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Review Article

Oral health needs, dental caries and access to oral health services among children and adolescents

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ABSTRACT

The oral health needs of a community can vary between region, sub-region and countries due to different sociocultural conditions and practices, awareness and acceptance of oral health practices, oral health seeking behaviors and attitudes towards oral health. There are many social, economic, political and cultural factors that affect the ability of developing countries and resource poor to provide adequate oral health care for the people. Oral diseases like dental caries are a significant public health problem in resource rich and resource poor countries. Children with dental caries in their primary teeth are more likely to have dental caries in their permanent teeth when compared to those who have never had dental caries in primary dentition if dental caries preventive measures are not instituted. The presence of dental caries in children is considered an important evidence for evaluating the oral health status of children.

Access to oral health care service among children for preventive, restorative, rehabilitative and curative purpose is important for optimal oral health and wellbeing of a child. Untreated carious teeth are a common finding in African children. Restorative index and Met Need Index among children and adolescent are very low, and can reflects limited access to oral care in terms of cost, accessibility, availability, acceptability and awareness. After searching articles from electronic databases, PubMed ,Scopus, Medline and Google Scholar. The aim of this article is to review the burden of dental caries, the dentist to patient ratio, restorative index and met need index of children and adolescents.

Key words: Dental caries, met-need index, oral health, restorative index

INTRODUCTION

The oral health needs of a community can vary between region, sub-region and countries due to different sociocultural conditions and practices, awareness and acceptance of oral health practices, oral health seeking behaviors and attitudes towards oral health. There are many social, economic, political and cultural factors that affect the ability of developing and resource poor countries to provide adequate oral health care for the people. Oral diseases like dental caries are a significant public health problem [1] in resource rich and resource poor countries. The presence of dental caries in children are considered an important evidence for evaluating the oral health status of children[1] In the 2017 Global Burden of Disease study, dental caries of permanent teeth was reported to be affecting 2.3 billion people and dental caries for primary teeth was reported to be affecting 560 million

children [2] Dental caries is a disease of significant worldwide consequences with dental caries in the permanent and primary teeth being the first and tenth most predominant global health problem, respectively [3]. It is expensive to health care systems, accounting for ≤10% of health care budgets in industrialized countries, being the fourth most expensive disease to treat [4]. The cost of treating dental caries is estimated to be US $3513 per 1000 children in most low-income countries, exceeding the total health budget of these countries [4]. The high level of untreated dental caries [3] in some region, sub-region, countries and communities can be as a result of limited access to dental care in terms of cost, accessibility [5], awareness and availability [5]. Untreated dental caries can leads to reversible pulpitis, irreversible pulpitis, acute apical periodontitis, dentoalveolar abscess and serious conditions such as facial space abscesses or Ludwig's angina. Children with dental caries in their primary teeth are more likely to have dental caries in their permanent teeth [1, 6] when compared to those who have never had dental caries in primary dentition [1,6], if dental caries preventive measures are not instituted.

Access to oral health care includes the availability, accessibility, awareness, accommodation, affordability, and acceptability of oral health services. Access to oral health care service among children for preventive, restorative, rehabilitative and curative purpose [5] is important for optimal oral health and wellbeing of a child. Access to quality oral health care services is a persistent oral health issue in most Africa countries, but the extent and seriousness of its impacts differ with each locality and sub-region. Access to oral health care is important in promoting and maintaining general health and quality of life. People who have access to oral health care are more likely to receive oral health preventive services and oral health education on oral health risks behaviors. They are also more likely to have oral diseases detected in the earlier stages and obtain restorative and curative care as needed. While lack of access to oral health care especially for people in resource poor countries, rural and remote areas can result in delayed diagnosis, [7] untreated oral diseases and conditions, and compromised oral and general health status.

