Advancing oral health policy for mandatory dental screening before admission into public primary and secondary schools in Lagos, Nigeria

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Abstract

Background: The oral health of children is a significant public health issue that considerably affects nutritional intake, growth and development, daily learning activities, sleep pattern, self-esteem, and quality of life. In Nigeria, limited progress has been made in reducing the prevalence and burden of oral health problems such as dental caries, Noma, and oral cancer due to absence of national data, inadequate budgetary allocation, dearth of personnel, poor policy framework/implementation, and challenges of care access. Lagos state has a large, diverse population, hampered by illiteracy and poverty, and school-based dental screening is a strategy that can potentially reduce the prevalence of oral diseases among a vulnerable population in resource-poor settings. This document proposes secondary prevention through screening for a significant proportion of children in Lagos State and will be a veritable source of Data for oral Health planning. Proposed Interventions: A draft policy document is proposed for the Ministry of Health for legislation mandating a low-cost comprehensive oral health examination to screen every child admitted into Primary or Secondary School in any of the State Government-owned Schools in Lagos State. Each child will receive an oral health education leaflet and a duplicated annual dental screening form in addition to all the other requirements he will provide before being cleared for resumption when the academic year commences. The parents of the child will then be expected to present the form at any of the Lagos State-owned General hospitals for dental screening. The children will receive expedited attention and will not be kept waiting unnecessarily before being attended to. Students who have any form of dental disease will however be required to open a dental card at the clinic and have their treatments done as soon as possible. Except the dental treatment is found to be very expensive, the parents would be firmly encouraged to have the treatment done before the academic year commences and the form can be filled and signed by the attending dental practitioner and duly stamped. A duplicate would be retained in a dedicated file in the dental clinic while the main form will be returned to the school. The schools will keep the forms in a dedicated file and at the end of each admission cycle, a report on the oral health status of the children for each school must be submitted to the Ministries of Education and Health. The preferred format for submission should be an excel spreadsheet containing the biodata and the summary of dental findings and treatment provided as applicable for each child. Evaluation: Short and long term evaluation will be done to assess coverage rate, the number of dental diseases identified, number of treatments done, the satisfaction of parents and children with the services while the cost-benefit analysis of the services will be determined using a combination of qualitative and quantitative methods. The results of these analyses will be utilized to justify further government
Position Summary: This policy proposal seeks to develop and institute anticipatory oral health programs for screening and improving oral health outcomes for school-aged children in Lagos State, particularly those with substantial risk for tooth decay due to their indigent background. The prevalence of dental caries was 21.7% in a recent Lagos State-Based school study, which is similar to reports in other parts of the country although it was slightly higher than reported in the most recent statewide survey. Tooth decay is a widespread and significant disease process in the population; thus, it is necessary to include oral health screening in the preadmission process of primary and secondary school students in Lagos state. Providentially, almost all oral health diseases can be prevented or successfully managed if detected at an early stage. Optimum oral health care can thus be maintained through regular dental visits and early interventions to prevent and treat oral conditions. Primary and early secondary prevention of dental diseases will reduce the expenditure incurred on costly restorative and rehabilitative care. Without these regular preventive visits, children will continue to be subjected to therapeutic interventions and emergency treatments. Dental screenings are of utmost importance. They not only determine the health of the child but are a veritable source of data on which planning can be based. School-based oral health programs explore multiple levels of determinants of health care access, and are usually more effective than other interventions that target only one level of care. They may also be more equitable in terms of health and education outcomes, especially for children from poor socioeconomic circumstances.

This proposal hence provides an opportunity for secondary prevention for a significant percentage of children in Lagos State as well a veritable source of Data for oral Health status in Lagos State. This is a policy proposal will be ethically implemented once the necessary approvals are obtained.

