

Oral Health in Africa: Building Research and Policy Capacity for Sustainable ChangeOladayo AM¹, Foláyan MO^{2,3}, El Tantawi M^{2,4}, Taiwo OO⁵, Butali A^{6,7}¹Missouri School of Dentistry and Oral Health, A.T. Still University, Kirksville, Missouri, USA²The Africa Oral Health Network (AFRONE), Alexandria University, Alexandria, Egypt³Department of Child Dental Health, Obafemi Awolowo University, Ife, Nigeria⁴Department of Pediatric Dentistry and Dental Public Health, Faculty of Dentistry, Alexandria University, Alexandria, Egypt⁵Intercountry Centre for Oral Health for Africa, Jos, Nigeria⁶Department of Oral Pathology, Radiology and Medicine, College of Dentistry, University of Iowa, Iowa City, Iowa, USA⁷Iowa Institute for Oral Health Research, University of Iowa, Iowa City, Iowa, USA**Correspondence:** Oladayo AM**Email:** bimoladayo@gmail.com**ABSTRACT**

Oral health disparities in Africa are stark, characterized by limited access, fragmented data systems, low political will, and persistent underfunding. With the WHO Global Oral Health Action Plan 2022–2030 calling for integration, prevention, and equity, African researchers and institutions are stepping into leadership roles to drive contextualized, data-informed, and sustainable solutions. This perspective synthesizes insights from African-led initiatives, including collaborative research networks, institution-based innovations, and field trial systems, which are designed to generate locally relevant evidence for clinical interventions and future research. This article draws on experiences across subregions and institutions, informed by the "Oral Health in Africa" symposium at the 2025 International Association for Dental Research (IADR) General Session. The article covers community field trials in Egypt, the initiative of the Intercountry Centre for Oral Health in Nigeria, and continent-wide research networks. It highlights opportunities for transformative change in African oral health and outlines priorities for data generation, policy alignment, institutional coordination, and funding strategies necessary to deliver on the global oral health agenda.

Key words: Oral Health Policy, Research Capacity-Building, Health Systems Strengthening, Africa, Universal Health Coverage (UHC), Community-Based Interventions, WHO Global Strategy.

BACKGROUND

Africa is home to nearly 1.5 billion people, yet oral diseases remain among the most neglected public health conditions across the continent.¹ While dental caries, periodontal disease, oral cancers, and neglected tropical diseases such as noma affect millions, Africa lacks the surveillance data, institutional infrastructure, and coordinated strategies needed to address these burdens effectively.²⁻⁵

The WHO Global Oral Health Strategy and its 2030 Action Plan urge a new path, one centered on country-led solutions, integrated health systems, and a robust evidence base.⁶ This article is a perspective that synthesizes insights from selected, ongoing African-led oral health initiatives. The selection of initiatives was guided by the presentations and discussions from the "Oral Health in Africa: Possibilities and Challenges" symposium at the 2025 International Association for Dental Research (IADR) meeting in Barcelona, Spain. The symposium brought together leading scholars and practitioners engaged in advancing oral health across the continent. It featured presentations on early childhood caries (ECC), community-based field trials, institutional innovations, and collaborative research networks, each highlighting both persistent challenges and promising solutions.

Drawing from the foregoing discussions, this paper shares lessons and emerging models that demonstrate how African researchers, institutions, and communities are actively reshaping the oral health landscape. These efforts span cross-national collaboration, institution-building, and grassroots research implementation, signaling a broader shift toward sovereignty in oral health research and policy, where Africans are increasingly defining their priorities, generating contextually relevant data, and constructing systems that reflect the realities and aspirations of their communities. The aim of this perspective is to evaluate the contribution of African-led oral health initiatives to advancing global oral health agendas through research collaboration, institutional reform, and field-based interventions, thereby proposing evidence-informed pathways for policy development, funding optimization, and equitable integration of oral health into broader health systems.

The primary objectives of this manuscript were to:

1. Synthesize and present key examples of African-led oral health research networks, institutional innovations, and community-based field trials.
2. Demonstrate how these initiatives align with the strategic objectives of the WHO Global Oral Health Action Plan 2022–2030.

