New Public Health Approach to Oral Health Care Accessibility in a Pandemic

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Abstract

Introduction

Poor access to oral healthcare has continually been a major setback to achieving universal oral healthcare. And this is more important in low-to-medium-income communities where a significant portion of the populations cannot afford oral treatments. This situation has contributed to the increased prevalence of oral health diseases. Historically, pandemics have been known to cause a further reduction in access to healthcare with the resultant effects of a burgeoning burden of oral diseases. This review article aims at describing the impact of COVID-19 pandemic on access to population-based dental care and to suggest a new approach to mitigating the effects of lockdown, which practically hinders populations' access to care during pandemics. These are with a view to improving pandemic preparedness and enhancing population access to oral healthcare in times of restrictions.

Areas covered

This is a review article that focused on COVID-19 pandemic and how it impacted access to oral healthcare. The article also highlighted the new approaches that could be adopted to consistently make oral healthcare obtainable by all despite physical restrictions. Literature searches of key terms were carried out using PubMed and Google Scholar.

Expert opinion

So much has been known about the impact of reduced access to oral healthcare. However, ideas on service modification and/or adoption of new methods of improving population-based access to oral care, especially during periods of global health crises have not been proposed.

Keywords: *Access to oral health, Community dentistry, Coronavirus, COVID-19, Dental public health practice, Oral health, Oral health promotion, Population oral health, Universal oral health care*

Introduction

A considerable amount of research has been devoted to the practice of population oral health care. This is because of the high burden and significance of oral diseases.[1,2]

Oral diseases, which affect people throughout their lifetime, with attendant pain, discomfort, disfigurement and even death, are well known to have great impacts on overall health.[3-5] Oral diseases are largely preventable[6] and they pose a major health burden for many countries, especially in countries with reduced accessibility to oral health care.[7,8]

Prevalence of the main oral diseases continues to increase globally with growing urbanization and changes in living conditions. This is due to availability and affordability of food with high sugar content and poor access to oral health care services in the community[9]. The high prevalence of oral health problems may be attributable not only to behavioural risk factors, but also to barriers that prevent access to oral health care.[10] Many factors influence oral health and the prevalence and severity of oral diseases. Most low- and middle-income countries do not have sufficient dental services available to treat oral health conditions.[11] And where available, these curative treatments are usually expensive, paid out-of-pocket, usually not part of universal health coverage and thus, are out of the reach of the major bulk of the populations that need these treatments most.[11]

Hence, oral health preventive measures become very essential and must be made accessible to the generality of the populations at every level.

Accessibility to Oral Health Care

Access to oral health care is understood as the ease with which oral healthcare can be reached in the face of financial, organizational, cultural, geographical and emotional barriers.[12,13] Lack of access to adequate oral health care remains a major obstacle in achieving optimal oral health and access to oral care is essential to promoting and maintaining overall health and well-being. When individuals are able to access oral health care, they are more likely to receive basic preventive services and education on personal behaviours.[14]

Worldwide access to oral care varies, with many developing countries having very limited access to oral care.[15] This limited access would further be reduced in situations that make oral health services unavailable. Access to good oral health and addressing the barriers are of great importance for overall well-being.[15].

Factors which influence access to oral health care has been categorized into contextual and individual factors.[13] The contextual factors include shortage and mal-distribution of dentists and a complex, difficult-to-navigate oral health system, among others.[13] Understanding the factors that influence access to dental care is an essential component to effectively provide oral health services to the population.[15]

Populations that are unable to access care must be able to obtain educational materials regarding preventive dental care that are easy to process, comprehend, and utilize.[16] While all these identified factors are important to accessibility of oral health care, there has been no consideration of the impact of pandemics on access to oral health care.