Oral diseases and access to oral health services: Oral diseases like dental caries restrict activities in school, at work and at home causing millions of school and work hours to be lost each year. [8] The burden of oral disease like dental caries is more expensive to treat consuming about 5–10% of healthcare budgets in developed countries [8] and a financial burden on the families. It can reduce work and recreational hours among youth and adults, reduce academic and recreational hours among adolescent; and loss of play and school hours among children. The increase in the burden of dental caries in some low- income countries could be as a result of lack of a good oral health care system, absence of universal health coverage for oral health services, awareness and acceptance of oral health preventive services among the people, and practicing an oral health system that mostly focuses on curative care [5].

Oral health problems continue to be among the most costly health problems to treat, resulting in high direct and indirect costs to individuals, families and governments. The global economic cost of dental caries was estimated to be 442 billion USD per year, of which, 298 billion USD was spent on the treatment costs [9] of dental caries and 144

billion USD was attributed to the lost working hours. The challenges associated with access to oral health care are common in African countries. They are faced with continuous oral health care delivery and access problems with variation in the availability of dentists between sub region, countries, and urban, semi-urban and rural locality. In North Africa, one dentist to a population of over 5,600 people was reported in Egypt [10], and one dentist to a population of 33,000 people was reported in Sudan [11]. In East Africa, one dentist to a population of 1,268,000 people was reported in Ethiopia [12], one dentist to a population of 360,000 people was reported in Tanzania [13], and one dentist to a population of over 92,000 people was reported in Rwanda [14]. In other East Africa countries, one dentist to a population of 303,185 people was reported in Eritrea [15] one dentist to a population of 158,000 people was reported in Uganda ,[16] one dentist to a population of 40,000 people was reported in Kenya,[17] another report from Kenya [18] reported one dentist to a population of 378,000 in the public sector, and only 20% of the dentists were in rural areas compared to 80% in urban environments.[18] Dentists are the head of the oral health professional team, and they can offer preventive, restorative, rehabilitative and curative services in accordance with their training and working experience.

In South Africa, one dentist to a population of 8, 817 people and one dental specialist per 118,947 people was reported [19]. Among the various dental specialists in South Africa , the ratio of dental specialist per population was one Maxillofacial and Oral surgeon serving 403,000 people, one Orthodontist serving 394,175 people, one Prosthodontist serving 692,333 people ,one Periodontist serving 1,038,500 people, one Community Dentist serving 1,636,424 people and one Oral Pathologist serving 2,700,100 people in South Africa [19]. The presence of Dental specialist in an oral health facility can increase the range of basic and advanced preventive, restorative, rehabilitative and curative services needed for optimal oral health and wellbeing of children, adolescents and adults. In West Africa, one dentist to a population of about 100,000 people was reported in Cameroon, [20] one dentist to a population of 750,000 was reported in Sierra Leone, [21] one dentist to a population of 104,000 people was reported in Ghana [22] and one dentist to a population of about 40,000 people was reported in Nigeria.[23-24] In other Africa countries, one dentist to a population of about 688,613 people was reported in Chad [25], one dentist to a population of 150,000 people was reported in Zambia, [26] one dentist to a population of 66, 666 people was reported in Lesotho,[27] one dentist to a population of 43,460 people was reported in Angola [28] and one dentist to a population of 419,000 people was reported in Malawi [29]. Most of the dentists that offered oral health services to children and adolescent were mostly practicing in urban areas and the dentist to patient ratio across sub region and countries in Africa were higher than the World Health Organization recommended standard [19]. Parents and children who have access to available, accessible, accommodating and affordable oral health services are more likely to receive oral health preventive services and more likely to have oral diseases detected in the earlier stages and obtain restorative and curative care as needed.

In Nigeria, among children, adolescents and adults, Met Need Index and Restorative index are all very low [3,30] . Restorative dental care is extremely expensive and only 5-10%

of health expenditure [24] goes into the provision of oral health in most countries. In Tanzania, The costs for a tooth extraction was equivalent to four times the average daily financial resources of a single person and restorations like fillings were even nine to ten times as high to the average daily financial resources of a single person. [13] Removable dentures were offered in only 32% of available dental facilities and root canal treatments in 46% of available dental health facilities in Tanzania [13]. The presence of a functional oral health system in most countries, with availability of universal health coverage can help to improve access to oral health services and oral health of the populace.

