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Basic Package for Oral Health Care: A Solution for India's Community Dental Health Challenges

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ABSTRACT: Oral health remains unattainable for a significant portion of the worldwide population, especially among marginalized communities, regardless of whether they reside in wealthy or impoverished countries. Despite the fact most oral health problems are not life-threatening, they have the potential of severely reducing an individual's quality of life, particularly those in vulnerable groups in both non-established market economies (non-EME) and established market economies (EME). The Basic Package of Oral Care (BPOC) formulated by the WHO Collaborating Centre in Nijmegen conforms to the Primary health care (PHC) model and presents a realistic approach to improving oral health in a low-resource setting. The initiative comprises three primary elements: Oral Urgent Treatment (OUT), Affordable Fluoride Toothpaste, and Atraumatic Restorative Treatment (ART) that is aimed at delivering affordable oral health services to the underserved population is now a component of most health systems globally, where communities receive their first care at this level. However, the PHC approach fails to provide therapy for complicated oral conditions, including oral cancer and congenital oral disorders such as cleft lip and palate. Including BPOC in PHC models ensures the provision of essential health services to specific communities in need, thereby contributing to the long-term improvement of oral health worldwide.

Keywords: -*Basic Packages of Oral Care, Fluoride, Oral Care, ART, Primary Health Care*

I. INTRODUCTION

Oral health is a crucial component to one's overall well-being; however, it is frequently disregarded in public health initiatives, especially in several non-established market economies (non-EME). [1,2] Even though they are rarely fatal, oral health problems lower people's oral health-related quality of life. Oral health issues are

prevalent among the disadvantaged in both non-established market economies (non-EME) and established market economies (EME). Many communities in non-EME countries face significant challenges, including a lack of established institutions for trade and investment, underdeveloped financial systems, and political and economic instability. [3,4] Additionally, these communities frequently have higher percentages of poverty, poorer educational attainment, and restricted access to healthcare, which makes it difficult for them to receive basic emergency care for oral infections and pain.[4]

II. GLOBAL ORAL HEALTH BURDEN

According to the World Health Organization's Global Oral Health Status Report (GOHSR), dental problems affected about 3.5 billion people globally in 2019 and constituted an enormous health and economic burden. A significant disparity exists in oral health, as three out of four individuals afflicted with oral diseases are found in middle-income countries. Vulnerable and disadvantaged people, particularly those from lower socioeconomic backgrounds, are more likely to have these illnesses throughout the course of their lives. Expenditures exceeding 380 billion USD are allocated globally for the treatment of significant oral diseases, highlighting the significant economic consequences. While severe periodontal disease affects 1 billion individuals, untreated dental caries is a common issue that affects 2.5 billion people. Moreover, complete edentulism affects 350 million people, whereas oral carcinoma has been identified in 380,000 cases worldwide in 2019.[5]

III. ORAL HEALTH IN INDIA

India is the most densely populated nation globally. Although industrialization is progressing steadily, a significant 68.84% of the Indian population continues to reside in rural areas, where access to essential healthcare services remains inadequate. The average prevalence of dental caries is 49% at ages 5 and 12, but it steadily increases from age 15 (60%) to the age group of 35–44 (78%), reaching a peak of 84% in the age group of 65–74.[6] The prevalence of periodontal disease was found to be higher in adult age groups (89.2%) than in children. The occurrence of periodontal pockets, whether deep (6 mm) or shallow (4–5 mm), was markedly elevated in the older age group (65–74 years). The prevalence of oral mucosal lesions was notably highest among the elderly population (65–74 years), with leukoplakia representing 3.1% and oral cancer constituting 0.4%. More than twenty five percent (29.3%) of those in the 65–74 age range were completely edentulous.[7]

IV. INTEGRATING ORAL HEALTH WITHIN PRIMARY HEALTH CARE

Primary Health Care (PHC) is a transformative approach in the healthcare landscape. It focuses on preventing and treating common illnesses outside of hospitals and provides basic, affordable care in community settings. Numerous governments globally have integrated the PHC approach into their national health systems, establishing it as the primary point of interaction for individuals, families, and communities with the healthcare system. Oral health care in the framework of primary health care does not encompass the treatment of severe conditions, such as oral cancer and cleft lip and palate disorders.[7] The Basic Package of Oral Care (BPOC), created by the WHO Collaborating Centre in Nijmegen, is a framework that closely adheres to the concepts of primary health care (PHC). It provides a practical method for enhancing oral health in areas with limited resources. It places emphasis on providing essential oral care via preventive and therapeutic measures that can be executed by community health workers in environments without dental facilities.[3]

The BPOC comprises three main components:

1.Oral Urgent Treatment (OUT)

