an individual's personal awareness, features, behaviors, and perceptions (6). In 2022, research has been conducted on denture hygiene knowledge and patients' attitudes toward partial or complete removable dental prostheses in Al-Madinah Al Munawwarah, Saudi Arabia. Finding that 45% of people cleaned their dentures twice a day, and 54.5% of people felt at ease using their prosthetics. In 58.2% of cases, brushing with a toothbrush and toothpaste was the preferred way of cleaning dentures (7).

Studies have been published on the Association between Prosthesis Cleanliness and Patient Knowledge of Hygiene Habits among Complete Denture Patients and Partial Denture Prostheses Wearers in Kathmandu University School of Medical Sciences. Based on prosthesis cleanliness, 16 patients (6.9%) had kept their prosthesis clean, 67 (29%) dirty, 148 (64.1%) extremely dirty in patients with complete dentures, and 51 patients (33.7%) clean, 83 (55%) dirty, and 17 (11.2%) extremely dirty in patients with removable partial dentures (8). On Patients' satisfaction, expectations, care, and maintenance of fixed prostheses, the study showed 320 patients wearing fixed prostheses. 90.7% of participants reported being aware of and using good oral hygiene practices. Just 9.3% of the sample did not practice good oral hygiene; this was caused by 8.1% lethargy, 0.6% ignorance of the dentist's advice regarding the need for good oral hygiene, and 0.6% incompetence with dental appliances (9).

To keep healthy teeth and periodontium, patients need to be guided and instructed in oral hygiene, which is why oral hygiene education is so important. On the other hand, limited studies have been done on Saudi Arabian prosthodontic patients' oral hygiene practices. This study aimed to assess patients' awareness of different cleaning techniques based on the kind of prosthesis they had received in Saudi Arabia to consciously help patients improve more effective hygiene practices.

Objectives: The study aim to assess the knowledge and awareness level of patients about the proper hygiene measures according to the type of prostheses received in Saudi Arabia.

Methodology:**Study Design and Setting:**

This study was a cross-sectional questionnaire survey in 2024 for the Saudi population, based on a structured questionnaire that was developed by the authors. The study's population consisted of Saudi adults male and female over the age of 18 to 70 receiving any type of prosthesis (crown, Bridge, removable partial denture, and complete denture) participants were recruited during 2024 from people receiving the questionnaire.

Sample size:

The sample size was estimated using the formula:

$n = P(1-P) * Z_{\alpha/2}^2 / d^2$ with a 95% confidence level.

n: Calculated sample size.

Z: The z-value for the selected level of confidence $(1 - \alpha) = 1.96$.

P: An estimated prevalence of knowledge.

Q: $(1 - 0.50) = 50\%$, i.e., 0.50.

D: The maximum acceptable error = 0.05.

Therefore, the calculated minimum sample size was: $n = (1.96)^2 \times 0.50 \times 0.50 / (0.05)^2 = 384$.

Inclusion and Exclusion Criteria:

The Saudi population, both male and female, aged 18 years old and above, from all provinces in the Kingdom of Saudi Arabia, subjects from the general population in the KSA with any kind of prosthesis, and individuals who would consent to take part in this study and answer questionnaires were the inclusion criteria. Males and females dental professionals were excluded.

Method for data collection, instrument, and score system:

Those who agree to participate in the study provide online informed consent and received a 3 part self-administered questionnaire in Arabic language, all questions were in a multiple-choice format that was used as a study tool. The authors collect the information using social media channels through Google Forms.

The final version of the questionnaire consisted of 20 questions with 3 sections. Section 1, starts with a brief description of the study and the consent question. Section 2, includes demographic features such as age, gender, residential area, educational qualifications, social status, working hours, and income. Section 3, The participants were asked about their knowledge and awareness of prosthodontics treatments they received, sources of hygiene information, and methods to maintain healthy oral hygiene.

Scoring system:

In all, 12 statements assessed the participants' degree of knowledge and awareness regarding dental prostheses. The scoring system includes demographic data with no scoring and knowledge and awareness statements: 12 questions, each with specific scoring-criteria: one point is given for correct answers, and zero points are given for incorrect answers or "I don't know." For scoring, we utilized specific scoring criteria based on the type of response. The maximum score for knowledge is 17 points, and for awareness, it is 20 points. The participants divided into three groups based on their scores. The classification is as follows: Knowledge score (0-21 points), low knowledge: ≤ 10 points, moderate knowledge: 11-14 points, high knowledge: ≥ 15 points. Awareness score (0-42 points), low awareness: ≤ 20 points, moderate awareness: 21-30 points, high awareness: ≥ 31 points.