Introduction/Purpose of the Policy

Review of conditions that led to the development of this Policy

Oral disease burden

The World Health Organization (WHO) states that oral health is “a state of being free from oral and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, other diseases and disorders that limit an individual’s capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing.” The Global Burden of Disease (GBD) study in 2015 showed that close to 4 billion people around the world have dental conditions, such as untreated dental caries in the deciduous and permanent dentitions, severe periodontal disease, edentulism, and severe tooth loss (having between 1 and 9 remaining teeth). Furthermore, utilizing a methodology outlined by the WHO Commission on Macroeconomics and Health (WHO 2001), the global productivity losses attributed to oral diseases in 2010 was US$138 billion after valuing disability-adjusted life years lost due to oral diseases at the global average per capita GDP (World Bank 2011). The seven oral health conditions accounting for most of the oral disease burden are periodontal diseases, oro-dental trauma, cleft lip and palate, oral cancers, oral manifestations of HIV, Noma, and dental caries. The prevalence of caries in school-age children is most often reported for those 12–15 years old. Available national data on the prevalence of dental caries in children in Nigeria showed that it is as high as 30% and 43% in children aged 12 years and 15 years, respectively. A study conducted in Lagos, Nigeria, reported that the caries prevalence for the population with special health care needs was 33.3%, with a mean dmft score of 0.7 and a mean DMFT score of 0.4. The prevalence of severe early childhood caries (S-ECC) in Nigeria was lowest in Ile-Ife (0.8%) and highest in Lagos state (4.8%), with another study in Lagos reporting a prevalence of 10.9% for S-ECC. Unfortunately, most of these carious lesions remain untreated, with a restorative index of 1% reported in a study conducted in Lagos state.

Impact of oral diseases

The impacts of untreated oral diseases are usually serious and these include incessant pain, oro facial infections, poor quality of life, interrupted schooling, interference with family life, and reduced parental work productivity. They can affect the individual or the whole society, by negatively impacting on students’ academic performance or interfering with adults’ ability to maintain a job or receive promotions. The World Health Organization recognized the societal impact of oral diseases through restricted home activities and loss of millions of school and work hours annually. The National Health Interview Survey projected that 51 million school hours are lost yearly due to dental disease based on retrospective assessment. Furthermore, the estimated cost of treating 6-year-old child with 3 carious teeth is about 20,000 naira, excluding indirect costs in lost earnings, transportation, and lodgings. Oral diseases and conditions afflict individuals all through their lifetimes, causing pain, discomfort, disfigurement, and even death because of their link with other debilitating noncommunicable diseases, or because of delay in identification, treatment, and care. However, these diseases are preventable or can be treated in their early stages.

Oral health inequalities are continually amplified in deprived and vulnerable groups where the vast majority experience the highest
burden of oral diseases.[14] Importantly, children in developing countries are known to suffer disproportionately from the burden of dental diseases. Poor oral health considerably affects children's nutritional intake and subsequently their general health, growth, and development. It is quite common for dental infections to cause osteomyelitis, infection of the floor of the mouth and neck space, cavernous sinus thrombosis, and even death in both children and adults. Moreover, untreated dental decay is thought to be a neglected determinant of failure to thrive.[15] These research outcomes that connect oral health to general health problems afford an opportunity to put oral health in the agenda of health care policies in low-income developing countries.

Barriers to oral health
There are suggestions that irregular dental attendance is largely due to low oral health awareness. However, inequities in oral health are due to several dynamics such as personal socioeconomic, and geographic factors,[16] and even when access to care is not a barrier, individuals do not utilize the oral health care system adequately and most failed to follow well-known dietary and behavioral preventive regimens.[17] In many African countries, availability and accessibility to oral health services is inadequate.[18] This is in addition to limited financial access because the main method of financing oral health care services remains out of pocket payments in the face of high poverty levels.[19,20] Other factors affect the utilization of oral health facilities in Nigeria include cultural beliefs and practices, educational barriers, shortage of dental manpower, lack of awareness of patients about oral health care and oral health problems, and the cost of dental services. Whole population prevention programs in dental caries prevention such as water fluoridation and affordable fluoridated toothpaste are not available in many LMICs. Moreover, dental caries has evolved from being a disease of affluence to that of deprivation on a global scale. The recent increase in consumption of soft drinks and in obesity in many LMICs suggests an upward trend in dental caries in those countries.[21]

