The Review Of
DIABETIC
STUDIES OPEN ACCESS

Role Of Dentists, Laboratory Diagnostics, Imaging, And Nursing In The Care Of Diabetes Mellitus

Fawaz Abdulrhman Alsaleh[1], Khalaf Fayiz Alhowaish[2], Amnah Khalifah Ali Alanazi[3], Alkuwaykibi, Basheer Alohaylim R[4], Alenezi Bassam Hawas H[5], Alruwaili Mohammed Musaher M[6], Alanazi, Thamer Hamoud[7], Abdulelah Abdulhadi Amiq Alanazi[8], Alenezi, Hassan Aied F[9], Falah Kunaydir S Alruwaili[10]

[1] Radiologist - Senior Registrar, Security Forces Hospital, Riyadh, Saudi Arabia
[2] General Practice - Dentist, Dental Department, Northern Borders Cluster, Arar, Saudi Arabia
[3] Dental Assistant, Dental Department, Northern Borders Cluster, Arar, Saudi Arabia
[4] Laboratory Technician, Prince Abdullah Bin Abdulaziz Bin Mosaed Center for Cardiac Medicine and Surgery, Arar, Saudi Arabia
[5] Nursing Technician, North Medical Tower Hospital, Arar, Saudi Arabia
[6] Technician - Laboratory, General Hospital of Turaif, Northern Borders, Saudi Arabia
[7] Laboratory Technician, North Medical Tower Hospital, Arar, Saudi Arabia
[8] Technician - Laboratory, Laboratories and Medical Technology, Prince Abdullah Bin Abdulaziz Bin Mosaed Center for Cardiac Medicine and Surgery, Arar, Saudi Arabia
[9] Lab Specialist, Arar Cardiac Center, Arar, Saudi Arabia
[10] Laboratory Specialist, PAAMCC, Arar, Saudi Arabia

Abstract:
Diabetes mellitus management necessitates a multidisciplinary approach that integrates the unique expertise of various healthcare professionals to address its systemic complexities effectively. Dentists play a critical role in mitigating the bidirectional relationship between periodontitis and glycemic control, while also identifying oral manifestations of the disease. Laboratory diagnostics provide the essential biochemical data for diagnosis, classification, and monitoring of glucose levels and complications through tests like HbA1c and renal function panels. Medical imaging, including retinal photography and cardiovascular scans, is indispensable for the early detection and management of microvascular and macrovascular damage. Nursing professionals form the integrative backbone of care, delivering clinical management, comprehensive patient education, psychosocial support, and care coordination. The synergy between these disciplines—oral health, diagnostic science, visual assessment, and holistic nursing—is fundamental to achieving optimal patient outcomes, preventing complications, and advancing towards a model of truly patient-centered, holistic diabetes care.

Keywords: Diabetes Mellitus, Multidisciplinary Care, Oral-Systemic Health, Periodontitis, Laboratory Diagnostics, Glycated Hemoglobin (HbA1c)

Introduction:

Diabetes Mellitus (DM) represents one of the most formidable global health challenges of the 21st century, characterized not merely as a disorder of glucose metabolism but as a pervasive, systemic condition with profound implications for virtually every organ system. Its chronic hyperglycemic state, mediated through intricate pathways of insulin deficiency or resistance, instigates a cascade of microvascular and macrovascular complications that dictate morbidity, mortality, and quality of life for millions worldwide [1]. The classical triumvirate of management—medical nutrition therapy, physical activity, and pharmacological intervention—while foundational, has proven insufficient to stem the tide of complications such as cardiovascular disease, nephropathy, retinopathy, neuropathy, and impaired wound healing. This insufficiency underscores a critical paradigm shift: the management of diabetes can no longer

be the sole purview of the endocrinologist or primary care physician. It demands a cohesive, multidisciplinary strategy that recognizes and integrates the specialized contributions of diverse healthcare professionals into a seamless continuum of care [2].

