ORIGINAL ARTICLE

Building Sustainable Dental Education in a Resource-Challenged Setting: A Case Study of the Gambian Undergraduate Model

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ABSTRACT

Background: The Gambia faces a severe deficit of oral health professionals leading to high unmet treatment needs. Previously heavily reliant on expatriates, the country lacked formal undergraduate dental training.

Aim: This case study describes the development, implementation, and initial outcomes of the first homegrown undergraduate dental programme at the University of The Gambia (UTG). Established in 2018, the six-year Bachelor of Dental Surgery programme utilized an inter-ministerial partnership and technical assistance from Nigerian institutions. The curriculum emphasizes early clinical shadowing, community outreach, and independent clinical practice, supported by international visiting faculty and existing teaching hospital facilities.

Result: Despite significant financial constraints, infrastructure limitations, and faculty shortages, pioneer students successfully progressed through clinical postings and examinations, securing partial accreditation from the Medical and Dental Council of The Gambia. The homegrown model proved more cost-effective and culturally relevant compared to traditional overseas scholarships. Conclusion: The UTG model demonstrates that sustainable dental education is achievable in resource-challenged settings through strategic partnerships. It offers a replicable framework for similar African contexts. Sustained investment, local faculty development, and robust retention strategies are crucial to prevent brain drain, thereby ensuring universal oral health coverage for the Gambian population.

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INTRODUCTION

Often in Africa, a human resource deficit in oral health exists[1,2], necessitating the strengthening of educational and health policy systems[3]. The University of The Gambia (UTG) is an emerging university that serves as the foremost government-owned institution for undergraduate and postgraduate training in The Gambia[4]. Before this time, no formal undergraduate program for training dental manpower existed in the country[5], despite the overwhelming evidence of several oral diseases[6–9]. These include, but are not limited to, dental caries and its sequelae, periodontal diseases, maxillofacial fractures, orofacial clefts, jaw tumours, and orofacial infections[4–10].

The dental program of the University of The Gambia was established in 2018 to enable the country to train indigenous young Gambians to meet the challenges of low oral health coverage in the country[11]. The successful management of these orofacial conditions requires specialized professional training[12]. Thus, the dental health care needs of a population of about two million people were only catered for by the periodic availability of a handful of expatriate dentists[5], including dental professionals serving in the Technical Aids Corps program from sister nations[13,14]. Also, the available dentist-to-population ratio in The Gambia is estimated to be about one to 200,000, suggesting that the majority of the Gambian population may never see a dentist in their lifetime[5,10].

This shortage in dental human resources has led to the field being largely occupied by untrained personnel and an uneven spread of the few dentists in public service, as well as those in private dental facilities in the country[5]. This has resulted in a high index of unmet treatment needs[5,15], and also complications after treatment by unqualified practitioners, which often results in mortality[16]. The need to change this narrative justified an innovative approach, i.e., the introduction of the Bachelor of Dental Surgery program to the School of Medicine and Allied Health Sciences of the University of The Gambia[11]. Therefore, the objective of this article is to describe the development, implementation, and initial outcomes of the first homegrown undergraduate dental program in The Gambia.

The Gambian model: program development

The institutional framework for the program was a partnership between the Ministry of Higher Education, Research, Science and Technology and the Ministry of Health. It was domiciled in the School of Medicine and Allied Health Sciences (SMAHS), University of The Gambia (UTG). Also, the existing dental clinic located at the Edward Francis Small Teaching Hospital was used for clinical training, pending the completion of a new dental school building that is undergoing construction[17]. Subsequently, facilitators for the program were appointed by the University in 2018, and technical assistance was sought from sister institutions in the sub-region. Subsequently, a Visitor was appointed by the university to conduct a scoping visit to the SMAHS in August 2019. Following this, memoranda of understanding were signed with sister dental institutions in Nigeria, while technical assistance was obtained from the Nigerian government to provide teaching and non-teaching staff, as well as technical staff for the proposed dental program[14]. Thus, the first set of students was admitted into the dental program in September 2019.

