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Knowledge, Attitudes, and Clinical Practices Regarding Denture Base Materials Among Dental Students and Practitioners

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المعرفة والاتجاهات والممارسات السريرية المتعلقة بمواد قواعد أطقم الأسنان لدى طلبة وأطباء طب الأسنان

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Abstract:
Denture base materials are critical for the success of removable prosthodontic treatments, influencing both functional performance and longevity. Differences in the physical, mechanical, and biological properties of these materials may influence clinical performance, patient satisfaction, and material selection. Recent advances in digital dentistry, including CAD/CAM and 3D printing, have introduced alternative denture base materials and fabrication techniques; however, their routine clinical use remains limited. This cross-sectional study assessed the knowledge, attitudes, and clinical practices of 171 dental students and practitioners in Libya, regarding denture base materials, as well as factors affecting their selection. Data were collected using a structured self-administered questionnaire and analyzed with descriptive statistics and Chi-square tests ($p < 0.05$). While 69% correctly identified polymethyl methacrylate (PMMA) as the predominant material, 64.3% recognized that high-impact acrylic resins improve impact strength. Conventional heat-cured PMMA remained the most frequently used material in clinical practice (57.9%), whereas routine use of CAD/CAM-milled and 3D-printed denture bases was reported by only 9.4% and 8.2% of participants, respectively. High levels of knowledge were observed in 41.5% of participants and were significantly associated with clinical experience ($p = 0.021$) and specialty ($p = 0.003$). Material selection was primarily influenced by patient preference (64.3%), mechanical strength (62.0%), and cost (50.3%). Despite increasing awareness of modern denture base technologies, their routine clinical implementation remains limited, highlighting the need for enhanced education, training, and access to digital tools.

Keywords: Denture base materials, PMMA, CAD/CAM, 3D printing, Knowledge, Clinical practice.

الملخص
تُعد مواد قواعد الأطقم السنية من العوامل الأساسية لنجاح التعويضات السنية المتحركة، حيث تؤثر على الأداء الوظيفي وطول عمر التعويضات .وقد تؤثر الاختلافات في الخصائص الفيزيائية والميكانيكية والحيوية لهذه المواد على الأداء السريري ورضى المرضى واختيار المادة المناسبة. كما أدت التطورات الحديثة في طب الأسنان الرقمي، بما في ذلك تقنيات CAD/CAM والطباعة ثلاثية الأبعاد، إلى ظهور مواد وطرق تصنيع بديلة لقواعد الأطقم السنية، إلا أن استخدامها السريري الروتيني ما يزال محدودًا. هدفت هذه الدراسة المقطعية إلى تقييم مستوى المعرفة والاتجاهات والممارسات السريرية المتعلقة بمواد قواعد الأطقم السنية لدى 171 طالبًا وطبيب أسنان في مدينة بنغازي، ليبيا، بالإضافة إلى تحديد العوامل المؤثرة في اختيار هذه المواد. تم جمع البيانات باستخدام استبيان منظم ذاتي التعبئة، وتحليلها باستخدام الإحصاء الوصفي واختبار كاي-تربيع ($p < 0.05$). أظهر 69% من المشاركين معرفة صحيحة بأن مادة بولي ميثيل ميثاكريلات (PMMA) هي المادة الأكثر استخدامًا، كما أشار 64.3% إلى أن الأكريليك عالي المقاومة للصدمات يساهم في تحسين مقاومة الصدمات. وظلت مادة PMMA المعالجة حراريًا هي المادة الأكثر استخدامًا في الممارسة السريرية (57.9%)،

في حين بلغ الاستخدام الروتيني لقواعد الأطقم المصنعة بتقنيات CAD/CAM والطباعة ثلاثية الأبعاد 9.4% و8.2% على التوالي. وتم تسجيل مستويات معرفة مرتفعة لدى 41.5% من المشاركين، مع وجود ارتباط معنوي بين مستوى المعرفة وكل من الخبرة السريرية ($p = 0.021$) والتخصص ($p = 0.003$). وكانت العوامل الرئيسية المؤثرة في اختيار المادة هي تفضيل المرضى (64.3%)، والقوة الميكانيكية (62.0%)، والتكلفة (50.3%). ورغم تزايد الوعي بالتقنيات الحديثة الخاصة بمواد قواعد الأطقم السنية، إلا أن تطبيقها السريري الروتيني ما يزال محدودًا، مما يبرز الحاجة إلى تعزيز التعليم والتدريب المستمر وتوفير التقنيات الرقمية بشكل أكبر.