The rationale for this integrated approach is rooted in the very nature of diabetes as a "syndemic," interacting synergistically with other health and social conditions. The chronic, insidious progression of diabetic complications often means that early warning signs manifest in domains managed by non-physician specialists. For instance, the oral cavity can serve as a mirror reflecting systemic health, with periodontal disease now recognized as the "sixth complication" of diabetes, sharing a bidirectional, pathological relationship with glycemic control [3]. Similarly, the feet of a diabetic patient, assessed meticulously by a nurse or a podiatrist, can reveal the earliest signs of peripheral neuropathy and vascular compromise long before a patient presents with a non-healing ulcer. These frontline observations are not peripheral to diabetes management; they are central to its success, forming an early-warning network that can trigger timely interventions to prevent catastrophic outcomes.

Furthermore, the objective management of diabetes hinges on data—precise, timely, and interpretable data. This is where the domains of laboratory diagnostics and medical imaging transition from supportive roles to pillars of clinical decision-making. Laboratory science provides the bedrock of diagnosis and monitoring, from the basic glycated hemoglobin (HbA1c) to sophisticated panels assessing renal function, lipid profiles, and inflammatory markers. These values are not static numbers but dynamic indicators of disease trajectory, therapeutic efficacy, and emerging risks [4]. Concurrently, advances in medical imaging have revolutionized our ability to visualize the silent damage wrought by diabetes. Technologies such as retinal photography, carotid intima-media thickness ultrasound, cardiac MRI, and advanced neuroimaging allow for the non-invasive detection of complications at subclinical stages, enabling pre-emptive strategies that were unimaginable decades ago [5]. The interpretation and integration of these diagnostic findings, however, require skilled professionals who can translate pixels and values into clinical narratives.

Within this intricate ecosystem of care, nursing professionals embody the essential thread that connects all elements. They function as clinicians, educators, coordinators, and advocates. From administering insulin and monitoring for acute complications like hypoglycemia in inpatient settings, to providing exhaustive self-management education and psychosocial support in the community, nurses ensure that the grand strategy of diabetes care is operationalized at the human level [6]. Their continuous, longitudinal engagement with patients positions them uniquely to identify subtle changes in condition, adherence barriers, and psychosocial distress, thereby facilitating personalized care adjustments and preventing care fragmentation [7, 8].

I. The Dentist: Guardian of the Oral-Systemic Link in Diabetes

The link between diabetes and periodontal disease is a quintessential example of a bidirectional pathological relationship. Chronic hyperglycemia impairs neutrophil function, alters collagen metabolism, and increases inflammation in gingival tissues, thereby elevating the susceptibility to, and severity of, periodontal infections [9]. Conversely, periodontitis acts as a chronic, low-grade inflammatory burden. The pro-inflammatory cytokines (e.g., TNF-α, IL-6) produced in the periodontal tissues enter the systemic circulation, contributing to increased insulin resistance and making glycemic control more challenging [10]. This creates a vicious cycle where poor glycemic control exacerbates periodontitis, which in turn worsens glycemic control. Robust evidence from systematic reviews indicates that non-surgical periodontal therapy can lead to a statistically significant reduction in HbA1c, approximately 0.3-0.4% over 3 months, an effect comparable to adding a second-line pharmacological agent [11]. Thus, the dentist’s role in diagnosing and aggressively treating periodontitis is a direct, non-pharmacological intervention in diabetes management itself.

Oral Manifestations as Diagnostic Clues and Complication Markers

Beyond periodontitis, the oral cavity presents a range of manifestations that can signal undiagnosed diabetes or indicate poor control in known patients. Dentists are trained to recognize these signs, which include: Xerostomia (dry mouth), resulting from decreased salivary flow due to polyuria and autonomic

neuropathy, increasing the risk of caries and candidiasis. Burning mouth syndrome, often linked to diabetic neuropathy. Accelerated dental caries due to xerostomia and perhaps higher salivary glucose levels. Oral candidiasis, particularly the erythematous and angular cheilitis forms, thrives in the glucose-rich environment and compromised immunity. Lichenoid reactions potentially associated with oral medications. Impaired wound healing following extractions or other oral surgery [12]. The presence of severe, generalized periodontitis in a young patient or one that is refractory to conventional therapy should raise a clinician's index of suspicion for underlying diabetes, prompting appropriate referral for screening [13].