Historical consideration of Pandemics

Pandemics are generally defined as large-scale outbreaks of diseases, usually of infectious origin, which cross international boundaries, and affect a large number of people as a result of the spread of human-to-human infection and that can greatly increase morbidity and mortality over a wide geographic area, causing significant social, economic, and political disruption.[17-19]

The major pandemics that have afflicted humankind throughout history include smallpox, plaque, cholera, dengue, influenza, Human Immunodeficiency Virus (HIV), Severe Acute Respiratory Syndrome (SARS), and Ebola; collectively contributing to one-fourth of all deaths globally and not sparing any age group.[20] The oral involvement of these pandemics ranged from mild oral ulcers (in smallpox) to mouth dryness (in cholera) and to bleeding from the mouth {(and other body orifices) in Ebola}.[21-23] While these oral signs have been described and have expectedly contributed to increased prevalence of oral health-related conditions, there's paucity of written literature on the impact of these pandemics on access to oral health care, if any, and/or on the adopted approach to improve access to dental care during those periods.

And although some of the pandemics have been eradicated, there's a possibility of new strains of already known infective organisms to cause outbursts[24] as a result of mutation, as it occurred with the SARS-related corona virus.

The Novel Coronavirus Pandemic

A coronavirus disease (COVID-19) outbreak which first started in Wuhan, China on December 8, 2019[25] was declared by the WHO as a public health emergency of international concern because of its cross-continental rapid spread. Its multiple modes of transmission including respiratory droplets {which occurred when an individual was in contact within 1m with or talking with someone who had respiratory symptoms such as coughing, sneezing}; direct contact routes; and fomites in the immediate environment of the infected persons;[25-27] increased its threat potential.

By March 11, 2020, in compliance with WHO's directive, Nigeria (and the world) had gone into an eight-month lockdown to curtail the pandemic. This wasn't a great news because although COVID-19 seemed to have little direct effects on the oral health of affected individuals, the lockdown and the resultant reduced access to oral health care would expectedly have far reaching impact on whole populations across the globe.

At such times when in-person dental visits are practically impossible, a new approach should be devised to deliver oral health care to populations, thus increasing access to oral health care and reducing the risk of increased prevalence of oral diseases.

The Global Burden of Oral diseases

Oral diseases are among the most prevalent diseases globally and are cosmopolitan.[1,2] According to the World Health Organization (WHO) Global Oral Health Status Report (2020), it is estimated that oral diseases affect nearly 3.5 billion people globally[1,2,7,8]. This is a staggering high figure nearing half of the about 8 billion current world population. For obvious reasons, there is increasing burden of oral health found in low-to-medium-income countries (LMICM).[25,26].

The two most widely-spread oral diseases are tooth decay and periodontal diseases. Oral diseases are chronic in nature and their overall impact could last a lifetime. They have been consistently reported to have negative impact on the general health such as worsening of cardiovascular conditions, increasing the risk of developing pneumonia, and increasing the risk of preterm birth, among others. And oral cancers which although occur less frequently, could have greater consequences.

Apart from personal level of affectation, oral diseases could also have profound impact on the immediate family members who are often the first-on-call as care-givers of sufferers of oral diseases. Sometimes apart from the financial burden of dental treatments, they could also undergo psychological stress especially if the dental condition is associated with severe pain, disfigurement or increased risk of death of their loved ones. They may also lose substantial economic opportunities and/or financial power due to absenteeism from work occasioned by having to provide mandatory stay-at-home or in-hospital support for their ill relatives.

The community where the sufferer of dental disease belongs to may also not be spared of the ripple effect of the disease. For instance, regular absenteeism from work due to chronic dental pain could negatively impact on how well or otherwise school pupils are taught by teachers who always hold their jaws in their hands, writhing in pains.

Eventually, this cascades to the larger society with resultant loss of workhours, reduced productivity and on the overall, loss in gross domestic product of a nation as a whole.

While oral diseases are largely preventable,[3] they would require the intervention of dental professionals once established. At the initial stage, treatment is simple, cheap and quite affordable.[9] However, with disease progression, both dental treatment complexity and cost increase while affordability of treatment reduces. Since the cost of oral health care has been extrinsically linked to care uptake, unaffordability of dental treatment would lead to reduced access to oral health care. Therefore,

disease prevention especially at population level, becomes the easiest and cheapest way out.