الكلمات المفتاحية: مواد قواعد الأطقم السنية، بولي ميثيل ميثاكريلات، CAD/CAM، الطباعة ثلاثية الأبعاد، المعرفة، الممارسة السريرية.

1. Introduction

Denture base materials are essential components in removable prosthodontics because they directly influence the retention, stability, durability, esthetics, and overall success of dental prostheses. Appropriate selection of denture base materials is critical for achieving optimal clinical performance and patient satisfaction. Several factors influence material selection, including mechanical strength, dimensional stability, biocompatibility, esthetics, ease of manipulation, repairability, and cost-effectiveness (1,2).

Polymethyl methacrylate (PMMA) remains the most widely used denture base material because of its favorable esthetic properties, acceptable biocompatibility, ease of processing, and relatively low cost (1–3). Despite these advantages, conventional heat-polymerized PMMA has several limitations, including polymerization shrinkage, residual monomer release, low impact strength, and susceptibility to fracture during clinical use (3,4). Consequently, modified acrylic materials such as high-impact acrylic resins have been developed to improve fracture resistance and mechanical performance (4,5).

Flexible denture base materials, particularly nylon-based thermoplastic resins, have also been introduced as alternatives to conventional acrylic dentures. These materials demonstrate improved flexibility, higher resistance to fracture, and enhanced esthetics due to the absence of visible metal clasps (6,7). In addition, flexible dentures may offer greater comfort for patients with undercut areas or acrylic allergies. However, nylon-based materials possess several disadvantages, including increased surface roughness, water sorption, reduced surface hardness, color instability, and difficulties related to polishing and repair (7,8). Therefore, flexible denture materials are not universally suitable for all prosthodontic cases and require careful clinical selection.

Recent advances in digital dentistry have introduced computer-aided design and computer-aided manufacturing (CAD/CAM) systems as well as additive manufacturing technologies such as three-dimensional (3D) printing into removable prosthodontics (9,10). CAD/CAM-milled denture bases are fabricated from pre-polymerized resin blocks, resulting in improved material homogeneity, reduced porosity, enhanced dimensional accuracy, and superior mechanical properties compared with conventional processing techniques (9,11). In contrast, 3D printing offers advantages including rapid fabrication, customization, reduced material waste, and simplified laboratory workflows. Nevertheless, concerns remain regarding the long-term clinical durability, mechanical strength, and accuracy of some 3D-printed denture base resins (10–12).

Several studies have reported significant differences in the physical and mechanical properties among conventional PMMA, high-impact acrylic resins, flexible nylon materials, CAD/CAM-milled dentures, and 3D-printed denture base materials (4,9–12). These differences may influence clinical longevity, fracture resistance, patient comfort, and overall treatment outcomes. Consequently, clinicians must possess adequate knowledge regarding the indications, advantages, limitations, and clinical performance of various denture base materials to support evidence-based decision-making.

Although awareness of digital prosthodontic technologies is increasing worldwide, their clinical implementation remains inconsistent, particularly in developing and resource-limited countries. Variations in clinicians' knowledge, attitudes, and clinical practices may significantly affect the selection and utilization of modern denture base materials. In Libya, limited data are available regarding the awareness and adoption of contemporary denture base technologies among dental students and practitioners.

Therefore, this study aimed to evaluate the knowledge, attitudes, and clinical practices regarding denture base materials among dental students and practitioners in Benghazi, Libya, as well as to identify the factors influencing material selection in routine clinical practice.

2. Materials and Methods

2.1. Study Design and Setting

An analytical cross-sectional study was conducted to evaluate knowledge, attitudes, and clinical practices related to denture base materials among dental students and practitioners in Benghazi, Libya. Participants were recruited from diverse clinical and academic environments, including the Faculty of Dentistry at the University of Benghazi, university teaching clinics, private dental practices, and governmental healthcare facilities.

2.2. Study Population and Sampling Strategy

The study included a total of 171 participants comprising dental students, general dental practitioners, prosthodontists, and other dental specialists.

A non-probability convenience sampling technique was employed to recruit participants who were actively involved in dental education or clinical practice at the time of the study. Individuals who submitted incomplete questionnaires were excluded from the final analysis.