Clinical Management and Interprofessional Communication

The dental management of a patient with diabetes requires specific adaptations and vigilance. Key responsibilities include: conducting a thorough medical history review with a focus on diabetes type, duration, medications, complications, and most recent HbA1c; scheduling appointments strategically (e.g., mid-morning to avoid peak insulin activity periods and minimize hypoglycemia risk); ensuring stress reduction protocols as stress hormones can elevate blood glucose; and maintaining meticulous infection control given the increased infection risk [14]. Perhaps most critically, the dentist must engage in active interprofessional communication. This involves informing the physician about a diagnosis of severe periodontitis, the planned treatment (especially surgical procedures that may require antibiotic prophylaxis or adjustment of anti-diabetic medication), and any observed oral signs of poor control. Conversely, dentists rely on physicians for information on a patient's overall glycemic stability and any specific precautions [15]. This two-way dialogue is the cornerstone of safe and effective co-management.

Preventive Education and Screening

Dentists and dental hygienists occupy a strategic position to provide preventive counseling tailored to diabetic patients. This includes reinforced oral hygiene instruction, dietary counseling to reduce sugary snacks and beverages, and advice on managing xerostomia (e.g., sugar-free gums, saliva substitutes) [16]. Increasingly, the dental office is being proposed as a novel site for opportunistic screening for dysglycemia. Point-of-care HbA1c testing using finger-stick blood samples in the dental setting has been studied as a feasible method to identify patients with undiagnosed prediabetes or diabetes, particularly those with risk factors and severe periodontitis, thereby acting as a crucial public health sentinel [17, 18].

II. Laboratory Diagnostics: The Biochemical Compass of Diabetes Management

Diagnosis and Classification: The Foundational Tests

Laboratory diagnostics provide the unequivocal criteria for diagnosing diabetes and distinguishing between its types. The core tests, as defined by the American Diabetes Association (ADA), include the fasting plasma glucose (FPG), the 2-hour plasma glucose during a 75g oral glucose tolerance test (OGTT), the glycated hemoglobin (HbA1c), and in symptomatic individuals, a random plasma glucose [19]. The OGTT remains the gold standard for diagnosing gestational diabetes. Beyond diagnosis, specific laboratory assays are pivotal for classification: measurement of C-peptide (a marker of endogenous insulin secretion) helps differentiate Type 1 from long-standing Type 2 diabetes; autoantibody panels (e.g., GAD65, IA-2, ZnT8) are key in confirming autoimmune Type 1 diabetes, especially in adults presenting with apparent type 2 features (Latent Autoimmune Diabetes in Adults - LADA) [20]. These initial laboratory profiles guide the entire therapeutic pathway.

Monitoring Glycemic Control: HbA1c and Beyond

HbA1c, reflecting average blood glucose over the preceding 2-3 months, is the cornerstone of long-term glycemic monitoring and the primary metric for treatment goals. However, its limitations—such as variability in red blood cell turnover, hemoglobinopathies, and certain anemias—necessitate confirmatory tests like fructosamine, which reflects glycemic control over approximately 2-3 weeks, and is useful in conditions where HbA1c is unreliable [21]. For day-to-day management, especially in insulin-treated

patients, self-monitoring of blood glucose (SMBG) and continuous glucose monitoring (CGM) are essential. While SMBG provides point-in-time snapshots, CGM systems generate vast amounts of data on interstitial glucose levels, trends, and variability. Laboratory professionals play a role in calibrating CGM devices against plasma glucose standards and in interpreting the ambulatory glucose profile (AGP) reports derived from CGM data, which offer insights into time in range, glycemic variability, and nocturnal patterns [22].