Pilot test:

Over fifteen people received the questionnaire and were asked to complete it. This was done to assess

questionnaire comprehension as well as study feasibility. The pilot data were not included in the study's final data.

Analyzes and entry method:

The PC was used to enter data using the "Microsoft Office Excel Software" (2021) Windows software. Then, the data was loaded into the IBM SPSS Statistics for Windows, Version 20.0 (Armonk, NY: IBM Corp.) statistical analysis application, version 20 of the Statistical Package of Social Science Software (SPSS). Gathered On a computer, data was input using the Windows version of Microsoft Excel (2021). After that, data was moved to version 20 of the Statistical Package for Social Science Software (SPSS). to be examined statistically.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (507). Participants are 31.7 years old on average, with a standard deviation of 11.9: 50.8% are age 26 and younger, resulting in a relatively young population. The gender distribution though clearly showing a strong female majority (68.8%) heightens the possibility of gender special characteristics during the study. Though scattered across all regions, the Southern region is present in nearly half of all (46.9%) participants, possibly due to either demographic trends or accessibility to date testing. The majority are single (59.6%) and could have behavioral and social consequence based on social status. A very well-educated sample where most of the cases have educational attainment at bachelor's level (63.1%), and most of them are not employees (38.3 %) and respectively students (33.1%) and employees (38.3%). The economic diversity of participants can be further illustrated by looking at their monthly income distribution — 49.9% earn between 1,000 and 5,000, potentially highlighting potential fields of research and policy development.

Table (1): Sociodemographic characteristics of participants (n=507)

<i>Parameter</i>		<i>No.</i>	<i>Percent (%)</i>
Age (Mean:31.7, STD:11.9)	23 years or less	130	25.6
	24 to 26	128	25.2
	27 to 40	128	25.2
	41 or more	121	23.9
Gender	Female	349	68.8
	Male	158	31.2
Residential region	Northern region	20	3.9
	Southern region	238	46.9
	Central region	91	17.9
	Eastern region	19	3.7
	Western region	139	27.4

<i>Social status</i>	Single	302	59.6
	Married	173	34.1
	Divorced	19	3.7
	Widowed	13	2.6
<i>Educational level</i>	Elementary school	1	.2
	Middle school	2	.4
	High school	60	11.8
	Diploma	67	13.2
	College student	11	2.2
	Bachelor	320	63.1
	Postgraduate	45	8.9
	None	1	.2
<i>Occupation</i>	Student	168	33.1
	Employee	194	38.3
	Un employed	77	15.2
	Self-employment	28	5.5
	Retired	40	7.9
<i>Working time</i>	6 Hours/day	202	39.8
	8 Hours/day	264	52.1
	12 Hours/day	26	5.1
	More than 12Hours/day	15	3.0
<i>Monthly income</i>	Less than 1000 SAR	111	21.9
	1000 to 5000 SAR	142	28.0
	6000 to 10000 SAR	95	18.7
	11000 to 15000 SAR	88	17.4
	More than 15000 SAR	71	14.0

As shown in figure 1, Insight is gained also into patient preference and clinical practice from data obtained on the types of prostheses used on a total sample of 507 individuals. An astounding 62.3% (or 316 participants) choose fixed crowns, bridges, or veneers, demonstrating a great aversion for more permanent solutions with superior aesthetics and functionality. In contrast, RPD was used by only 8.1% (41 participants), and therefore was less popular than other prosthesis. In 5.9% (30 individuals), full dentures offer was used, suggesting a small proportion of edentulous individuals seeking complete denture solutions. 23.6 per cent (120 individuals) made use of more than one kind of prosthesis, indicating diversity in approach to managing dental restoration, and possibly reflecting patient requirements and treatment outcome.