Strategies to improve oral health
The main preventive approach in dentistry, which focusses on changing the behavior of high-risk individuals, has not effectively reduced oral health inequalities. A fundamental shift is thus needed from the biomedical/behavioral “downstream” approach, to one addressing the “upstream” underlying social determinants of population oral health.[22] Effective interventions must aim to promote and facilitate long-term sustainable improvements, such as tackling upstream factors, and the environments that cause poor oral health and create inequities. Upstream action includes legislative and regulatory policy at a national or state levels to create a social environment that supports health. Healthy public policies and legislation are essential upstream measures to promote oral health, through legislation to support the implementation of fluoridation programs, healthy diet policy, and the creation of a supportive environment that is conducive to oral health.[23] Oral health of children and adolescents can be promoted through healthy school environment with safe playgrounds and buildings, a tobacco-free and stress-free environment, and the availability of nutritious foods, which can help reduce the risk to oral and general health and promote sustainable healthy lifestyles.[24] One of such interventions is our proposed policy.

Justification of policy
Majority of children and youth attend school and the early identification of health and developmental concerns provides an opportunity for timely intervention, enabling children to achieve optimal developmental and functional health outcomes.[24] Unrecognized disease and postponed care worsen oral and dental problems, leading to pain, discomfort, and sometimes irreversible damage. Delay in timely intervention can result in substantial cost to the health system, government, and the community. School-based oral health programs have the potential to surmount many of the logistical barriers to accessing primary preventive oral health services that inexplicably affect vulnerable populations.[25,26] In addition, schools have the potential to link families to systems of care and to impact the social norms regarding health behaviors.[21] Thus, dental providers may see a downstream benefit from strengthening their relationship with schools and recruiting additional patients into their practice. This policy is relevant to the practice of primary care physicians because a strong link has been observed between oral and general health, with research displaying a correlation between poor oral health and poor general health. Oral diseases also have common risk factors with many chronic systemic diseases such as cardiovascular disease, diabetes mellitus, chronic respiratory diseases, rheumatoid arthritis, and certain types of cancer.[27] Integrating primary oral health care programs into primary care can improve oral health-related outcomes and it also has the potential to combat oral health disparities among vulnerable populations. This will happen through intersectoral collaboration and strengthening of referral systems and also through a family-based approach.[28]

Assessment of needs and resources (situational analysis)
Primary and secondary educational system in Lagos State
In Lagos State, the Organization: State Universal Basic Education Board (SUBEB) coordinates Primary and Secondary School education. The state government has 1001 primary schools, 339 Junior Secondary Schools, 319 Senior Secondary Schools as well as 5 Technical colleges. Presently, Lagos state provides free education to over One Million pupils/students in 1010 primary schools with a population of about 497,318 pupils; and about 564,758 Junior and Senior Secondary Schools pupils as well as Technical and Vocational Schools students.[29] In addition, Lagos makes up one of the largest markets for private basic education services in the world and over 57% of the state's primary and secondary students are enrolled in more than 12,000 private schools. In total, an estimated 1.5 million children go to private primary and junior secondary schools in the state. As such,
approximately 80% of households with children of school age have at least one child in private school.[39]

**Oral health care provision Lagos State**

Lagos state has a very mixed population, where the level of illiteracy and poverty among the population acts as a great hindrance to achieving high levels of adequate oral health experience. Levels of oral health service being delivered in the state include the primary, secondary, and tertiary.

1. **Primary Health care level:** The primary health care level of service for dental delivery has been rudimentary and only two of the facilities offer dental services. The staff complement at these service points are inadequate; thus, training programs have been provided for the medical staff to provide oral health promotion.[31,32]

2. **Secondary Facilities:** They account for the highest proportion of governmental dental staff and services. A total of 14 out of the 26 secondary care hospitals provided dental services and accounted for a patient turnover ranging from 86,682 in 2009 to 82,066 in 2011. Services provided range from dental fillings, scaling and polishing, root extractions, root canal therapy, dentures, orthodontic treatment, and other forms of complex dental surgery. Hospitals that do not provide dental services include Mainland, Ibeju Lekki, Mushin and Alimosho General Hospitals; Lagos Island Maternity centre, Onikan Health centre, Ifẹjede Health centre, Ketu-Ejirin Health Centre, and Harvey road health centre.

3. **Tertiary facilities:** The Lagos State University Teaching Hospital is the main State-funded facility that provides the full range of dental care services, and the Lagos University Teaching Hospital serves as the tertiary institution for the Federal Government. It also houses the first state-owned dental school in Nigeria. These three levels of care run on the free health/subsidized scheme and is supported by the Lagos State Government.