Monitoring Complications and Comorbidities

The laboratory's role extends far beyond glucose to surveil for diabetic complications. Renal Function: Annual measurement of serum creatinine for estimated glomerular filtration rate (eGFR) and urinary albumin-to-creatinine ratio (UACR) is mandatory for early detection of diabetic kidney disease [23]. Cardiovascular Risk: Annual lipid profiles (total cholesterol, LDL-C, HDL-C, triglycerides) are critical for assessing cardiovascular risk and guiding statin therapy. Metabolic Acidosis: In suspected diabetic ketoacidosis (DKA), laboratories provide rapid results for serum ketones (beta-hydroxybutyrate), venous pH, bicarbonate, and anion gap, which are lifesaving for diagnosis and management [24]. Other Assessments: Liver function tests (given the association with NAFLD), thyroid function tests (due to increased autoimmune comorbidity in Type 1 DM), and vitamin levels (e.g., B12 in patients on long-term metformin) are part of comprehensive care [25].

Emerging Biomarkers and Personalized Medicine

The field of laboratory diagnostics is evolving towards novel biomarkers that may offer earlier risk stratification. These include markers of oxidative stress, advanced glycation end-products (AGES), specific inflammatory cytokines like hs-CRP, and adipokines [26]. Genetic testing, while not routine, can identify monogenic forms of diabetes (MODY), which have distinct management implications. The integration of multi-omics data—genomics, proteomics, metabolomics—holds promise for the future of personalized diabetes care, allowing for tailored prevention and treatment strategies based on an individual's unique biochemical fingerprint [27, 28].

III. Medical Imaging: Visualizing the Silent Progression of Diabetic Damage

Retinal Imaging: Preventing Diabetic Blindness

Diabetic retinopathy (DR) is a leading cause of blindness in adults. Imaging is fundamental to its screening and staging. Fundus photography, particularly through non-mydriatic cameras, has become the standard for population-based screening programs, allowing for remote grading and timely referral to ophthalmologists [29]. For more detailed assessment, optical coherence tomography (OCT) provides high-resolution cross-sectional images of the retina, precisely quantifying macular edema—the most common cause of vision loss in DR. Fluorescein angiography (FA) maps the retinal vasculature, identifying areas of ischemia, leakage, and neovascularization, guiding laser photocoagulation or intravitreal anti-VEGF therapy [30]. Regular, systematic retinal imaging is a non-negotiable component of diabetes care to prevent irreversible visual loss.

Cardiovascular Imaging: Assessing Macroangiopathy

Diabetes is a major risk equivalent for coronary artery disease (CAD). Imaging modalities are crucial for both screening and diagnosis. Coronary artery calcium (CAC) scoring via non-contrast CT scan is a powerful tool for refining cardiovascular risk assessment in asymptomatic diabetic patients, guiding the intensity of primary prevention strategies [31]. Stress echocardiography or myocardial perfusion imaging (MPI) with SPECT or PET are used to diagnose inducible ischemia in symptomatic patients. Cardiac CT angiography provides detailed anatomical visualization of coronary plaques, while cardiac MRI offers unparalleled assessment of myocardial viability, fibrosis, and subtle functional changes associated with diabetic cardiomyopathy, a distinct entity of heart failure in the absence of CAD or hypertension [32].

Neuroimaging and Assessment of Cerebrovascular Disease

The brain is a key target of diabetic damage, with an increased risk of stroke, cognitive decline, and dementia. Neuroimaging plays a dual role. For macrovascular disease, carotid Doppler ultrasound measures intima-media thickness and screens for atherosclerotic plaques, while CT or MR angiography of the head and neck can evaluate stenosis [33]. For microvascular cerebral disease, magnetic resonance imaging (MRI) is indispensable. It reveals white matter hyperintensities, lacunar infarcts, and cerebral microbleeds—markers of cerebral small vessel disease strongly associated with diabetes and linked to cognitive impairment and gait disorders [34]. Advanced MRI techniques like diffusion tensor imaging (DTI) can detect subtle white matter integrity loss before clinical symptoms appear.