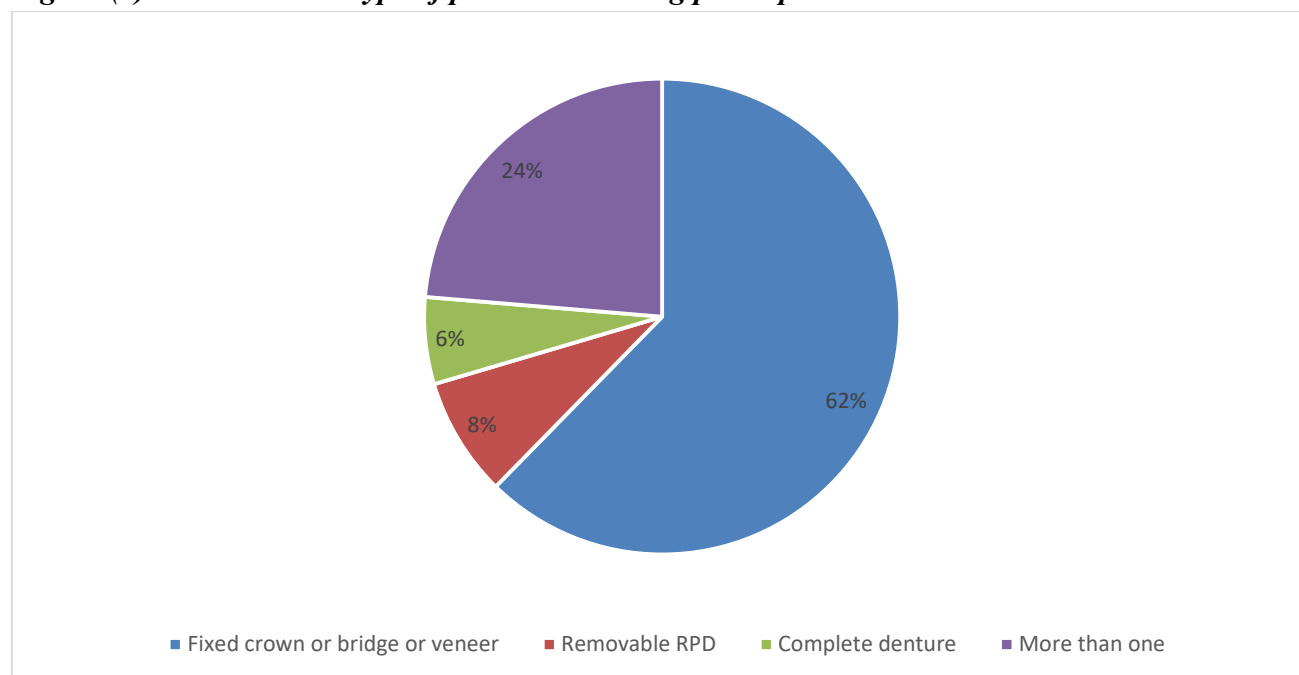
Figure (1): Illustrates the type of prostheses among participants.

Table 2 presented critical insights regarding the knowledge level of oral hygiene measures for prosthodontics patients, with N = 507. Notably, more than a substantial majority (62.3%) have fixed prostheses, i.e., the crowns, bridges or veneers, which indicates that these types of restorations are preferred. The highly frequent (85.6%) use of private clinics as the preferred setting for obtaining prosthetic services points to the occurrence of accessibility, and perceived quality of care as influencing patient choices. Interestingly, 74% of respondents were given clear instructions by their dentists about keeping their prostheses, yet 26 per cent felt that they were ill informed. Additionally, these data show that patients responded proactively to oral health management, with 72.2% returning for follow up visits. It is, however, concerning that 40.8 percent of respondents did not seek additional information regarding proper cleaning techniques, despite a large reliance on dentists as the primary resources of advice.

Table (2): Parameters related to knowledge level of oral hygiene measures in prosthodontics patients (n=507).

<i>Parameter</i>		<i>No.</i>	<i>Percent (%)</i>
<i>Type of Prostheses</i>	Fixed crown or bridge or veneer	316	62.3
	Removable RPD	41	8.1
	Complete denture	30	5.9
	More than one	120	23.7

<i>Type of Clinic where you get the Prosthesis</i>	Private	434	85.6
	Public	73	14.4
<i>Duration of Wearing a Prosthesis</i>	1 to 2 years	229	45.2
	2 to 3 years	95	18.7
	3 to 4 years	71	14.0
	More than 5 years	112	22.1
<i>Do you think you received clear information and instructions from your dentist how to clean your dental prosthesis?</i>	No	132	26.0
	Yes	375	74.0
<i>Have you visited your dentist after you received dental prosthesis?</i>	No	141	27.8
	Yes	366	72.2
<i>How often do you clean the teeth\ denture after receiving prosthesis?</i>	Once a day	188	37.1
	Twice a day	197	38.9
	Thrice a day	102	20.1
	More than 3 times	20	3.9
<i>Did you try to seek information about the correct way of cleaning your dental prosthesis?</i>	No	207	40.8
	Yes	300	59.2
<i>Current information source for cleaning? *</i>	Dentist	359	70.8
	Pharmacist	40	7.9
	Relatives/friends	84	16.6
	Magazines/TV/internet	71	14.0
	Dental technician	39	7.7
	Formal education (School/University, etc.)	24	4.7
	None/cannot remember	68	13.4

****Results may overlap***

As shown in figure (2), Specific trends in cleaning frequency are observed with data collected from a total sample of their respondents regarding the oral hygiene practices conducted after receiving prosthetic dental devices. Particularly, 37.1% of respondents (188 persons) add that they clean their teeth or dentures once a day, while slightly higher, 38.8% (197 persons), said that they clean them twice a day. Furthermore, 102 people (20.1 percent of respondents) organized a thrice a day cleaning routine, which represents a good habit toward oral health. Among the people, a smaller segment of 3.9% (20), was noted to clean their prostheses more than three times a day.