2.3. Instrument Development and Data Collection Tool

Data were collected using a structured, self-administered questionnaire developed based on an extensive review of the literature related to denture base materials and prosthodontic practice. The questionnaire was designed to assess four main domains: sociodemographic and professional characteristics (including age, gender, years of clinical experience, specialty, and type of practice), knowledge related to denture base materials, attitudes toward material selection and evidence-based practice, and clinical practice patterns, including material preference and influencing factors. The instrument included multiple-choice questions and Likert-scale items to ensure a comprehensive evaluation of participants' knowledge, attitudes, and clinical practices.

2.4. Validity and Reliability Assessment

Content validity was established through expert evaluation by specialists in prosthodontics and dental materials, who assessed the questionnaire for relevance, clarity, and comprehensiveness.

A pilot study was conducted on 15 participants to evaluate the feasibility, clarity, and interpretability of the questionnaire. Based on feedback obtained from the pilot phase, minor revisions were implemented to improve the quality of the instrument.

2.5. Data Collection Procedure

The finalized questionnaire was distributed in both electronic and paper-based formats to maximize participation. All participants were informed about the objectives and significance of the study prior to participation.

Participation was entirely voluntary, and no incentives were provided. Completion of the questionnaire was considered as an indication of informed consent.

2.6. Ethical Considerations

Ethical approval for this study was obtained from the Faculty of Dentistry, University of Benghazi, Libya (Ethical Approval No. 399). All procedures were conducted in accordance with ethical standards for human research. Participant anonymity was strictly maintained, and no identifying information was collected. Data confidentiality was ensured throughout all stages of the study.

3. Results

3.1. Participant Characteristics

A total of 171 participants were included. The majority were female (78.4%) and under 30 years of age (55.6%). More than half had less than 5 years of clinical experience (56.1%). Students (38.6%) and general practitioners (27.5%) formed the largest groups. Most participants practiced in university-based clinics (%54.4) (Table 1).

Table 1 presents the demographic characteristics of participants

Variables	No.	%
Gender		
Male	37	21.6%
Female	134	78.4%
Age Groups		
Less than 30 years	95	55.6%
30–39 years	27	15.8%
40–49 years	43	25.1%
50–59 years	5	2.9%
60 years or older	1	.6%
Years of clinical experience		
Less than 5 years	96	56.1%
5–10 years	26	15.2%
11–15 years	16	9.4%
16–20 years	22	12.9%
More than 20 years	11	6.4%

Specialty		
Student	66	38.6%
General Practitioner (GP)	47	27.5%
Prosthodontist	23	13.5%
Other dental specialty	35	20.5%
Type of practice		
Private clinic	20	11.7%
University clinic	93	54.4%
Government hospital	11	6.4%
Both private and university	42	24.6%
Other	5	2.9%

3.2. Knowledge of Denture Base Materials

Most participants (69.0%) correctly identified PMMA as the most commonly used denture base material, while 64.3% recognized the role of high-impact acrylics in improving impact strength. Knowledge of CAD/CAM was moderate, with 64.9% acknowledging its superior dimensional accuracy. Awareness of 3D-printed denture bases was less consistent; only 43.3% indicated sufficient long-term clinical evidence (Table 2).

Table 2 Knowledge regarding denture base materials

Knowledge		
	No.	**%**
The most commonly used denture base material is:		
Polymethyl methacrylate (PMMA)	118	69.0%
Nylon (Flexible resin)	9	5.3%
Composite resin	14	8.2%
I don't know	30	17.5%
High-impact acrylic resins mainly improve:		
Impact strength	110	64.3%
Water sorption	4	2.3%
Color stability	1	.6%
Surface roughness	13	7.6%
I don't know	43	25.1%
CAD/CAM denture bases show better dimensional accuracy than conventional processing:		
False	26	15.2%
True	111	64.9%
I don't know	34	19.9%
Residual monomer in acrylic resin may cause:		
Allergic reactions or mucosal irritation	122	71.3%
Increased strength	9	5.3%
Improved fit	6	3.5%
Enhanced esthetics	4	2.3%
I don't know	30	17.5%
3D-printed denture bases currently have long-term clinical evidence comparable to conventional acrylic		
False	45	26.3%
True	74	43.3%
I don't know	52	30.4%

3.3. Attitudes Toward Material Selection

Overall, 57.9% of participants demonstrated positive attitudes toward denture base materials, particularly regarding evidence-based clinical decision-making and the influence of cost on material selection, whereas 26.9%

showed neutral attitudes and 15.2% demonstrated negative attitudes. Participants showed neutral attitudes toward replacing conventional PMMA with newer denture base materials (Table 3).