4. **Private practitioners:** Lagos State has numerous private dental clinics and these provide the full range of dental services to individuals; however, patients pay private fees which can run anywhere from N5000 to N2,000,000 depending on the service being requested. Therefore, only the affluent can afford their services. Majority of them are sited in the urban regions of the state.

The State also provides other recurrent free health schemes for the delivery of oral health services. These are the School Health Programme, Free Health Medical Mission, and Cleft lip and Palate Surgeries. The State Ministry has two mobile dental vans that provide oral health screening to children in different state-owned primary schools and adults/children within the different local governments. For the School Health programme, the classes seen are usually Nursery 1 to Primary 6; it also involves eye, ear, weight, and height checks, as well as general medical examinations. These sessions usually run per LGA during the school term. Services provided are oral health education, scaling and polishing, extractions, and GIC fillings. Children required treatment that is beyond the scope of the vans facilities are referred to the General hospitals in the local area so the children are treated for free.[39]

The Medical missions run quarterly in different LGAs and the dental vans provide oral health treatment to those in the communities who cannot afford treatment. Usually, the services provided are scaling and polishing and mainly extractions. Children are provided extractions, scaling and polishing, as well as GIC fillings. For services beyond the scope of what the vans can handle, patients are referred to the nearest health center/secnondary facility close to where they domicile for treatment. Cleft Lip and Palate Surgeries are also part of the State's initiative to improve the lives of its children who are born with such deformities. These corrective procedures are carried out at the Lagos State University Teaching Hospital by a team surgical specialists at no fee to the individuals, and are done in batches throughout the year.[34]

**Oral Health Care Personnel.** The cadres of staff available for dental service delivery in the state include dentists, dental hygienists, dental technologists, and dental nurses. Majority of them are employed in the general hospitals and at the tertiary facility (LASUTH). LASUTH has consultants in all specialties of Dentistry and a full complement of the other cadres. For training of personnel, an undergraduate Dentistry is being offered at the Lagos State University, and this helps to create a workforce pool. The profession is regulated by the Medical and Dental Council of Nigeria. Dental Hygienists/Dental Therapists help to provide basic scaling and polishing to individuals as well as carrying out minor fillings for children. They are very few in number in the state. There are no formal schools of training for dental hygienists in Lagos state. Dental laboratory technologists fabricate crowns, bridges, dentures, and inlays/onlays and the training school for laboratory technologists is in Enugu state. Lagos state also does not have a training school for dental nurses. This staff cadre is trained in the Enugu, Ogun, and Ondo states.

**Policy and Administrative Guidelines for mandatory dental screening for students in Lagos state**

- State policies and administrative guidelines are being developed to engender effective relationships among the Ministry of health, schools, and the community. Key legislation and policies, as well as international, regional, and national initiatives which informed this policy include the United Nations Convention on the Rights of the Child, the Nigerian Children's Rights Act of 2003, the 2012 National Oral Health Policy, the global HIV prevention and AIDS elimination targets for 2030, the 2016 Nigeria National Health Act, the 2016 Nigeria National Health Policy, and the 2018-2022 Second Nigeria National Strategic Health Development Plan.

**Goals and Objectives**

- To promote the health and development of children by engaging with families and school staff.
• To identify children who may be at risk of health and developmental concerns, through surveillance activities.
• To strengthen the state oral health system and to provide equitable, accessible, affordable preventive and curative oral health services to school-age children, thereby reducing their oral health-related morbidity and generating oral health data.

Program components
• Policy development, Advocacy, and resource mobilization through budgetary provisions, grants, and donor support.
• An interdisciplinary and interagency school health coordinating board that will include Ministry of health representatives, school staff, and representatives of the community. An efficient process for sharing information and resources as well as program coordination will be established for assessment of needs, implementing recommendations and evaluating programs.
• Competent and committed oral health workforce: Capacity building and sensitization for dentists and other dental personnel, teachers, social welfare officers, and other professionals who will be involved in the implementation of the program.
• Data collection, research, and program improvement: Stimulate research to generate relevant evidence to inform sustenance and growth of the program.