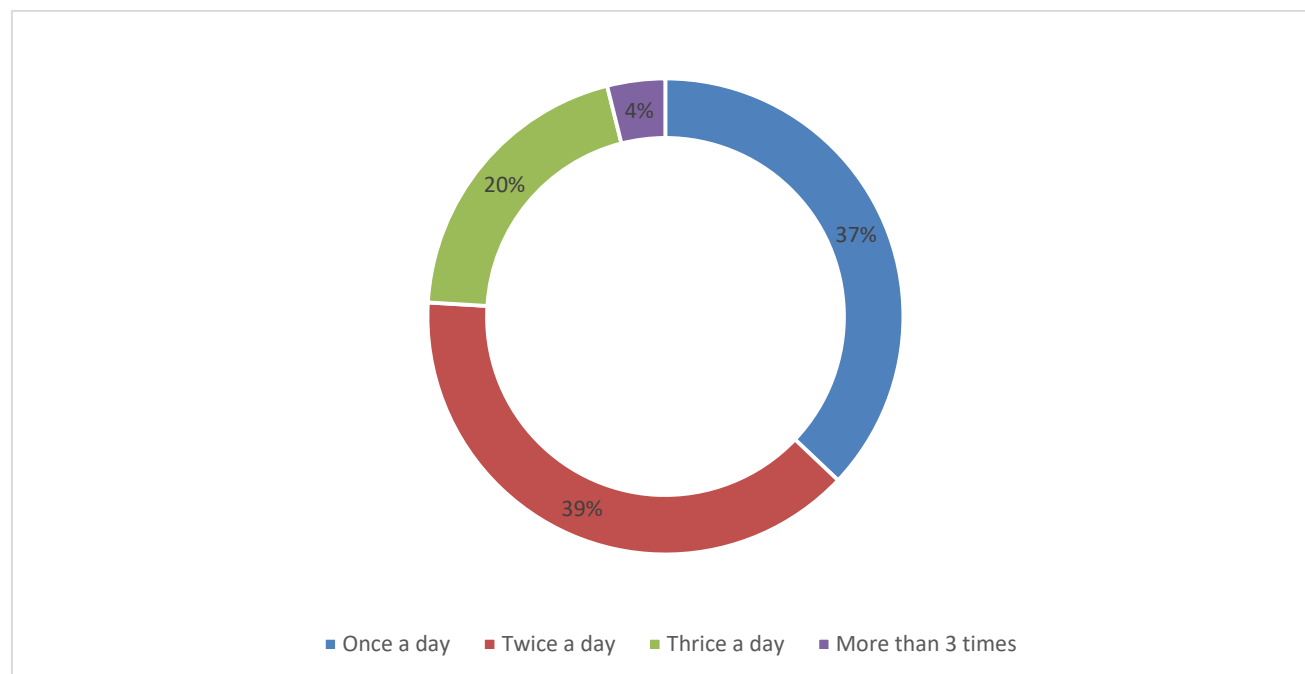
Figure (2): Illustrates the rate of cleaning of teeth and denture after prostheses among participants.

Table 3 present some information on the awareness over oral hygiene practices on prosthodontics patients with evidence from 507 persons. This is important, as when probed on the best way to clean removable complete and partial dentures, a large majority (69.0%) rightly replied that a toothbrush and toothpaste was indeed the answer, indicating a common understanding of sound dental care practices. However, it is a bit worrying to find that only 16.4% chose toothbrush and soap and only 2.6% mentioned the use of sodium hypochlorite which shows a lack of knowledge about other more sophisticated cleaning agents. Moreover, concerning fixed dentures respondents clarify that while toothbrushing still ranks highest (66.9%), follow up practices like regular flossing (40.4%) and use of interdental brushes (28.0%) require further guidance.

Table (3): participants' awareness level of oral hygiene measures in prosthodontics patients (n=507).