Table 3 attitude toward denture base materials

Attitudes	Mean	Std. Dev	Agreement level
New denture base materials should replace conventional PMMA.	3.11	0.94	Neutral
Clinical decisions regarding denture materials should be evidence-based.	3.53	1.22	Agree
Cost significantly influences my choice of denture base material.	3.58	0.99	Agree
I am confident in my knowledge of denture base material properties.	3.15	0.91	Neutral
Over All Classification	**No.**		**%**
Disagree	26		15.2%
Neutral	46		26.9%
Agree	99		57.9%

3.4. Clinical Practice Patterns

Conventional heat-polymerized PMMA was most frequently used (57.9%), followed by high-impact acrylics (17.5%). Routine use of CAD/CAM (9.4%) and 3D printing (8.2%) remained low, although 57.9% and 59.6% of participants expressed willingness to adopt CAD/CAM and 3D printing, respectively. Material selection was mainly influenced by patient preference (64.3%), mechanical strength (62.0%), and cost (50.3%) (Table 4).

Table 4 Clinical practice patterns

Clinical Practice		
	No.	**%**
Which denture base material do you most frequently use?		
Conventional heat-cured PMMA	99	57.9%
High-impact acrylic resin	30	17.5%
Flexible nylon base	13	7.6%
3D-printed denture base	10	5.8%
Other	19	11.1%
Have you used CAD/CAM milled denture bases in your practice?		
Yes, regularly	16	9.4%
Yes, occasionally	28	16.4%
No, but I plan to	99	57.9%
No, and I do not plan to	28	16.4%
Have you used 3D-printed denture bases in your practice?		
Yes, regularly	14	8.2%
Yes, occasionally	27	15.8%
No, but I plan to	102	59.6%
No, and I do not plan to	28	16.4%
What factors influence your denture base material selection?		
Mechanical strength	106	62.0%
Cost	86	50.3%
Availability	86	50.3%

Patient preference	110	64.3%
Esthetics	70	40.9%
Scientific evidence	56	32.7%
Laboratory recommendation	83	48.5%
Have you attended continuing education courses on denture base materials in the last 3 years?		
NO	104	60.8%
YES	67	39.2%

3.5. Distribution of Knowledge Levels

Participants were categorized into three levels of knowledge: low, moderate, and high. High levels of knowledge were observed in 41.5% of participants, while 39.2% demonstrated moderate knowledge and 19.3% demonstrated low knowledge levels (Table 5).

Table 5 knowledge level classification

level	No.	%
Low	33	19.3%
Moderate	67	39.2%
High	71	41.5%

Knowledge scores were calculated by assigning one point for each correct answer. Participants scoring less than 50% were classified as having low knowledge, those scoring 50–75% as moderate knowledge, and those scoring above 75% as high knowledge.

3.6. Factors Associated with Knowledge

Knowledge level was significantly associated with years of clinical experience ($p = 0.021$) and specialty ($p = 0.003$). Higher levels of knowledge were observed among prosthodontists and participants with longer clinical experience compared with students and general practitioners (Table 6).

Table 6 association between knowledge level and variables

Variables	Classification of knowledge			P-value
	Low	Medium	High	
Years of clinical experience				
Less than 5 years	23 (13.5%)	40 (23.4%)	33 (19.3%)	0.021
5–10 years	4 (2.3%)	12 (7.0%)	10 (5.8%)	
11–15 years	4 (2.3%)	7 (4.1%)	5 (2.9%)	
16–20 years	2 (1.2%)	7 (4.1%)	13 (7.6%)	
More than 20 years	0 (0.0%)	1 (0.6%)	10 (5.8%)	
Specialty				
Student	19 (11.1%)	23 (13.5%)	24 (14.0%)	0.003
General Practitioner (GP)	7 (4.1%)	24 (14.0%)	16 (9.4%)	
Prosthodontist	1 (0.6%)	4 (2.3%)	18 (10.5%)	
Other dental specialty	6 (3.5%)	16 (9.4%)	13 (7.9%)	

3.7. Determinants of Clinical Practice

Cost was significantly associated with the selection of denture base materials ($p = 0.012$). In addition, knowledge regarding the effects of residual monomer release was significantly associated with the use of 3D-printed denture base materials ($p = 0.010$) (Table 7).