3. Outline evidence-informed priorities for policy, funding, and systems integration to advance oral health equity across the continent.

Scope and Sources: This Perspective curates illustrative, policy-relevant examples from three input streams: (a) presentations and discussions from the "Oral Health in Africa" symposium at IADR 2025; (b) WHO global and regional oral health strategy and framework documents (2022–2030); and (c) selected peer-reviewed studies and reports on African-led, data-generating initiatives. Items were included if they were Africa-based and produced evidence or implementation learning relevant to health system integration and WHO objectives.

1. African Research Networks: Data as a Foundation for Action

A foundational barrier to progress in oral health across Africa is the lack of reliable, country-specific data.⁴ To illustrate the uneven evidence base across subregions, ongoing ECC work shows marked "data deserts," reinforcing the need for coordinated data generation and continental repositories. An ongoing systematic review and meta-analysis on the prevalence of ECC in African subregions revealed significant gaps in data coverage across the continent (PROSPERO IDs: CRD420251004675 - West Africa, CRD420251006590 - North Africa, CRD420251003598 - East Africa, CRD420251019424 - Central Africa, and CRD420251004718 - Southern Africa).⁷⁻¹¹ For example, Central Africa had only five eligible studies from three of its eight countries—Cameroon, the Democratic Republic of the Congo, and the Central African Republic. East Africa had 23 studies from six of its 18 countries: Tanzania, Kenya, Uganda, Ethiopia, Sudan, and Mozambique.

In Southern Africa, 15 studies were identified from four of 10 countries: Angola, Namibia, Mozambique, and South Africa. Northern Africa had 18 studies from four of its seven countries: Egypt, Tunisia, Sudan, and Morocco. Although West Africa had a larger number of eligible studies—26 in total—these were drawn from only five of the region's 16 countries: Nigeria, Ghana, Gambia, Mali, and Senegal. This underscores the uneven distribution of oral health data across the continent, with many countries lacking representative studies (Folayan, personal communication). Pan-African collaborations are emerging to address this deficit through primary data collection, secondary data analysis, and agenda-setting efforts aligned with the WHO strategy.¹²

Key initiatives in the region include the following:

- **The African Oral Pathology Research Consortium (AOPRC):** Inaugurated at the 1st Regional Congress of the International Association of Oral Pathologists (IAOP) in Lagos, Nigeria, in September 2015, the AOPRC was established to promote collaborative oral pathology research, skill exchange, and stronger ties among oral pathologists across Africa and beyond. Member institutions include six Nigerian universities (Benin, Ibadan, Port Harcourt, Calabar, Lagos, and Obafemi Awolowo), two South African universities (Cape Town and the University of the Western Cape at Tygerberg Hospital), and the University of Iowa, USA. The consortium has supported multicenter research, including a study on the burden of oral cancer in Nigeria.¹³

- **The African Craniofacial Anomalies Research Network (AfriCRAN):** Established in June 2012 following a planning grant from the Wellcome Trust, AfriCRAN is a multidisciplinary network of researchers across Africa that collaborates with international partners to study genetic and environmental factors associated with craniofacial abnormalities. The network includes institutions from Nigeria, South Africa, Ethiopia, Ghana, and Rwanda, along with two institutions in the USA and one in the UK. Its primary aim is to collect and analyze data from affected individuals and families to investigate the etiology of these complex traits and lay the groundwork for future large-scale studies. AfriCRAN's core strength lies in the expertise and dedication of its members, who drive the network's growing continental and global research capacity.¹⁴

- **Africa Oral Health Network (AFRONE):** Established in 2022, AFRONE is a pan-African initiative dedicated to empowering early-career and senior researchers to conduct interdisciplinary, policy-relevant oral health research. With a mission to generate evidence that informs oral health policy and programming across the continent, AFRONE fosters a collaborative research community guided by the One Health framework, recognizing the interconnectedness of human, animal, and environmental health. AFRONE's mission is critically urgent given Africa's severe oral healthcare gap: only 17% of the population has oral health services covered under Universal Health Coverage (UHC) schemes (4), whereas the continent bears 17% of the global oral disease burden with just 1% of the global dental workforce (4). The network promotes cross-sectoral partnerships and capacity building to advance oral health and overall well-being in Africa. It is currently collaborating with members and partners to develop the Oral Health Research Agenda for Africa, with funding support from the IADR. Researchers from the AFRONE network have published 12 articles in PubMed-indexed journals to date, addressing oral health-related issues in Africa.¹⁵

