Enhancing Oral Health Care Access for School Children: A Perspective

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ABSTRACT

Inadequate access to oral health services for school children remains a pervasive issue in Nigeria. According to a study, a mere 20% of enrolled students have availed themselves of dental visits following referrals from dentists. Various barriers, such as geographical location, socioeconomic status, lack of awareness about the importance of oral health, and fear of treatment, contribute to this low utilization rate. The resulting problem, thus, exacerbates social class disparities within the country. To address this pressing concern, we conducted an academic review encompassing peer-reviewed literature, policy documents, and other relevant materials. This review underscored three potential policy alternatives: bolstering educational campaigns on oral health, implementing mobile dental clinics, and establishing on-site school-based dental clinics—an innovative approach in the Nigerian context. Additionally, we will delve into insights from a successful case study of a model on-site school oral healthcare clinic in Ile-Ife. Recognizing that each approach comes with its own set of advantages and disadvantages, we propose a concise School Oral Health Policy. This policy aims to establish a framework for incorporating these remedies efficiently, providing a comprehensive solution to the issue of insufficient availability of dental healthcare services among Nigerian school pupils.

INTRODUCTION

Access to oral healthcare for children in Nigeria is inadequate, with only a small percentage seeking dental care.[1] The primary school enrollment in the country is estimated at approximately 66%, comprising 27 million students in government schools and 5.4 million in private schools.[2] Limited reports on access levels for this population group indicate that less than one-fifth attended dental appointments, with almost half visiting due to dentist referrals.[1] The unavailability of health infrastructure and workers, geographical location, as well as socioeconomic circumstances creates barriers to accessing quality healthcare globally[3]. As a result, disadvantaged populations face greater challenges accessing oral health facilities within countries contributing to disparities between different areas or groups within countries, negatively affecting access for individuals from impoverished backgrounds.[3-5]

Onyejaka et al.[1] studied the barriers to dental service utilization among children aged 8 to 11 years in Enugu, Nigeria, and common obstacles observed included lack of awareness about the oral health importance, fear of dental treatment, high cost, and long waiting times at dental clinics. The study also found that children from low socio-economic backgrounds and single-parent families utilized oral healthcare services less frequently.[1] Other studies have identified lack of perceived need for dental services as an additional barrier to dental service utilization.[6-8]

Inadequate oral health care has been reported to have consequences on school children's overall well-being, academic performance and long-term oral health

outcomes.[9,10] Those with poor oral health are found to be three times more likely to be absent from school because of dental pain, affecting their academic performance.[9,10] Untreated dental problems and unmanaged risk factors for oral disease in a milieu of socio-economic and psychosocial factors in early stages of the life course also influence oral health trajectory in adulthood.[11] According to Listl et al.[12], the economic and social costs associated with oral diseases are significant, including both intangible, direct and indirect costs globally. Families in Nigeria may experience financial insecurity and may be pushed into poverty through the heavy out-of-pocket expenses required for dental treatments for their wards and children. Furthermore, families experiencing financial insecurity may be pushed into poverty through the heavy out-of-pocket expenses required for dental treatments for their wards and children.

While Nigeria has a National School Health Policy governing health programs in schools,[13] there is currently no clear policy on improving the oral health of school children. To address this gap and ensure equitable access to dental care for students, we suggest three practical solutions: i) Strengthening school oral health education programs, ii) Improving oral health care accessibility for school children via mobile dental clinics, and iii) Co-Locating a School Oral Health Clinic (SOHC) in a school's premise. Before recommending these options to the Federal Government of Nigeria, we evaluated their advantages and disadvantages.

STRENGTHENING SCHOOL ORAL HEALTH EDUCATION PROGRAMS

The impact of a 4-year school oral health education program in Ile-Ife Nigeria resulted in a reduced need for curative dental treatments, indicating an enhanced acceptance of oral health education messages.[14] In developing this program, the researchers recognized the need for an initial community-based education initiative. This approach involved visits to antenatal clinics to provide oral health education dispelling myths and misconceptions. Religious centers were also engaged to deliver oral health talks targeting parents, and a 30-minute curriculum was developed to facilitate public discussions on oral health. The school oral health education curriculum of the American Association of Pediatric dentists served as the basis for developing age/class-specific oral health education for pupils in classes one to six in six schools.[14] Edomwonyi et al.[15], emphasized the involvement of teachers in delivering oral health education messages to pupils. The research demonstrated the effectiveness of trained teachers in improving pupil's oral health knowledge, comparable to dentists in effectiveness in delivering OHE. Likewise, Ibiyemi et al.[16] advocated for the use of Oral Hygiene Education Songs as tools to advance oral health education in schools, especially among children and adolescents in underserved communities.