<i>Parameter</i>		<i>No.</i>	<i>Percent (%)</i>
<i>In your opinion what is the proper way to clean removable complete and partial denture? *</i>	Toothbrush and soap	83	16.4
	Toothbrush and toothpaste	350	69.0
	Toothbrush and water	43	8.5
	Only water	36	7.1
	Water and soap	26	5.1
	Water and NaOCl	13	2.6

	Miswak	55	10.8
	Water with lemon	13	2.6
	Only toothbrush	19	3.7
	Denture cleanser tabs	130	25.6
<i>In your opinion how do you clean a fixed denture? *</i>	Toothbrushing	339	66.9
	Regular flossing	205	40.4
	Interdental brush (IDB)	142	28.0
	Superfloss	78	15.4
	Mouthwash	200	39.4
	Waterfloss	230	45.4
	Toothpick	33	6.5
<i>In your opinion how do clean around the crown? *</i>	Toothbrushing	363	71.6
	Regular flossing	219	43.2
	Interdental brush (IDB)	140	27.6
	Superfloss	71	14.0
	Mouthwash	188	37.1
	Waterfloss	214	42.2
	Toothpick	25	4.9
<i>In your opinion how do you clean a bridge? *</i>	Toothbrushing	353	69.6
	Regular flossing	171	33.7
	Interdental brush (IDB)	137	27.0
	Super floss	88	17.4
	Mouthwash	202	39.8
	Water floss	230	45.4
	Toothpick	27	5.3

***Results may overlap**

Table 4 presents an interesting distribution of awareness in terms of knowledge levels about oral hygiene measures of the prosthodontics patients. Moreover, only 20.9% of respondents achieved a high level of knowledge for important oral care behaviors. Meanwhile, the greatest segment (48.7%) demonstrated a moderate degree of education, depicting some initial apprehension with incomplete comprehension to support best line of defense for maintaining oral wellbeing. A shocking 30.4% of patients suffered from low knowledge

Table (4): Shows knowledge level of oral hygiene measures in prosthodontics patients score results.

	Frequency	Percent
High level of knowledge	106	20.9
Moderate knowledge	247	48.7
Low level of knowledge	154	30.4
Total	507	100.0

As seen in Table 5, the prosthodontics patients' awareness levels with respect to oral hygiene measures is disturbing. Notably, there was only 5.7% of respondents who showed high awareness and 18.3% of respondents who showed moderate awareness. But the most noteworthy statistic is the massive low awareness rate of 75.9 percent of those who were classified as patients.

Table (5): Shows awareness level of oral hygiene measures in prosthodontics patients score results.

	Frequency	Percent
High level of awareness	29	5.7
Moderate awareness	93	18.3
Low awareness	385	75.9
Total	507	100.0

Table (6) shows that knowledge level of oral hygiene measures in prosthodontics patients has statistically significant relation to age (P value=0.0001), social status (P value=0.001), and occupation (P value=0.027). It also shows statistically insignificant relation to gender, residential area, educational level, working time, and monthly income.

Table (6): Relation between knowledge level of oral hygiene measures in prosthodontics patients and sociodemographic characteristics.

Parameters		Knowledge level		Total (N=507)	P value*
		High or moderate knowledge	Low level of knowledge		
Gender	Female	248	101	349	0.296
		70.3%	65.6%	68.8%	
	Male	105	53	158	
		29.7%	34.4%	31.2%	
Age	23 years or less	113	17	130	0.0001
		32.0%	11.0%	25.6%	
	24 to 26	80	48	128	
		22.7%	31.2%	25.2%	
	27 to 40	88	40	128	
		24.9%	26.0%	25.2%	
	41 or more	72	49	121	
		20.4%	31.8%	23.9%	
Residential area	Northern region	11	9	20	0.138
		3.1%	5.8%	3.9%	
	Southern region	157	81	238	

		44.5%	52.6%	46.9%	
	Central region	70	21	91	
		19.8%	13.6%	17.9%	
	Eastern region	15	4	19	
		4.2%	2.6%	3.7%	
	Western region	100	39	139	
		28.3%	25.3%	27.4%	
<i>Social status</i>	Single	219	83	302	0.001
		62.0%	53.9%	59.6%	
	Married	115	58	173	
		32.6%	37.7%	34.1%	
	Divorced	16	3	19	
		4.5%	1.9%	3.7%	
	Widowed	3	10	13	
		0.8%	6.5%	2.6%	
<i>Educational level</i>	Elementary school	1	0	1	0.782
		0.3%	0.0%	0.2%	
	Middle school	1	1	2	
		0.3%	0.6%	0.4%	
	High school	39	21	60	
		11.0%	13.6%	11.8%	
	Diploma	50	17	67	
		14.2%	11.0%	13.2%	
	College student	9	2	11	
		2.5%	1.3%	2.2%	
	Bachelor	223	97	320	
		63.2%	63.0%	63.1%	
	Postgraduate	29	16	45	
		8.2%	10.4%	8.9%	
	None	1	0	1	
		0.3%	0.0%	0.2%	
<i>Occupation</i>	Student	127	41	168	0.027
		36.0%	26.6%	33.1%	
	Employee	122	72	194	
		34.6%	46.8%	38.3%	
	Un employed	22	6	28	
		6.2%	3.9%	5.5%	
	Self-	58	19	77	