Dental education, vision, philosophy and curriculum learning objectives of the UTG dental program

The vision of the newly established BDS program was to train globally relevant dental professionals through a world-class dentistry program with a focus on attitude, academic and clinical excellence, tailored towards promoting excellent orofacial health care for the populace11. It is a six-year homegrown course designed in line with existing curricula in the sub-region but directed towards addressing the immediate oral health needs of the populace[2,18].

The philosophy behind the training was to ensure the establishment of a scientific foundation for understanding the principles of dental practice[11]. At the end of the training, the University of The Gambia dental school graduate would have acquired adequate clinical competence and skills, knowledge, and the right attitude that would enable graduates to perform their roles as a general dental practitioner in The Gambia and abroad, as

well as be proficient enough to pursue speciality training or postgraduate training and conduct basic oral health research[11].

Highlights of the training included exposing the students to early clinical shadowing in the 2nd year of pre-clinical training and during the pre-clinical dentistry posting19,20. This enhanced their understanding of basic concepts that were being taught (e.g., use of impression materials, tooth restoration materials, clinical correlations of selected cases of orofacial clefts, facial nerve paralysis, trigeminal neuralgia, etc.) and played a vital part in shaping their interactive skills with allied dental staff, as well as improving their perspective of patient-centerd care[19,20].

Furthermore, community experience in the program produced substantial gains; the trainees embarked on oral health awareness outreaches to schools and communities, reaching numerous individuals. Other than creating oral health awareness, the outreaches conducted during introductory clinical postings exposed the students to a plethora of dental diseases and conditions, a broader spectrum than would be typically encountered in the clinic. This enabled them to develop the affective domain of their

Table 1: UTG Bachelor of Dental Surgery program Summary Design

2nd YEAR	3rd YEAR	4th YEAR	5th YEAR	6th YEAR
1st Semester Human Anatomy I - Gross Anatomy - Histology - Embryology Physiology I Biochemistry I Community Medicine I 2nd Semester Human Anatomy II - Gross Anatomy - Histology - Embryology Physiology II Biochemistry II Community Medicine II	1st Semester Human Anatomy III Gross Anatomy Histology Embryology Physiology III Biochemistry III Community Medicine III Part I Professional Examinations in Anatomy, Biochemistry and Physiology 2nd Semester Introductory Clinical Course Introductory Lab Med & Pharmacology Pre-Clinical Dentistry I -Op Tech/Pros/SDM -Oral Biology Lab Medicine I & Pharmacology 1	I st Semester Medicine I Surgery I Paediatrics I 2nd Semester Pre-Clinical Dentistry II -Op Tech/Pros/SDM -Oral Biology BDS Part IIA Examination in Op Tech/Pros/SDM -Oral Biology Lab Medicine II Pharmacology II BDS Part IIB Professional Examinations Lab Medicine & Pharmacology	I st Semester Introductory Clinical Dentistry (LA in Dentistry) and Introductory Community Dentistry Posting Oral & Maxillofacial Surgery Oral Diagnosis/ Pathology /Medicine/Radiology 2nd Semester (24 weeks) Oral & Maxillofacial Surgery Oral Diagnosis/ Pathology /Medicine/Radiology BDS Part III Professional Examination in OMS & OD Paediatric Dentistry I Community Dentistry. Rural Postings Elective Posting	1st Semester Introduction to Restorative Dentistry Surgery III Specialities: Orthopaedics, ENT (ORL), Anaesthesia, Ophthalmology Introduction to Medical Entrepreneurship, Bioinformatics and Fundamentals of Research Restorative Dentistry Paediatric Dentistry II 2nd Semester Periodontology Orthodontics Community Dentistry Project Presentation Advanced Restorative Posting Part IV Final Professional Examinations in Restorative Dentistry Periodontology and Community Dentistry Child Oral Health

learning[21,22] before treating patients in the clinic, as well as helped them to understand the specific oral health needs of the communities and the basics of oral health research[23–25]. The direct result of this training curriculum ensures that a broader range of skills and treatment options will be delivered to the patients, which adds value to the mission of dental schools[26,27].