The literature reports on the effectiveness of school oral health education programs and promotional activities in reducing the burden of oral diseases, and improving oral health knowledge, attitude and behavior.[17-19] Reports may not explicitly address increased access to oral health care from these programs, nevertheless, they underscore the potential for an enhanced access to oral health care among school children. The National oral health policy outlines strategies to achieve optimal oral health in at least 50% of the population and recommends the Federal Ministry Education to incorporate oral health education and promotion activities into the school curriculum.[20] This will potentially address disparities in access to oral health care for children in schools. With the recent transition in the Federal government, the Nigerian Dental Association has auspiciously urged the President to ensure the implementation of this policy.[21] While expectations are high and uncertain, full implementation of the policy holds the promise of transforming the oral health landscape among school children.

IMPROVING ORAL HEALTH CARE ACCESSIBILITY FOR SCHOOL CHILDREN VIA MOBILE DENTAL CLINICS

The use of Mobile Dental Clinics (MDC) traces its origins back to 1924, targeting schools, rural communities, physically challenged individuals, industries, and armed forces personnel in various countries.[22] MDCs serve to deliver both educational and clinical oral health services, addressing geographical, financial, cultural, and perceptual barriers to access. The dental personnel at MDCs encompass dental and dental auxiliary students, oral

hygienists, therapists, and dentists. These clinics may take the form of specially modified trucks, dental caravans, pantechnicons, or dental equipment transported by air or road. In Nigeria, Mobile Dental Clinics have successfully provided oral health education and curative services to targeted rural communities.[21-24]

MDCs follow a public health approach rooted in the principles of primary oral health care, making oral health care accessible to target populations at an affordable cost. To address social barriers to oral health care among school children, such as lack of parental involvement or single-parent households, as well as cultural and environmental factors, MDCs serve as an adjunct to oral health service delivery. They establish crucial contacts with underserved populations, thus mitigating oral health needs. For more than 25 years, the University of Witwatersrand has operated a mobile dental unit increasing access to oral health care to both children and adults.[25] The dental manpower operating this unit include a driver, dental therapist, dental assistant and dentist. And they provide basic oral health services including oral health education and oral health screening, fissure sealants, fluoride applications, simple restorations, and extractions.[22] The MDU has been an effective adjunct to oral health service delivery. In a cost analysis of the program, Molete et. al[25], reported that although the major drivers for its considerable expenditure were incurred through personnel costs, 9.1% of the costs, were saved when non-dentists led the team.

CO-LOCATING A SCHOOL ORAL HEALTH CLINIC (SOHC) IN A SCHOOL PREMISE

According to Lynn Gargano's ecological model and review[26], school-based dental programs contribute to enhanced healthcare access, improved general well-being, and increased skill-based health Education.[26] School settings are identified as the most effective platforms for delivering both prophylactic and curative dental services to children. Reports by Larsen et al.[27], Carpino et al.[28], Amalia et al.[29], and Culler et al. [30] support the efficacy of school-based dental services. In Nigeria, the Department of Preventive and Community Dentistry at Obafemi Awolowo University has pioneered this intervention by establishing a dental clinic within the premises of a public primary school in Ile-Ife, Osun state. Operational since January 2021, the School Oral Health Clinic (SOHC) exhibits notable features.

Highlights of the School Oral Clinic in Ile-Ife:

Services: The clinic consistently delivers oral health education on both micro and macro levels. Preventive services, including topical fluoride application, scaling and polishing, atraumatic restorative treatments, dental extractions, splinting of mobile teeth, and pain relief with prescribed medications, are routinely provided. Treatment costs are 50% cheaper than those at the Teaching Hospital, and bureaucratic bottlenecks associated with patient registration and appointment scheduling are eliminated.

Staffing: The SOHC is staffed by dentists, a dental surgery assistant, a dental therapist, and dental students from the Department of Preventive and Community Dentistry. It operates as one of the community's dentistry intervention outposts and is open once a week.

Self-Sustainability: The clinic is self-sustained, with funds obtained from patient payments primarily used to purchase consumables and materials. Occasionally, these funds are supplemented by supplies from the Department.