- **The Oral Health Initiative (OHI):** Established in 2023, the OHI aims to improve the capacity of early-career researchers (ECRs) in Africa to conduct interdisciplinary oral health research using secondary data. The focus is on building the competency of non-dentists to identify oral health-related initiatives for transdisciplinary studies. Since its inception, the team has submitted 22 manuscripts and published 11 in Scopus-indexed journals, many of which provide the first nationally representative, policy-relevant data for Nigeria on critical oral health issues affecting vulnerable populations.¹⁶⁻²⁵
- **Africa Unite Oral Health Research Group:** The Africa Unite Oral Health Research Group is a pioneering initiative dedicated to advancing pediatric oral health research across the African continent. Established through collaborative efforts beginning in 2020, the group brings together researchers from countries such as South Africa, Nigeria, Kenya, Ghana, Egypt, Uganda, Sudan, Rwanda, Namibia, Zimbabwe, Libya, Tunisia, and Côte d'Ivoire. The aim is to address critical oral health challenges facing children in Africa. Its mission is to generate and share high-quality, evidence-based research that informs policy, strengthens health systems, and improves pediatric oral health outcomes. The vision is to establish a robust, interconnected African research network that promotes innovation, capacity building, and collaboration. Current key areas of focus include molar incisor hypomineralization (MIH), early childhood caries (ECC), and silver diamine fluoride (SDF) interventions. These African-led data initiatives generate contextually grounded insights that are critical for developing effective oral health interventions. By conducting studies based on primary data collection and secondary data analysis, these efforts create a robust evidence base to inform both regional and national policy development. Moreover, the emergence and strengthening of African research networks play pivotal roles in fostering shared capacity, supporting collaboration, and ensuring the sustainability of research infrastructure across the continent.

2. Institution-Building: The Intercountry Centre for Oral Health

Africa faces a critical shortage of oral health professionals, housing 17% of the global population but only 1% of the global oral health workforce.^{4, 26, 27} This deficit is further compounded by the maldistribution of providers, with a concentration in urban centers, and a persistent brain drain that depletes local expertise.¹ At the policy level, most African countries lack current, locally appropriate, standalone oral health policies and have yet to fully integrate oral health into universal health coverage (UHC) or noncommunicable disease (NCD) frameworks.¹ These systemic gaps underscore the urgent need for strong, well-coordinated institutions capable of driving sustainable, continent-wide, relevant oral health agendas.

In response to the WHO's call for strengthened oral health systems in low- and middle-income countries,¹² the Intercountry Centre for Oral Health (ICOH) for Africa was established under the auspices of the Federal Ministry of Health (FMoH), Nigeria. ICOH's mission is to provide a conducive environment for research, training, and demonstrations of oral health and related conditions.²⁸ This arises from the understanding that institutional capacity is the bedrock of health sector transformation.²⁹

A strategic partnership between the FMoH, ICOH, and the Association of Nigerian Dental Deans (ANDD) advances oral health workforce policy integration in Nigeria, directly aligning with the WHO global oral health action plan target 3.1, which focuses on workforce models for oral health.³⁰ In this model, the FMoH provides policy direction, ICOH translates policies into action through research and outreach, including advocacy for oral health inclusion in national workforce policies, and the ANDD supports academic development and curriculum reforms to reflect national workforce goals. This coordinated approach operationalizes workforce policy alignment, reflecting global best practices in health system strengthening.³¹ Through partnerships with academia and primary healthcare networks, ICOH is championing an integrative model for oral health system development.