Teaching, learning and clinical activities

The emphasis of the training was to move beyond producing competent students towards developing capable clinicians[11]. The inclusive training and evaluation methods employed in this program were chosen to change the oral health outcomes in The Gambia, and to improve the standard of oral health care delivery for individuals and the wider public, in the first instance, and ultimately global oral health outcomes[11].

In the final year, students were assigned full-care patients, which afforded an in-depth foundation for modern training[28]. Comprehensive patient care changed the focus of instruction from managing isolated teeth to all-inclusive handling of the patient[28]. It ensures graduates are capable, empathetic, and proficient in addressing complex, long-term oral health needs[27,29]. These designated preparations were services essential to being a pioneer and foundation dental practitioner immediately after graduation[28,29]. This level marked the transition from supervised dental students to semi-independent practitioners[28,29].

Postings

This was designed to meet the immediate needs of the country in view of the high demand for quality care due to long years of nonexistent preventive and restorative oral care. The first group of trainers in oral and maxillofacial surgery, oral diagnosis and conservative dentistry arrived from 2019 to 2021 before the commencement of clinical dental training. The pioneer set wrote pre-operative dentistry and oral biology examinations in July 2022, while their clinical dental postings started in September 2023 with introductory postings in community dentistry and oral & maxillofacial surgery, where the students were introduced to the fundamentals of preventive dentistry and the administration of local anaesthetics. This was followed by postings in oral and maxillofacial surgery as well as oral diagnostic sciences, which culminated in the BDS Part III Professional Examination in February 2025.

A consultant in community dentistry joined the academic team in August 2024, and the final phase of training in community dentistry & periodontology, restorative dentistry and child dental health led to the Final BDS Part IV Professional Examinations in October/November 2025. Their training was complemented by international visiting faculty who, after giving online lectures, were physically present in The Gambia for clinical demonstration sessions with the students in the following specialities: introduction to community dentistry, periodontology, prosthetics, paediatric dentistry and orthodontics.

In December 2025, an assessment of the dental program was carried out by a visiting accreditation team of experts from the sub-region, at the invitation of the Medical and Dental Council of The Gambia. The team interacted with principal officers of the institution as well as faculty, students and relevant support staff. They also observed teaching and learning activities, conducted a facility tour and carried out a desk analysis of documentation. The major findings of the accreditation visit were the need for accurate documentation; increased funding from relevant agencies; expansion of clinical and laboratory services; recruitment of faculty; and periodic review of the curriculum to include modern trends in dentistry, including artificial intelligence (AI), digital dentistry and robotic dentistry. Subsequently, a partial accreditation for two years was recommended and the first set of home-grown dental graduates for The Gambia were inducted into the profession in March 2026[30] .

Challenges

Establishing a dental school in The Gambia encountered significant challenges due to a dearth of qualified personnel available to teach. Also, the high financial investment in infrastructure and equipment was limited, and reliance often had to be on external partners like the World Bank's Gambia Essential Health Services Strengthening Project[31] or limited government budgets.

Similarly, oral health is often not prioritised, leading to limited government funding compared to other medical specialities, which restricts the development of dental training institutions[32].

CONCLUSION AND RECOMMENDATIONS

The establishment of the first dental school in The Gambia since independence has provided an opportunity to fast-track dental education and reverse the neglect in oral health care. The University of The Gambia, along with its partners and collaborators, have successfully led the way, despite enormous resource challenges, and provided noteworthy changes in the field of education. The long-term sustainability of this model is both desirable and achievable and should be actively pursued, eventually leading to less reliance on external aid. The "homegrown" approach would appear better than overseas scholarships due to the cultural relevance and cost-effectiveness. It is hoped that more investments and partnerships in local dental education would be initiated and sustained to achieve Universal Health Coverage. Also, there is a need for sustainable human resource retention. Therefore, efforts should be made to prevent "brain drain" by offering dental interns and dentists incentives, as well as to encourage them to pursue postgraduate specialisation training. This is possible because accreditation for both undergraduate and postgraduate training has been obtained from relevant bodies. In view of the dearth of dental schools in some parts of Africa, this model, used in The Gambia, can be successfully replicated and adopted for dental training.

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