Population-based Prevention of Oral Diseases

Effective public health strategies are required to prevent oral diseases and promote oral health across populations. These strategies will be most effective when priority is given to population-based interventions rather than those aimed at high-risk individuals.[28] As an advantage, population prevention approach is directed at the underlying causes of disease across the whole population. It also reduces the risk of developing oral diseases. [28]

Traditionally, the following approaches have been used for improving dental care access among different populations globally.

(i). **Proper referrals from doctors and nurses:** Overall health is generally often considered to be of greater priority than dental health because oral health diseases are not considered to be life threatening.[29] And attendance at medical facility is usually higher than at the dental clinics. Increasing the number of referrals from medical professionals can help in improving access to oral health care.

(ii). **Compulsory rural postings or internships for dental students:** It is a well-known fact that dentists are non-uniformly distributed in many countries, and are usually clustered in urban cities.[30] This trend is especially so in low-to-medium economies where there are more underserved rural communities. The world apex health organization, WHO has mandated every country to make working in the rural communities enticing to health professionals, dentists inclusive, by improving social amenities in those rural regions and by providing juicy financial attraction-rural allowance. Such rural postings could be made mandatory to health interns.

(iii). **Dental homes:** This is the ongoing relationship between the dentist and the patient, including continuous delivery of all aspects of oral health care in a family-centered way.[31] This approach is more relevant to children and can go a long way in preventing oral disease occurrence during the later years of life. Dental home also serves as a focal point to deliver preventive oral health supervision and emergency care.[31]

(iv). **Dental insurance:** This approach has been used to increase access to dental care mostly among employed individuals.

(v). **Provision of oral health aids for people working in private services:** Health insurance coverage is usually generally restricted to government-employed workers. And these workers constitute a small fraction of the whole adult population of any country. Unfortunately, the unemployed and persons working in private services are those who constitute the bulk of the population are usually underpaid. They generally fall below poverty line and are unable to afford paying for dental treatments out-of-pocket. Poverty and financial constraints are established barriers to oral health access. Targeting this teeming population of service-

class people would improve population-based access to oral care.

(vi). **School oral health programme:** Is an important and effective public health approach in promoting the oral health of children. It is an effective way to reach millions of children in a school setting to provide oral health education and other preventive dental services. An added advantage is that both teachers and parents of these school-children could be reached through this means, thereby improving their access to oral health care. A major drawback of this programme is that it is best delivered in-person and thus would have limited use during pandemic.

(vii). **Population-based oral health education:** Oral health education has been proven to increase access to oral health by increasing awareness and understanding of oral health conditions. Oral health education provides dental information and is effective if reinforced with appropriate oral health prevention skills. Each individual is the best person to improve his/her access to oral care and this can only happen when an individual understands the causes and risk factors for oral diseases.

The advantage of this educational intervention could be lost during pandemics where the oral health educator cannot reach the patients.

Increasing Oral Health Access during Pandemics

Since many of the known traditional access-improving methods often require in-person contacts, they are very impractical in the face of restriction to movement that could arise during pandemics.

Therefore, methods that do not involve physical visits and which could be remotely employed, are better options in pandemic situations. The following options and/or modifications to existing methods are thus suggested:

(i). **Continual reinforcement of oral self-care:** Individualistic oral health care still remains the best preventive measure against oral diseases. For this reason, more efforts should be made at ensuring that individuals in every community and household are educated on the need to maintain good oral health and should be practically taught on relevant oral health skills before any pandemic springs up.

Public health dentists should make every effort at emphasizing on developing personal oral health skills. Every visit to the community should be with the purpose of demonstrating correct tooth-brushing techniques. At such visits, they should also emphasize on creating supportive environments for oral health and strengthening community actions for health.