In addition to its role in national coordination, ICOH also recognizes the critical importance of regional collaboration. A major barrier to oral health progress in Africa is the absence of a robust, continent-wide coordination mechanism for research and development. This gap undermines cross-border collaboration, hinders data harmonization, and limits efforts to align training curricula across institutions. To address this, ICOH advocates for the consolidation of AFRONE as a platform to facilitate coordinated research and policy engagement across the continent. The Centre is also proposing the development of a continental oral health data repository to strengthen surveillance and inform policy planning. To increase local capacity and reduce professional migration, ICOH supports joint postgraduate programs and is investing in innovation hubs that focus on emerging fields such as artificial intelligence, teledentistry, and digital diagnostics, thereby positioning African oral health systems for a more connected and resilient future. However, scaling such initiatives continent-wide requires sustainable funding streams, underscoring the need for national tax reforms dedicated to health innovation.

3. Field-Based Evidence: Lessons from Caries Prevention Trials in Egypt

Egypt is a major contributor to oral health research in Africa, with many oral health studies led by researchers from Egyptian institutions.³² However, most clinical trials are small-scale phase 2 studies conducted in academic settings, as these are often thesis projects by graduate students working independently with limited funding and short follow-up periods. In response to these limitations, a team at Alexandria University developed a structured, community-oriented system for field trials designed to generate real-world evidence and address broader public health challenges. Unlike controlled clinical trials, these field trials assess the effectiveness of preventive strategies in community settings, requiring both advanced logistical coordination and local engagement.³³ The system emphasized researcher capacity building through calibration exercises and structured team roles, dividing personnel into clinical examiners, trained interviewers using digital data tools, and logistics managers. This organized, multiteam approach ensured high-quality data collection and smooth field operations while strengthening the research capacity of early-career scholars.

Sustaining this field trial model required innovative funding and strong community partnerships. Initially, researchers pooled personal resources to cover expenses such as transportation, protective equipment, and intervention materials, with costs significantly higher than those of smaller clinical trials. A turning point occurred when the team secured external funding through Egypt's Science and Technology Development Fund (STDF), easing the financial burden and enabling more consistent research implementation. Equally critical was engagement with local community partners. By building trust through early household surveys and partnering with rural nurseries run by local charities, the team ensured participant retention and smooth field operations, demonstrating the essential role of community collaboration in successful field research.

Within three years, the field trial system successfully produced and published three studies on fluoride regimens for ECC, gaining visibility in high-impact journals and at international conferences.³⁴⁻³⁹ This success was driven by several enabling factors, including a critical mass of dental public health researchers at various career stages, which allowed for effective task distribution and mentorship. The extended duration of PhD programs also aligned well with the long-term follow-up needs of field trials. Financial incentives also played a key role, starting with the STDF grant and bolstered by Egypt's national open-access publishing agreement with Springer Nature⁴⁰ and Alexandria University's tiered publication rewards. Together, these elements created a sustainable and replicable model for high-quality, community-based oral health research. This sustainable field trial model provides valuable implementation evidence directly relevant to developing national guidance on effective community fluoride interventions, addressing a critical policy gap across the continent.

4. Aligning with the WHO Global and Regional Oral Health Action Plan

These oral health initiatives and research efforts align closely with the six strategic objectives of the WHO Global Strategy on Oral Health (2022–2030).⁴¹ These objectives provide a comprehensive framework for strengthening oral health systems globally. Table 1 shows how African-led initiatives directly contribute to each of these strategic priorities through data generation, workforce development, institutional innovation, and community-based prevention efforts.