Imaging for Foot Complications and Other Systems

In the diabetic foot, imaging is critical to diagnose osteomyelitis (bone infection) and Charcot neuro-osteoarthropathy. Plain radiographs are the first step but lack early sensitivity. MRI, with its excellent soft tissue and bone marrow resolution, is the imaging modality of choice for diagnosing osteomyelitis, distinguishing it from neuropathic arthropathy, and delineating the extent of infection for surgical planning [35]. In other systems, renal ultrasound is used to assess kidney size and rule out other pathologies, while transient elastography (FibroScan) or MR elastography can non-invasively assess hepatic fibrosis in diabetic patients with non-alcoholic fatty liver disease (NAFLD) [36].

IV. Nursing: The Integrative Force in Holistic Diabetes Care

Clinical Care and Acute Management

Nurses are frontline clinicians in both inpatient and outpatient settings. In hospitals, they manage the complexities of insulin therapy, including sliding scales and IV insulin drips for critical conditions like diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHS). They are responsible for vigilant monitoring of blood glucose, vital signs, fluid balance, and neurological status, recognizing and initiating treatment for hypoglycemia swiftly [37]. In outpatient clinics, nurse practitioners often manage stable diabetic patients independently, prescribing medications, ordering and interpreting tests, and adjusting treatment plans under collaborative agreements. Their clinical role is hands-on and immediate, ensuring safety and stability.

Education for Self-Management Empowerment

Perhaps the most defining role of nursing in diabetes care is that of educator. Effective self-management education (DSME/S) is the engine of long-term success. Nurses educate patients on a vast array of topics: understanding the pathophysiology of their disease; glucose monitoring techniques and interpretation; carbohydrate counting and meal planning; the mechanism, administration, and side effects of medications (especially insulin injection technique and insulin pump management); prevention, recognition, and treatment of hypoglycemia; foot care inspection; and the importance of regular screening for complications [38]. This education is not a one-time event but an ongoing, adaptive process tailored to the patient's literacy level, cultural background, and readiness to learn.

Care Coordination and Psychosocial Support

Diabetes care involves navigating a complex web of specialists, appointments, medications, and insurance issues. Nurses, particularly diabetes care and education specialists (DCES) and case managers, excel as care coordinators. They facilitate referrals to dietitians, endocrinologists, podiatrists, ophthalmologists, and dentists, ensuring information flows between providers and preventing care gaps [39]. Equally vital is their role in providing psychosocial support. They screen for diabetes distress, depression, and anxiety—all highly prevalent in the diabetic population. They employ motivational interviewing techniques to address barriers to adherence, help patients set realistic goals, and foster resilience in the face of a demanding chronic illness. This holistic support addresses the person, not just the disease [40].

Advocacy and Community Health

Nurses also function as advocates at the individual and population levels. They advocate for individual patients within the healthcare system and for resources to support their care. On a broader scale, public health nurses and community health nurses engage in population-based strategies for diabetes prevention, running screening camps, leading lifestyle intervention programs in communities, and advocating for policies that create healthier environments (e.g., access to healthy food, safe spaces for physical activity) [40]. This upstream approach is essential for curbing the diabetes epidemic.

Conclusion:

The management of diabetes mellitus in the modern era has transcended the boundaries of a single medical specialty. As this comprehensive analysis has elucidated, achieving optimal outcomes—preventing complications, preserving quality of life, and prolonging health—requires a symphony of expertise, with each discipline playing an indispensable and interconnected part. The dentist stands as a sentinel at the oral-systemic frontier, breaking the vicious cycle of periodontitis and hyperglycemia while screening for undiagnosed disease. The laboratory diagnostician provides the indispensable biochemical compass, guiding every diagnostic, therapeutic, and monitoring decision with precise data. The imaging specialist illuminates the hidden internal landscape of diabetic damage, from the retina to the heart to the brain, enabling pre-emptive action long before clinical symptoms arise. And permeating every layer of this structure is the nursing professional—the clinician, educator, coordinator, and empath—who integrates these streams of information and expertise into a practical, personalized, and compassionate care plan for the individual living with diabetes.