Dentists who attend to patients in the clinic should ensure they improve on their patient-engagement skills. They should provide clear and concise explanation on the mechanisms of

initiation and progression of oral diseases and the rationale(s) for the prescribed curative and/or preventive management plans. It is only by this that patients can begin to appreciate why they must prevent oral diseases.

If all dentists concertedly prepare every dental patient ahead of pandemic, then there would be no need for curative treatments during pandemic lockdowns simply because there would be no decayed teeth causing pains nor would there be the neglected 'weeping' gingivae calling for attention during pandemics or that would necessitate dental appointments when one-on-one dental consultations are not possible.

(ii). Teledentistry: This is defined as the practice of using video-conferencing technologies to diagnose and provide advice about treatment over a distance. It enables a dental service provider to remotely interact with a patient for the purpose of diagnosis, treatments and recommendation and have proven effective. It eliminates geographical barriers. Although this technological application is not completely new, it is yet to be adopted by many countries, it is yet to be technological feasible in many of the remote areas of many countries and has not been reported as been used by dental professionals to address population-based access to oral care during the COVID-19 pandemic. If globally applied, teledentistry can appreciably improve access to oral health care especially in remote places where there are fewer dentists, and where establishment of dental homes could have been non-preexistent.

The different categories of teledentistry include the web-based self-instruction educational system in which already stored data can be accessed by individuals anywhere they are. In Nigeria as well as in many other low-income countries where technological advancement still lags behind, there is limited internet access in many places coupled with the high level of technology illiteracy. Both of these factors can adversely affect the wide usage of this technology.

Interactive video conferencing which is another category of teledentistry could be relayed live or recorded. The advantage is that the user can receive immediate feedback and can send pictures of his/her oral cavity to show any pathology in the oral cavity. WhatsApp, Google Meets, Zoom are examples of platforms where video conferencing could be performed.

Dental chat rooms are other platforms of communication between the dentist and patients. Numerous dental organizations and individual practitioners who exchange information on a variety of topics now take advantage of chat rooms to reach a wide arrays of populations on a global scale.

Teledentistry has opened up new, massive, and unlimited opportunities to improved access to oral health on a wide scale and could become a ready public health tool during pandemics. However, since Teledentistry approach is

internet-based, it may not be practical to use in areas with poor or no internet access. Improving the technological framework for these platforms would go a long way to improve access to dental information and dental services especially in preparedness for any pandemic that may arise in the future.

(iii). **Dental homes:** Although dental homes were originally designed for children to get acclimatized to dentists and oral care right from early childhood, this preventive strategy can be extended to whole households and communities.

When dental professionals adopt families which they visit on regular scheduled appointments, it then becomes easy for household members to communicate with their oral health professionals about their dental health and receive dental health-related information and advice at any point in time.

This established relationship can then be extended and sustained during any pandemic lockdown when in-person dental visits may not be possible.

(iv). Provision of oral health training to house-hold focal persons in communities before pandemic outbreak: Simply put, a household consists of all the people who occupy a housing unit.[32]

The whole idea of household focal persons is because of the fact that pandemics do not usually cause social distancing within households. This is also coupled with the fact that members of households, such mothers, have successfully been used as oral health educators through a step-down training technique.

In the same vein, mothers or other members of the family, who have the intellectual capacity to be trained in self oral-care and the manual dexterity to perform tooth-brushing techniques and/or other simple preventive treatments, should regularly receive such trainings in pre-pandemic situations and serve as household oral health focus persons in times of pandemics.

Conclusion

The suddenness of COVID-19 pandemic is an eye-opener that the liberty of movement we often take for granted could be temporarily withdrawn from us. While this restriction to movements and reduced inter-personal contacts may be largely unavoidable and necessary, we should not accept the ensuing limited access to oral health care as inevitable and non-modifiable.

By using some of the simple prevention principles and techniques, we can confidently face any brooding mutated strain with our full complements of healthy teeth.

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