Working time	employment	16.4%	12.3%	15.2%	0.420
	Retired	24	16	40	
		6.8%	10.4%	7.9%	
	6 Hours/day	137	65	202	
		38.8%	42.2%	39.8%	
	8 Hours/day	189	75	264	
		53.5%	48.7%	52.1%	
	12 Hours/day	19	7	26	
		5.4%	4.5%	5.1%	
	More than 12Hours/day	8	7	15	
Monthly income		2.3%	4.5%	3.0%	0.190
	Less than 1000 SAR	77	34	111	
		21.8%	22.1%	21.9%	
	1000 to 5000 SAR	102	40	142	
		28.9%	26.0%	28.0%	
	6000 to 10000 SAR	70	25	95	
		19.8%	16.2%	18.7%	
	11000 to 15000 SAR	52	36	88	
		14.7%	23.4%	17.4%	
	More than 15000 SAR	52	19	71	
		14.7%	12.3%	14.0%	

***P value was considered significant if ≤ 0.05 .**

Table (7) shows that awareness level of oral hygiene measures in prosthodontics patients has statistically significant relation to gender (P value=0.013), age (P value=0.001), social status (P value=0.025), educational level (P value=0.001), and occupation (P value=0.0001). It also shows statistically insignificant relation to residential area, working time, and monthly income.

Table (7): Awareness level of oral hygiene measures in prosthodontics patients in association with sociodemographic characteristics.

Parameters		Awareness level		Total (N=507)	P value*
		High or moderate awareness	Low awareness		
Gender	Female	95	254	349	0.013
		77.9%	66.0%	68.8%	
	Male	27	131	158	
		22.1%	34.0%	31.2%	
Age	23 years or less	44	86	130	0.001
		36.1%	22.3%	25.6%	
	24 to 26	37	91	128	

		30.3%	23.6%	25.2%	
		25	103	128	
	27 to 40	20.5%	26.8%	25.2%	
		16	105	121	
Residential area	41 or more	13.1%	27.3%	23.9%	0.574
		3	17	20	
	Northern region	2.5%	4.4%	3.9%	
		63	175	238	
	Southern region	51.6%	45.5%	46.9%	
		23	68	91	
	Central region	18.9%	17.7%	17.9%	
		3	16	19	
	Eastern region	2.5%	4.2%	3.7%	
		30	109	139	
Social status	Western region	24.6%	28.3%	27.4%	0.025
		85	217	302	
	Single	69.7%	56.4%	59.6%	
		33	140	173	
	Married	27.0%	36.4%	34.1%	
		4	15	19	
	Divorced	3.3%	3.9%	3.7%	
		0	13	13	
	Widowed	0.0%	3.4%	2.6%	
		0	1	1	
Educational level	Elementary school	0.0%	0.3%	0.2%	0.001
		0	2	2	
	Middle school	0.0%	0.5%	0.4%	
		6	54	60	
	High school	4.9%	14.0%	11.8%	
		14	53	67	
	Diploma	11.5%	13.8%	13.2%	
		6	5	11	
	College student	4.9%	1.3%	2.2%	
		93	227	320	
	Bachelor	76.2%	59.0%	63.1%	
		3	42	45	
	Postgraduate	2.5%	10.9%	8.9%	
		0	1	1	
	None				

		0.0%	0.3%	0.2%	
Occupation	Student	60	108	168	0.0001
		49.2%	28.1%	33.1%	
	Employee	32	162	194	
		26.2%	42.1%	38.3%	
	Un employed	19	58	77	
		15.6%	15.1%	15.2%	
	Self-employment	7	21	28	
		5.7%	5.5%	5.5%	
	Retired	4	36	40	
		3.3%	9.4%	7.9%	
Working time	6 Hours/day	44	158	202	0.055
		36.1%	41.0%	39.8%	
	8 Hours/day	74	190	264	
		60.7%	49.4%	52.1%	
	12 Hours/day	2	24	26	
		1.6%	6.2%	5.1%	
	More than 12Hours/day	2	13	15	
		1.6%	3.4%	3.0%	
	Less than 1000 SAR	33	78	111	
		27.0%	20.3%	21.9%	
Monthly income	1000 to 5000 SAR	35	107	142	0.323
		28.7%	27.8%	28.0%	
	6000 to 10000 SAR	24	71	95	
		19.7%	18.4%	18.7%	
	11000 to 15000 SAR	18	70	88	
		14.8%	18.2%	17.4%	
	More than 15000 SAR	12	59	71	
		9.8%	15.3%	14.0%	