The future of diabetes care lies not in further isolation of these roles, but in the intentional strengthening of collaborative frameworks. Shared electronic health records, interdisciplinary case conferences, co-located clinics, and clear referral pathways are the practical tools needed to operationalize this model. When a dentist's note on severe periodontitis prompts a physician to intensify glycemic control, when a nurse's observation of poor wound healing triggers a vascular imaging study, and when an imaging report of silent ischemia leads to a reinforced education session on medication adherence, the true power of multidisciplinary care is realized. In this integrated paradigm, the patient is no longer a passive recipient of fragmented services but the central focus of a unified, expert team dedicated to managing the whole person in their fight against a whole-body disease. This is not merely an enhanced model of care; it is the essential model for conquering the multifaceted challenge of diabetes mellitus.

References:

1. Friman G, Hultin M, Nilsson G H, Wårdh I. Medical screening in dental settings: a qualitative study of the views of authorities and organisations. BMC Res Notes 2015; 8: 580.
2. Bould K, Scott S E, Dunne S, Asimakopoulou K. Uptake of screening for type 2 diabetes risk in general dental practice; an exploratory study. Br Dent J 2017; 222: 293-296.
3. Santella A J, Conway D I, Watt R G. The potential role of dentists in HIV screening. Br Dent J 2016; 220: 229-233.
4. Riley B L, MacDonald J, Mansi O et al. Is reporting on interventions a weak link in understanding how and why they work? A preliminary exploration using community heart health exemplars. Implementat Sci 2008; 3: 27.
5. Yonel Z, Cerullo E, Kröger A T, Grey L J. Use of dental practices for the identification of adults with undiagnosed type 2 diabetes mellitus or non-diabetic hyperglycaemia: a systematic review. Diabet Med 2020; 37: 1443-1453.
6. Gianos E, Jackson E A, Tejpal A et al. Oral health and atherosclerotic cardiovascular disease: A review. Am J Prev Cardiol 2021; 7: 100179.
7. Doble A, Bescos R, Witton R, Shivji S, Ayres R, Brookes Z. A Case-Finding Protocol for High Cardiovascular Risk in a Primary Care Dental School-Model with Integrated Care. Int J Environ Res Public Health 2023; 20: 4959.