Table 7 significant factors influencing clinical practice

Variables	Which denture base material do you most frequently use?					P_ Value
	Conventional heat-cured PMMA	High-impact acrylic resin	Flexible nylon base	3D-printed denture base	Other	
Cost significantly influences my choice of denture base material.						
Strongly disagree	6 (3.5%)	4 (2.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.012
Disagree	3 (1.8%)	3 (1.8%)	1 (0.6%)	0 (0.0%)	2 (1.2%)	
Neutral	17 (9.9%)	10 (5.8%)	3 (1.8%)	5 (2.9%)	11 (6.4%)	
Agree	58 (33.9%)	10 (5.8%)	6 (3.5%)	5 (2.9%)	4 (2.3%)	
Strongly Agree	15 (8.8%)	3 (1.8%)	3 (1.8%)	0 (0.0%)	2 (1.2%)	

Variables	Have you used 3D-printed denture bases in your practice?				P_ Value
	Yes, regularly	Yes, occasionally	No, but I plan to	No, and I do not plan to	
Residual monomer in acrylic resin may cause:					
Allergic reactions or mucosal irritation	8 (4.7%)	15 (8.8%)	80 (46.8%)	19 (11.1%)	0.010
Increased strength	2 (1.2%)	3 (1.8%)	3 (1.8%)	1 (0.6%)	
Improved fit	0 (0.0%)	4 (2.3%)	2 (1.2%)	0 (0.0%)	
Enhanced esthetics	0 (0.0%)	0 (0.0%)	4 (2.3%)	0 (0.0%)	
I don’t know	4 (2.3%)	5 (2.9%)	13 (7.6%)	8 (4.7%)	

4. Discussion

The present study evaluated the knowledge, attitudes, and clinical practices regarding denture base materials among dental students and practitioners in Libya. The findings demonstrated that conventional heat-polymerized polymethyl methacrylate (PMMA) remains the most commonly used denture base material in routine clinical practice. This finding is consistent with previous studies reporting that PMMA continues to be widely preferred because of its favorable esthetics, ease of manipulation, acceptable biocompatibility, and relatively low cost (1–3). Despite its widespread use, PMMA still exhibits several inherent limitations, including susceptibility to fracture, low impact resistance, polymerization shrinkage, and residual monomer release, all of which may compromise long-term clinical performance (3–5).

The current study also demonstrated moderate to high awareness regarding CAD/CAM denture base technologies among participants. Most participants recognized the superior dimensional accuracy of CAD/CAM-milled denture bases compared with conventional processing methods. Similar findings have been reported in previous investigations showing that CAD/CAM systems provide improved fit, reduced porosity, enhanced mechanical properties, and better material homogeneity due to the use of pre-polymerized resin blocks (9–11). Nevertheless, the routine clinical use of CAD/CAM technologies among participants remained limited. This limited implementation may be attributed to several factors, including high financial cost, limited availability of digital dental laboratories, lack of equipment, and insufficient practical training opportunities. In Libya and similar resource-limited settings, restricted access to digital technologies may further delay the integration of CAD/CAM systems into daily prosthodontic practice.

Likewise, the use of 3D-printed denture bases was relatively low despite increasing awareness of digital prosthodontic technologies. Previous studies have shown that additive manufacturing offers advantages such as rapid fabrication, customization, reduced laboratory time, and decreased material waste (10–12). However, concerns regarding mechanical strength, dimensional accuracy, long-term clinical durability, and variability associated with printing parameters continue to limit widespread clinical adoption (10–12). These concerns may explain the cautious attitudes demonstrated by many participants toward replacing conventional PMMA with newly introduced denture base materials.

Flexible nylon denture base materials were less frequently used among participants despite their reported esthetic and fracture-resistant advantages. Previous studies have shown that nylon-based dentures provide improved flexibility and enhanced patient comfort, particularly in patients with undercut areas or acrylic allergies (6,7).