Table 1: Alignment of African-Led Oral Health Initiatives with WHO Strategic Objectives.⁴¹

WHO Strategic Objective	Contribution of African-Led Initiatives
Objective 1: Oral health governance	African researchers and institutions (e.g., ICOH) are taking leadership roles in setting research priorities, forging partnerships between government, academia, and NGOs, and advocating for stronger national policies and dedicated funding streams.
Objective 2: Oral health promotion and oral disease prevention	Field trials, epidemiological studies, and community-based interventions (e.g., fluoride prevention studies in Egypt, ECC prevalence studies) provide information on oral disease risk factors and scalable models for promoting oral health and preventing disease through locally tailored strategies. ^{34, 35}
Objective 3: Health workforce	Projects such as OHI emphasize capacity building through early-career researcher training, task-sharing models, and interdisciplinary research teams that include both dental and non-dental professionals ^{42, 43} to address human resource gaps.
Objective 4: Oral health information systems	Ongoing systematic reviews by OHI and regional studies by AFRONE members are helping to fill "data deserts," while ICOH's push for a continental oral health data repository could strengthen surveillance and policy planning capacity.
Objective 5: Oral health research agendas	African-led networks (e.g., AFRONE, AfriCRAN) are developing continent-specific research agendas, conducting implementation science, and generating evidence directly responsive to regional public health needs.

These African-led initiatives are also advancing policy integration in line with the milestone for Priority Area 1 of the WHO Regional Oral Health Framework, which targets 60% of Member States having national oral health policies with dedicated budgets and staff by 2028.⁴⁴ By producing context-specific, policy-relevant data and fostering multisectoral partnerships—as demonstrated by ICOH's alignment with Actions 29 and 39—these efforts provide the evidence base to demand and operationalize policy goals at the national level.

Egypt's structured community-based fluoride trials offer a concrete implementation model for the WHO Regional Framework Action 3.⁴⁴ These trials generated robust, context-specific real-world evidence on the effectiveness of different fluoride regimens (including SDF) in arresting ECC within African community settings.³⁴⁻³⁷ Currently, only four African countries have such guidelines, despite a regional oral disease prevalence of 42%.⁴⁵

AFRONE's research outcomes and advocacy can further support Action 31 and Priority Area 4 of the WHO Regional Framework, particularly in championing the inclusion of effective agents such as SDF on the essential medicine lists of African Union member states (44). Moreover, AFRONE's agenda-setting work may accelerate progress toward the 2030 target of 50% of countries having national oral health research agendas focused on public health and population-based strategies, provided that its findings are effectively disseminated for policy adoption.⁴⁴

While African-led initiatives align strongly with the WHO oral health strategy, their long-term impact and ability to achieve the WHO's goals depend on bold political action at national and regional levels in three key areas. First, sustainable financing through innovative tax reforms—such as levies on tobacco, sugar-sweetened beverages, alcohol, or luxury goods—is essential to generate dedicated revenue for oral health services, workforce expansion, and research, directly addressing chronic underfunding. However, care must be taken to prevent these tax reforms from unduly burdening vulnerable populations, despite their reported advantages in high- and middle-income countries⁴⁶ as this could increase their risk for oral health inequities.⁴⁷

Second, significant workforce investment is needed to close the glaring human resource gap. This means scaling up training programs, improving retention through better incentives, and institutionalizing task sharing with non-dental health workers.⁴²⁻⁴³ aligning with WHO Objective 3 (Workforce) and Priority Area 4.^{41,44} Third, oral health must be fully integrated into national primary healthcare (PHC) systems and UHC benefit packages. This requires explicit ministerial mandates, updated PHC guidelines, supply chain alignment for essential products such as SDF, and clear PHC budget lines. Table 2 highlights how these African initiatives address the goals of the WHO Regional Oral Health Framework.

Table 2: Alignment of African-Led Oral Health Initiatives with WHO Regional Oral Health Framework Priorities