SPECIFIC PREVENTIVE STRATEGIES: One key goal of the program is to build caring relationships between the children and the dental staff so that children can comfortably relate with the dental team and feel secure in the dental environment.[33]

Once any child successfully gains admission into the Primary or Junior Secondary School 1 (JSS1) in any of the State Government-owned Schools in Lagos State, the child’s parents will receive a duplicated dental screening form in addition to all the other requirements he will provide before being cleared for resumption when the academic year commences. To help prepare the child for a dental examination, the parents would be advised to carefully time the child’s visit and to schedule the dental visit for the child early in the day when he or she is rested and most likely to cooperate. They will also be motivated to be positive when talking to the child about the dental examination, and to avoid using words such as “pain,” or “hurt.” In its place, they should inform the child that the dentist will use special tools to make sure the child’s teeth are healthy. They should remind the child about the visit to the dentist, but should not mention any negative dental experiences they might have had.

The parents will then be expected to present the form at any of the Lagos State-owned General hospitals or LASUTH for dental screening. The Dental departments will be informed that there is no need to open a dental card for the students prior to the screening exercise. The children should also receive expedited attention and should not be kept waiting unnecessarily before being attended to. Students who have any form of dental disease will however be required to open a dental card at the clinic and have their treatments done as soon as possible. These conditions include toothache, decayed or fractured teeth, gingival inflammation or swelling, failed dental fillings, oral ulcers or fistulas; Malocclusion, mal-position, or supernumerary teeth; Leukoplakia or premalignant lesions; ill-fitting orthodontic appliances; Difficulty in chewing or swallowing of food; Swollen or tender lymph nodes in neck and jaw; Dental-related and nasal voice quality that suggests a health problem such as enlarged adenoids. Except the dental treatment is found to be very expensive, the parents should be firmly encouraged to have the treatment done before the academic year commences and the form can be filled and signed. The school authorities should be notified if the parents cannot bear the cost and the Ministry of health would be duly informed.

Once the child is examined and found to be free of dental disease, the form can be filled and signed by the attending dental practitioner and duly stamped. A duplicate should be retained in a dedicated file in the dental clinic while the main form will be returned to the school. The school should keep the forms in a dedicated file and at the end of each admission cycle, a report on the oral health status of the children for each school must be submitted to the Ministries of Education and Health. The preferred format for submission should be an excel spreadsheet containing the biodata and the summary of dental findings and treatment provided as applicable for each child.

This proposal hence provides an opportunity for secondary prevention for a significant percentage of children in Lagos State as well a veritable source of Data for oral Health status in Lagos State.

Evaluation
An evidence-based approach and access to quality data at the Ministry of health, school, and clinic level will be done to ensure quality planning, monitoring, and evaluation. Evaluations will be conducted annually to assess the level of satisfaction with this program. It will assess coverage of services, the impact of the service on the health of students and on access to education, retention, and achievement of learners, quality of services, and the sustainability of the program. This will include input evaluation of resources put into project—examination and evaluation of the quality of oral health services provided, financial commitment, staff, the distribution of resources, technical expertise; Process evaluation of what is done to effect desired changes such as training, building, giving information, and Output evaluation of the screening activities resulting from process/activities including the number of dental diseases that were promptly identified and treated. Impact evaluation will also be done to determine the effect of the program on oral health indices. The level of data collection compliance by the personnel in the school and the dental clinics, the number of dental diseases identified, number of treatments done, the satisfaction of parents and children with the services, and the cost-benefit analysis of the services will be determined using a combination of qualitative
and quantitative methods. The results of these analyses will be utilized to justify further government commitment of resources to this program.

Conclusion

- Oral health is an integral part of the overall health and well-being of children. The success of this school-based dental screening programs requires the cooperation and trust of the school management and staff.

- Principals, Teachers, school nurses, and other school staff working with these children and their families can provide help to encourage families to participate and this appears to be an effective way to reach children who will not otherwise receive dental treatment anywhere else.

- This program can help to decrease or eliminate barriers to access. It can also increase the number of children who will receive both preventive and curative oral care and thus improve their knowledge of oral health.

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Conflicts of interest

There are no conflicts of interest.

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