The presence of a School Clinic raises awareness about oral health and general health among school children, teachers, parents, and members of the community. In reviewing the impact of a school based dental clinic Carpino et al.[28] reported a notable reduction in access barriers to oral health care among the target population, alongside decreased dental decay ($p=0.005$), increased dental restoration ($p<0.001$), and fewer treatment urgency referrals ($p=0.001$) among 293 participants. This success was attributed to the involvement of staffed nurses in the school health clinic and a partnership between the University of Missouri-Kansas City School of Dentistry school and a preparatory school in the city. Molete et al.[31] evaluated school oral health program implementation in South African schools against policy guidelines. Despite achieving some successes, the programs encountered obstacles such as poor infrastructure, funding shortages, and inadequate stakeholder support.

We identified the demerits and merits of the school oral health clinic strategy for improving access to oral health, presented in Table 1 in comparison with other options for improving access to oral care. To determine the community impact of the school oral health clinic in Ile-Ife, a program evaluation focusing on improved oral health outcomes and access will be needed.

Table 1. Comparison of Policy Options to Improve Access to Oral Health Care Among School Children

Policy option	Strength	Weakness
Strengthening Oral Health Education in Schools to improve access to oral health care	• By leveraging established school health programs to disseminate oral health information, a target population is reached more efficiently. • Cost-effective strategy: demands minimal financial investments since new healthcare infrastructure do not need to be built. • Embracing a common risk factor approach facilitates the public health-oriented management of oral health, and the addressing of underlying factors contributing to poor oral health. • Non-dental personnel, including teachers, can undergo training to provide oral health education and make appropriate referrals, thus expanding the dental manpower. • Fosters collaboration between the education and health sectors leading to more coordinated efforts to improve oral health outcomes.	• This option may not enhance access to oral care alone but will require complementary oral health promotion activities to improve oral health care accessibility.
Utilizing Mobile Dental Clinic to promote access to oral health care	• Can provide cost-effective and high-quality oral health services to multiple schools within a community. • Offers flexibility in service delivery, addressing the shortcomings of fixed dental clinics, and enhancing acceptability. • Overcomes geographical, cultural, and perceptual limitations in accessing healthcare. • Staffing can also incorporate dental auxiliaries to ensure cost savings from a provider's perspective.	• Significant capital investments are necessary for the initial setup. • Services may be relatively more expensive due to the requirement for a private and public partnership for establishment. • Potential challenges include technical and logistic issues in organizing operations within a community and coordinating visits to rural areas. • The travel times between schools may also reduce the available time for clinical work.
Co-locating a School Oral Health Clinic within a school premise to Promote access to Oral Health Care.	• The presence of a school oral health clinic within a school invariably increases the awareness about oral health. • School children, within the community, parents, and teachers can readily locate and access the school clinic for oral health needs. • Students at the host school can conveniently reach the School Oral Health Clinic (SOHC) for urgent oral treatment. This promotes trust and familiarity for the students, while reducing the barriers of access. • The Basic Package of Oral Health Services, encompassing dental prophylaxis and oral health education, affordable fluoride treatment, atraumatic restorative treatment and oral urgent treatment can be delivered at an affordable cost. • This setup eliminates bureaucratic delays often encountered in teaching hospitals, thereby fostering patient accommodation.	• It necessitates a significant initial capital investment for establishment. This will be needed to demonstrate long-term commitment to oral health care delivery and a dedication to reducing oral health disparities. • It requires a dedicated infrastructure and an allocated space within the school premises. This implies additional maintenance costs would be factored into the project. • It operates on a fixed model, lacking the flexibility seen in mobile dental clinics serving multiple schools. Thus, may not effectively respond to changing population oral health needs especially where other school children may not be able to access to the clinic. • Given, constrains in financial resources, allocating funds to compensate the discounted fees at the clinic would be a major challenge in a setting where the budget is constrained. • There is a financial vulnerability where additional grants and aids are not ensured to promote its sustainability.

CONCLUSION AND RECOMMENDATION

Improving the accessibility of oral health care services for school children can be achieved by implementing strategic measures such as reinforcing dental education programs, deploying mobile clinics to provide dental services, and establishing oral health clinics within schools. While these approaches present an opportunity to transform access to patient-centered oral healthcare among students, their effective implementation requires a well-structured framework, particularly in the context of Nigeria. To address this need comprehensively, we propose a collaboration between relevant government agencies, including the Ministry of Health and Ministry of Education, along with other pertinent departments. This collaboration aims to establish a School Oral Health Policy with legal validity, garnering government support to enhance oral health conditions in this specific group.

The National School Oral Health Policy should provide clear strategies and directives for integrating oral health education into school curriculums. Additionally, it should emphasize avenues for collaboration with private enterprises to facilitate the establishment of mobile dental facilities nationwide. Lastly, the policy should endorse and sponsor the establishment of dental clinics within government-run primary schools.

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