8. Wright D, Muirhead V, Weston-Price S, Fortune F. Type 2 diabetes risk screening in dental practice settings: a pilot study. Br Dent J 2014; 216: E15.
9. Care Quality Commission. Scope of registration: Regulated activities. Diagnostic and screening procedures. 2022.
10. Suarez-Durall P, Osborne M S, Enciso R, Melrose M D, Mulligan R. Results of offering oral rapid HIV screening within a dental school clinic. Spec Care Dentist 2019; 39: 188-200.
11. Feinstein-Winitzer R T, Pollack H A, Parish C L, Pereyra M R, Abel S N, Metsch L R. Insurer views on reimbursement of preventive services in the dental setting: results from a qualitative study. Am J Public Health 2014; 104: 881-887.
12. D'Aiuto F, Gable D, Syed Z et al. Evidence summary: the relationship between oral diseases and diabetes. Br Dent J 2017; 222: 944-948.
13. Shivji S. Alone we are strong, together we are stronger. 2022.
14. Herrera D, Sanz M, Shapira L et al. Association between periodontal diseases and cardiovascular diseases, diabetes and respiratory diseases: Consensus report of the Joint Workshop by the European Federation of Periodontology (EFP) and the European arm of the World Organisation of Family Doctors (WONCA Europe). J Clin Periodontol 2023; 50: 819-841.
15. Bilitou A, Were J, Farrer A et al. Prevalence and Patient Outcomes of Adult Primary Hypercholesterolemia and Dyslipidemia in the UK: Longitudinal Retrospective Study Using a Primary Care Dataset from 2009 to 2019. Clinicoecon Outcomes Res 2022; 14: 189-203.
16. Genco R J, Schifferle R E, Dunford R G, Falkner K L, Hsu W C, Balukjian J. Screening for diabetes mellitus in dental practices: A field trial. J Am Dent Assoc 2014; 145: 57-64.
17. Public Health England. Making Every Contact Count (MECC): Consensus statement. 2016.
18. Nuredini G, Saunders A, Rajkumar C, Okorie M. Current status of white coat hypertension: where are we? Ther Adv Cardiovasc Dis 2020.
19. Ireland R S, Bowyer V, Ireland A, Sutcliffe P. The medical and dental attendance pattern of patients attending general dental practices in Warwickshire and their general health risk assessment. Br Dent J 2012; 212: E12.
20. Eisenstein M. Homing in on an oral link to inflammatory disease. Nature 2021.
21. Moody A, Cowley G, Fat L N, Mindell J S. Social inequalities in prevalence of diagnosed and undiagnosed diabetes and impaired glucose regulation in participants in the Health Surveys for England series. BMJ Open 2016.
22. Liau F L, Kok S-H, Lee J-J et al. Cardiovascular influence of dental anxiety during local anaesthesia for tooth extraction. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008; 105: 16-26.
23. Creanor S, Millward B A, Demaine A et al. Patients' attitudes towards screening for diabetes and other medical conditions in the dental setting. Br Dent J 2014; 216: E2.
24. Kivimäki M, Strandberg T, Pentti J et al. Body-mass index and risk of obesity-related complex multimorbidity: an observational multicohort study. Lancet Diabetes Endocrinol 2022; 10: 253-263.
25. Humphris G, King K. The prevalence of dental anxiety across previous distressing experiences. J Anxiety Disord 2011; 25: 232-236.
26. Hoffmann T C, Glasziou P P, Boutron I et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. BMJ 2014; 348: g1687.
27. Abdulwahab M, Kamal M, Akbar A. Screening for High Blood Pressure at the Dentist's Office. Clin Cosmet Investig Dent 2022; 14: 79-85.
28. Manger D, Walshaw M, Fitzgerald R et al. Evidence summary: the relationship between oral health and pulmonary disease. Br Dent J 2017; 222: 527-533.
29. Coqueiro R S, Santos M C, Neto J S, Queiroz B M, Brügger N A, Barbosa A R. Validity of a portable glucose, total cholesterol, and triglycerides multi-analyser in adults. Biol Res Nurs 2014; 16: 288-294.
30. Humphris G M, Freeman R, Campbell J, Tuutti H, D'Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. Int Dent J 2000; 50: 367-370.
31. Dietrich T, Webb I, Stenhouse L et al. Evidence summary: the relationship between oral and cardiovascular disease. Br Dent J 2017; 222: 381-385.

32. Chung R, Leung S-Y J, Abel S N et al. HIV screening in the dental setting in New York State. PLoS One 2020.
33. Ungoed-Thomas J. GPs in England treat up to three times more patients than safety limit demands. The Observer (London) 2022 November 20.
34. Daly B, Thompsell A, Sharpling J et al. Evidence summary: the relationship between oral health and dementia. Br Dent J 2018; 223: 846-853.
35. NHS England. Building dental teams: Supporting the use of skill mix in NHS general dental practice - long guidance. 2023.
36. Usher-Smith J A, Harte E, MacLure C et al. Patient experience of NHS health checks: a systematic review and qualitative synthesis. BMJ Open 2017.
37. UK Government. The Medical Act 1983. London: The Stationary Office, 1983.
38. Daley A J. Time to get our teeth into reducing obesity: should dentists screen and deliver interventions to reduce obesity in the population? Br Dent J 2022; 232: 78-79.
39. NHS England. Standard General Dental Services Contract - July 2018. 2018.
40. Doughty J, M Gallier S, Paisi M, Witton R, J Daley A. Opportunistic health screening for cardiovascular and diabetes risk factors in primary care dental practices: experiences from a service evaluation and a call to action. Br Dent J. 2023;235(9):727-733. doi:10.1038/s41415-023-6449-6