***P value was considered significant if ≤ 0.05 .**

Discussion:

Aims of the present study were to assess the level of knowledge and awareness of oral hygiene measures among prosthodontics patients in Saudi Arabia. Since oral hygiene is a fundamental determinant of the maintenance of dental prostheses and the oral cavity health in general, this investigation is particularly relevant. This is the first study (to our knowledge) to identify a concerning gap between knowledge and awareness about proper oral hygiene practices among patients, consistent with previous research in a variety of populations showing similar shortcomings. In one such study, a study conducted in Al-Madinah Al Munawwarah found that the majority of the subjects were cleaning their dentures regularly

however most chiefly relied on just rinsing them with water to clean, since there was a lack of awareness of appropriate denture care (10). This embodies a broader trend across demographics in which poor oral hygiene habits are, sadly, associated with lack of knowledge about how to keep ones teeth and gums healthy.

We found that 74 percent of respondents reported being given clear directions by their dentists on how to maintain their prostheses. While this resonates with the findings by Patel et al. (11), however a significant 26% felt inadequately informed. We also found that our data relied on dental professionals for guidance, as 40.8% of participants did not seek additional information about cleaning techniques after returning for follow up visits. It indicates a passive manner of managing oral health, wherein patients do not make efforts to acquire this knowledge that could improve their hygiene practices.

The study also showed that a whopping 20.9% of participants had high awareness of oral care behaviors, while a jaw dropping whopping 75.9% had low awareness of the ways to take care of our teeth. This finding is consistent with the findings of Zarea et al. (12), which found that university students in Saudi Arabia had poor knowledge of oral health, suggesting that educational interventions are needed urgently to fill these gaps. More evidence of the relationship between knowledge level and demographic variables including age, social status, and occupation is provided by the correlation between these factors. As for example, in Günpınar et al. (13) mentioned they show that adults younger than 46 generally have better oral hygiene practices and increased knowledge than those over 46 years old.

Reflected in participant preference for fixed prostheses, with 62.3% selecting for crowns, bridges and veneers, this preference is for both aesthetically and functionally appealing solutions. This agrees with the findings of Shrestha et al. (14) who found that patients using fixed dental prostheses had superior knowledge regarding oral hygiene practices to those wearing removable prostheses. But low use of interdental aids with 40.4 percent of the participants practicing regular flossing and 28% using interdental brush highlights an area for improvement in oral hygiene practice. The use of such aids for effective cleaning of fixed prostheses is particularly concerning given that the cleaning may be effective only if the aids are used to prevent plaque accumulation and development of periodontal complications. Demographic analysis showed predominance of a young and educated population where 63.1% of the study's population had a bachelor's degree. This presents questions on the potency of current instructive methodologies in conveying vital oral dental hygiene data. Márquez-Arrico et al. (15) found those with lower educational levels were less informed about the proper way to maintain oral hygiene, leading us to believe that educators need to develop interventions that are intended for the least educated levels. In addition, the high proportion of participants from the Southern region (46.9%) may also suggest regional inequities in oral health education and access to dental care that deserves further exploration. While there is a generally positive attitude towards oral health maintenance indicated by how many times participants performed cleaning routines, our study identified knowledge gaps that are a major obstacle to achieving the best possible oral health outcomes. The findings echoed in Cooper et al. (10) that a lack of awareness regarding the proper denture cleaning techniques can result to neglect and poor health regarding one's oral health. Yet, the correct response on this question by only 69 percent of respondents appears to confirm the need for comprehensive educational initiatives to increase patient knowledge.

This study offers much to be learned about the levels of understanding and knowledge that

prosthodontics patients in Saudi Arabia have about preserving their oral health, and to that end, it is not without its limitations. There is discrepancy in the reliance on self-reported data since one may overestimate their limitations and practices. In addition, knowledge, awareness and oral hygiene practices studies are of cross-sectional nature that does not allow the drawing of causal inferences about the relationship between knowledge, awareness and oral hygiene practices.