Restorative index and met need index of children and adolescents: Untreated carious teeth are common findings in African children.[15,31-36] In many African countries, access to oral health services is limited and carious teeth are often left untreated. [15,31-36] The level of untreated dental caries in Eritrea,[15] Ethiopia[32], Uganda[33], Kenya[18] ,South Africa [34-35],Ghana[36] and Nigeria[30-31] is high, with 98.3% reported in Eritrea[15] , about 90%-97% in South Africa [32-33], and ranging between 77.2% and 98.6% in the permanent teeth and 92% and 95.6% in the primary teeth in Nigeria [3] . In Eritrea, among 12 years old Eritrean children, 98.3% of the carious teeth were untreated [15], In Ethiopia, among 6-15 years old Ethiopian children, 84.6% of the carious teeth were untreated [32], among 6 years old South African children , more than 90% of the children had carious teeth that were untreated.[33] In Ghana, among 9-15 years Ghanaian children, 80% of the carious teeth were untreated In Nigeria, among 3 – 6 years nursery school children , 92 % of the carious teeth were untreated. [31] The high level of untreated dental caries[30] in children [15,31-36] indicates high restorative treatment needs [37] and very low restorative index [30,37] among children and adolescent ,and can reflects limited access to oral care in terms of cost, accessibility, availability and awareness.

In Nigeria, Met Need Index and Restorative index are all very low.[3, 30] Met Need Index is an indication of treatments received by an individual,[38] while Restorative Index reflects the restorative care of those who have suffered the disease. [30,38] In Kano state, North west, Nigeria, the restorative index among 12-14 year old Almajiris children was 0% while the Met Need Index among 12-14-year-old Almajiris children was 0.08. [39] The restorative index among 12-14 year old private school children in Kano state, North west, Nigeria was 10.5 % while the Met Need Index among 12-14-year-old private school was 0.16 .[39] The restorative index of private school children [39] was higher than that of Almajiris children, possibly because of better awareness and more oral health seeking behaviour among private school children. The restorative index among 12 years old children in Ilorin, Kwara State, North central, Nigeria was 1.5% ,[40] among 12–14 year old school children in Ibadan, Oyo State, South west Nigeria, Met Need Index and restorative index among 12 year old children were 0 and 0% respectively ,[38] among 13 year old, restorative index was 0% and Met Need Index was 0.04, [38] while among 14 year old children, restorative index was 3.45% and Met Need Index was 0.11.[38] In Lagos State , South west, Nigeria, among 11-16 years old children, restorative index was about 1% [41], and among 5 to 16 year old school in Lagos State , South west, Nigeria, the restorative index was 0.3%.[42] Among

12 -15 year old secondary school children In Port Harcourt, Rivers State ,South south, Nigeria , the restorative index was 6.3%.[43] A hospital-based study in South south, Nigeria, among 3–16 year old children ,the restorative index for children with Molar incisor hypomineralization was 3.2%, [44] while the restorative index for children without Molar incisor hypomineralization was 6.9%. The Met Need Index for children with Molar incisor hypomineralization was 0.06, and 0.09 for children without Molar incisor hypomineralization. [44] In Enugu, South East Nigeria, the restorative index among 12 – 15 year old was 3% , [45] among 11-16 years old secondary school children in rural area, the restorative index was 2.8% [37] and among 12 years old school children in Enugu, South East Nigeria, the restorative index for both private and public school children was 0% .[46] The Met Need Index for private and public school children was 0.03 and 0.01 respectively.[46] Private school children had higher Met Need Index than public school children and could be as a result of more oral health seeking behaviour and access to oral health care among private school children.

CONCLUSION

Dental caries is a disease of significant public health problem and it is expensive to oral health care systems. Untreated dental caries are common findings in African children and adolescents. Restorative index and Met need index among children and adolescent are very low. Improving access to oral health services through universal health coverage with a functional oral health system could help to reduce the burden of untreated dental caries among children and adolescent and improve their oral health and wellbeing.

Key words: Access, Adolescent, Children, Dental caries, Oral health, Oral health services

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There are no conflicts of interest.

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