However, these materials also possess several disadvantages, including difficulties related to polishing and repair, increased surface roughness, water sorption, and possible color instability over time (7,8). These limitations may contribute to their lower clinical utilization compared with conventional heat-cured PMMA.
An important finding of the present study was the significant association between knowledge level, years of clinical experience, and specialty. Prosthodontists and clinicians with greater clinical experience demonstrated significantly higher levels of knowledge regarding denture base materials compared with students and general practitioners. This finding supports previous evidence suggesting that advanced clinical exposure and specialty training improve clinicians' understanding of prosthodontic materials and evidence-based treatment planning (13,14).

Regarding attitudes, more than half of the participants demonstrated positive attitudes toward evidence-based material selection and acknowledged the importance of scientific evidence in clinical decision-making. However, neutral attitudes were observed regarding the replacement of conventional PMMA with newer denture base materials. This may reflect cautious clinical behavior toward recently introduced technologies due to concerns related to cost, long-term clinical evidence, availability, and technical complexity.
Patient preference, mechanical strength, and cost were identified as the main factors influencing denture base material selection. These findings reflect the practical realities commonly encountered in clinical practice, particularly in resource-limited settings where economic considerations significantly influence treatment planning and material availability (15,16). Although many participants acknowledged the importance of evidence-based decision-making, financial limitations and patient-related factors appeared to exert stronger influence on final material selection.
The relatively low participation rate in continuing professional development courses related to denture base materials may partially explain the discrepancy observed between theoretical knowledge and actual clinical implementation of modern technologies. Previous studies have demonstrated that continuing education programs and professional training significantly improve clinicians' confidence, awareness, and adoption of newly introduced dental materials and digital technologies (14,17).
Overall, the findings of the current study indicate that awareness regarding modern denture fabrication technologies is increasing among dental students and practitioners; however, their routine clinical implementation remains limited. Strengthening undergraduate education, expanding hands-on digital prosthodontic training, and improving access to digital technologies may help bridge the gap between theoretical knowledge and practical application in Libya.

4.1. Limitations
Several limitations should be considered when interpreting the findings of this study. First, the use of convenience sampling may limit the generalizability of the results to all dental professionals in Libya. Second, the self-administered nature of the questionnaire may have introduced response and reporting bias. Third, the cross-sectional study design prevents the establishment of causal relationships between variables. In addition, the study relied primarily on participants' self-reported practices rather than direct clinical observation. Despite these limitations, the study provides valuable baseline information regarding the current knowledge, attitudes, and clinical practices related to denture base materials among dental professionals in Libya.

5. Conclusion
This study assessed the knowledge, attitudes, and clinical practices regarding denture base materials among dental students and practitioners in Benghazi, Libya. The findings demonstrated that conventional heat-cured PMMA remains the most commonly used denture base material despite increasing awareness of alternative materials and digital fabrication technologies. Participants generally exhibited moderate to high levels of knowledge, with higher knowledge levels observed among prosthodontists and clinicians with greater clinical experience. Although awareness of CAD/CAM and 3D-printing technologies was relatively satisfactory, their routine clinical implementation remained limited. Material selection was primarily influenced by patient preference, mechanical strength, and cost considerations. The findings highlight a gap between theoretical awareness and practical adoption of modern denture base technologies, emphasizing the need for enhanced educational programs, continuous professional development, and improved access to digital prosthodontic technologies in Libya.

6. Recommendations
Based on the findings of the present study, the following recommendations are proposed:
1. Strengthen undergraduate curricula by incorporating comprehensive education on contemporary denture base materials and digital denture fabrication technologies.
2. Expand continuing professional development programs and hands-on workshops focusing on CAD/CAM and 3D-printing applications in removable prosthodontics.

3. Improve access to digital prosthodontic technologies within dental schools, teaching hospitals, and private clinics.
4. Encourage evidence-based clinical decision-making through regular updates on current scientific literature and clinical guidelines.
5. Promote collaboration between academic institutions, dental laboratories, and healthcare providers to facilitate the implementation of modern denture fabrication techniques.
6. Conduct larger multicenter studies across different regions of Libya to provide more representative data regarding knowledge, attitudes, and clinical practices related to denture base materials.
7. Perform longitudinal clinical studies evaluating the long-term performance and patient outcomes associated with CAD/CAM-milled and 3D-printed denture base materials.

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Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

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