Conclusion:

This study highlights the critical need for a targeted educational intervention to increase prosthodontic patients' knowledge and awareness of oral hygiene in Saudi Arabia. Closing the identified gaps in knowledge and involving the patients in active awareness of, and participation in oral health management can accomplish a great deal in dental care provision and increase the patient outcomes and overall oral health. A major contribution to improved oral hygiene practice and the longevity of dental prostheses consists in the integration of comprehensive education in routine dental care especially for the population with different educational backgrounds and different socio-economic status.

Acknowledgement:

Special thanks to the Deanship of Scientific Research (DSR) and the Faculty of Dentistry at King Abdulaziz University, Jeddah, for supporting this project.

Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

Funding

There was no external funding for this study.

Conflict of interests

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability

All data associated with this study are present in the paper.

References:

1. Elmahdi AA, Elagib MFA, Ali ABM, Abouzeid HL, Atta AS, Abullais SS, et al. Assessment of Periodontal Health Among Removable and Fixed Partial Denture Wearers in Aseer Region of Saudi Arabia. *Med Sci Monit.* 2023;29:1–10.
2. Jafar Alhaddad A, Munshi N, Mohammed Ali W, Ali Aldoiej A, Ali Alnemari A, Hassan Alhazmi F, et al. Factors affecting patients' behaviors toward prosthodontic treatment needs in Saudi Arabia. 2021;
3. Alenezi A. Assessment of oral care habits in patients with fixed dental prostheses : A pilot study. 2022;12(8):1–8.
4. Anandhi T, Kumar MPS, Surgery M, Lecturer S, Surgery M. International Journal of Dentistry and Oral Science (IJDOS) ISSN : 2377-8075 Knowledge , Attitude and Practices regarding Oral Hygiene Maintenance Among Private Security. 2021;8(9):4312–6.
5. Algabri R, Alqutaibi AY, Altayyar S, Mohammed A, Khoshafa G, Alryashi E, et al. Behaviors, hygiene habits, and sources of care among removable complete and partial dentures wearers: A multicenter cross-sectional study. *Clin Exp Dent Res.* 2024;10(2).
6. Alshahrani S, Alshuaibi A, Alkhaldi M, Koppolu P. Perception and knowledge of patients from different regions in the kingdom of saudi arabia towards oral hygiene and oral hygiene aids. *Healthc.* 2021;9(5).
7. Moussa R, Alruhailie LGA, Saleh SAM. Assessment of Denture Hygiene Knowledge and Attitude in Al Madinah AlMunawwarah. Vol. 15, *Journal of International Dental and Medical Research.* 2022. p. 814–9.
8. Basnyat SK, Mahanta S, Sapkota B. Association between Prosthesis Cleanliness and Patient's Knowledge on Hygiene Habits among Complete Denture Patients and Partial Denture Prostheses Wearers. *J Nepal Prosthodont Soc.* 2022;5(2):57–63.
9. Kashbur N, Bugaighis I. Patients ' Satisfaction , Expectation , Care , and Maintenance of Fixed Prosthesis. 2022;26–32.
10. Cooper, P., Hegde, R., & Hegde, C . (2019). A questionnaire-based survey to assess the knowledge and awareness of denture staining in complete denture wearers. *Journal of Health and Allied Sciences Nu*, 09(02), 45-50. <https://doi.org/10.1055/s-0039-1694803>
11. Patel, J., Kulkarni, S., Doshi, D., Reddy, B., Reddy, M., & Buunk-Werkhoven, Y. (2019). Determinants of oral hygiene behaviour among patients with moderate and severe chronic periodontitis based on the theory of planned behaviour. *International Dental Journal*, 69(1), 50-57. <https://doi.org/10.1111/idj.12413>
12. Zarea, K. (2013). Oral health knowledge of periodontal disease among university students. *International Journal of Dentistry*, 2013, 1-7. <https://doi.org/10.1155/2013/647397>
13. Günpınar, S. and Meraci, B. (2021). Periodontal health education session can improve oral hygiene in patients with gingivitis: a masked randomized controlled clinical study. *Journal of Periodontology*, 93(2), 220-230. <https://doi.org/10.1002/jper.21-0034>

14. Shrestha, L., Dahal, S., Pradhan, D., & Lohani, J. (2020). Satisfaction level among patients treated with fixed dental prosthesis in a tertiary care hospital: a descriptive cross-sectional study. *Journal of Nepal Medical Association*, 58(221). <https://doi.org/10.31729/jnma.4720>
15. Márquez-Arrico, C., Almerich-Silla, J., & Montiel-Company, J. (2019). Oral health knowledge in relation to educational level in an adult population in Spain. *Journal of Clinical and Experimental Dentistry*, 0-0. <https://doi.org/10.4317/jced.56411>