Initiative	Contribution to Universal Health Coverage	Contribution to Health Systems Resilience
African Research Networks (AOPR C, AfriCRAN, AFRONE, OHI, Africa Unite Oral Health Research Group)	Generate nationally representative data to inform UHC benefit package design for oral health; support integration of oral health into primary care through evidence for task-sharing models; advocate for essential medicine inclusion (e.g., SDF) to reduce out-of-pocket costs.	Fill critical "data deserts" to enable evidence-based crisis response; build sustainable cross-border research capacity for rapid knowledge exchange; develop context-specific prevention strategies (e.g., fluoride guidelines) adaptable to emergencies.
Institution-Building (ICOH, Nigeria)	Coordinate policy alignment between FMoH, dental schools, and primary care networks to integrate oral health into UHC; expand workforce via joint postgraduate programs and non-dental professional training; scale teledentistry and AI innovations to reach rural populations.	Establish continental oral health data repository for real-time surveillance; create regional coordination mechanism (via AFRONE) to harmonize research and development during crises; invest in innovation hubs for rapid prototyping of diagnostics and delivery models.
Field-Based Evidence (Egypt's fluoride trials)	Validate low-cost, community-delivered prevention (e.g., fluoride varnish) for scalable primary care integration; embed oral health in maternal and child health programs to reach vulnerable groups; reduce financial barriers through charity partnerships and publicly funded interventions.	Develop adaptable field research protocols for sustained service delivery in resource-constrained settings; strengthen community trust and local partnerships for crisis continuity; train interdisciplinary teams (clinicians, logisticians, community workers) for surge capacity.

At the heart of this progress is the recognition that data are foundational. Reliable, country-specific evidence not only reveals the scale of oral health disparities but also serves as the backbone for targeted interventions, policy development, and health system integration. However, the challenges remain substantial. Underfunded systems, limited research infrastructure, workforce shortages, and the absence of coordinated regional mechanisms continue to impede progress. Bridging these gaps will require intentional investment in institutional capacity, policy alignment, and long-term funding strategies that can support strategic action in three critical areas: advancing implementation science to translate research into practice; embedding oral health into national health policies and universal coverage schemes; and scaling community-based preventive models that center equity and inclusion. Strengthening partnerships with community gatekeepers and grassroots organizations, promoting multicenter collaboration, and developing a resilient, interdisciplinary workforce will be essential steps toward this vision.

CONCLUSION

The growing momentum in African-led oral health research reflects a critical shift toward self-determination, contextual relevance, and sustainable impact. Across the continent, researchers and institutions are demonstrating that when local experts set the research agenda, collaborate across borders, and anchor their work in the lived realities of African communities, the outcomes can be meaningful and scalable. This collaborative model exemplifies how strengthening partnerships with community gatekeepers and grassroots organizations, promoting multicenter collaboration, and advancing workforce policy reforms will be essential to transform the oral health profile of Africa.

The WHO Global Oral Health Strategy 2022–2030 presents an urgent and timely opportunity to reframe oral health as a core component of Africa's broader health and development agenda. The continent has the capacity, expertise, and momentum demonstrated by its researchers, institutions, and communities. What is critically needed now is the unwavering political will and collective resolve to enact concrete measures. Africa is not the weak link in global oral health; it is an emerging, reliable, and committed leader demanding the policy and fiscal environment necessary to realize its potential. The time for governments, regional bodies, and global partners to invest, collaborate, and act on these priorities is now.

LIMITATIONS

It is important to acknowledge the limitations of this perspective. This article is not a systematic review and does not provide an exhaustive catalog of all oral health initiatives in Africa. The programs highlighted were selected as illustrative examples based on the authors' collective experiences and the themes from the 2025 IADR symposium. Therefore, other impactful initiatives across the continent may not have been included. The synthesis is qualitative, intended to highlight emerging models and strategic alignments rather than to perform a quantitative comparison of outcomes. Where personal communications informed interpretation, this is indicated in-text. Despite these limitations, this perspective provides a valuable synthesis of the current momentum and future directions for African-led oral health research and policy.

LIST OF ABBREVIATIONS

Abbreviation	Full Form
IADR	International Association for Dental Research
ECC	Early childhood caries
WHO	World Health Organization
AOPRC	African Oral Pathology Research Consortium
IAOP	International Association of Oral Pathologists
AfriCRAN	African Craniofacial Anomalies Research Network
AFRONE	Africa Oral Health Network
UHC	Universal Health Coverage
OHI	Oral Health Initiative
ECRs	Early career researchers
MIH	Molar incisor hypomineralization
SDF	Silver diamine fluoride
ICOH	Intercountry Centre for Oral Health
FMoH	Federal Ministry of Health
ANDD	Association of Nigerian Dental Deans
STDF	Science and Technology Development Fund (Egypt)

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