2.Affordable Fluoride Toothpaste

3.Atraumatic Restorative Treatment (ART)

4.1. Oral Urgent Treatment (OUT) for the emergency management of oral pain, infection and trauma

Oral Urgent Treatment (OUT) is a vital emergency treatment targeted to alleviate oral pain, infections, and trauma. It offers relief through three main actions: reducing oral pain, providing first aid for infections and dentoalveolar injuries, and referring complicated situations. Treatment generally encompasses the extraction of severely decayed or periodontally compromised teeth under local anesthesia; addressing post-extraction complications such as dry sockets and hemorrhage; draining localized abscesses; administering palliative medication for acute infections; and delivering first aid for oral trauma. Complex patients are sent to adjacent facilities for enhanced treatment.[2]

4.2. Preventing dental caries through Affordable Fluoride Toothpaste (AFT)

The WHO considers appropriate fluoride exposure the most effective preventive measure against dental caries. However, in many low- and middle-income countries, implementing water and salt fluoridation is challenging due to limited infrastructure, technology, and resources, particularly in rural areas. In economically more established (EME) countries, dental caries has significantly declined over recent decades, largely due to the widespread use of fluoride toothpaste and twice-daily brushing. Interestingly, caries rates have fallen even though sucrose consumption remains steady, suggesting that where fluoride toothpaste is widely used, diet plays a less significant role in caries prevention. Promoting twice-daily brushing with fluoride toothpaste is thus essential for caries prevention globally. Expanding access to fluoride toothpaste in low-resource countries would greatly benefit both dental caries and periodontal disease prevention. [2,3]

In many low- and middle-income countries, toothpaste is often too expensive for regular use. To address this, the WHO Oral Health Program partnered with industry to create a low-cost fluoride toothpaste (SMFP) that demonstrated effective caries prevention in a school-based program in Indonesia. Governments should recognize the substantial oral health benefits of fluoride toothpaste and take steps to reduce or eliminate taxes on this essential product. Preferential tax treatment should be reserved for toothpastes that have verified anti-caries efficacy rather than simply appealing marketing claims. [2,9]

The two key factors for effective fluoride toothpaste use are brushing frequency and rinsing habits. Brushing twice daily is recommended, as it increases anti-caries efficacy compared to brushing only once. Avoiding thorough rinsing after brushing is also advised, as rinsing too much reduces fluoride levels in the mouth to suboptimal concentrations. Instead, rinsing once lightly or simply spitting out excess toothpaste is preferable. The effectiveness of fluoride toothpaste also depends on the concentration of free fluoride ions. Toothpastes with 1,000 to 1,500 ppm fluoride are generally more effective than those with lower concentrations. However, concentrations above 1,500 ppm may pose a risk of dental fluorosis in young children. [2,3]

4.3. Managing dental caries through the Atraumatic Restorative Treatment (ART) approach

Conventional restorative treatments depend largely on electrically powered equipment, which is costly and challenging to maintain. This complexity typically confines treatments to dental clinics, limiting accessibility. Consequently, for many low- and middle-income countries and communities, conventional restorative care is often impractical due to high costs, limited availability, and restricted access. [2,9]

Atraumatic Restorative Treatment (ART) represents an innovative, minimally invasive approach to managing dental caries, notable for its elimination of the need for drills, plumbed water, or electricity. This method utilizes hand instruments to remove decayed tissue, followed by the application of an adhesive fluoride-releasing restorative material in both cavities and adjacent fissures. Art aligns closely with contemporary principles in preventive and restorative dentistry, which emphasize preventative care and tissue conservation. By retaining all healthy tooth tissue, ART minimizes pain and discomfort by often removing the need for anesthesia, which enhances patient comfort and acceptance—particularly among young, treatment-naïve children. The ART approach's reliance on simple tools and techniques makes it feasible for dental auxiliaries, such as dental therapists, to perform in settings outside conventional clinics, such as schools and community health centers. This adaptability not only lowers the cost of care but also improves its availability and accessibility. ART thus

supports the core principles of primary health care (PHC), providing secondary preventive care through an affordable, accessible, and equitable approach using appropriate technology. [3,9,10]

A substantial proportion of dentine lesions can be effectively managed using the Atraumatic Restorative Treatment (ART) approach. Compared to conventional amalgam restorations, ART procedures tend to cause less patient discomfort. Recent studies have shown improved survival rates for single-surface ART restorations using glass ionomers in permanent teeth, with an average annual failure rate of about 4–5 percent within the first three years. The caries-preventive efficacy of ART-applied glass ionomer sealants is remarkably high, ranging from 96 to 98 percent over three years. Additionally, a three-year survival rate of 71–72 percent for partially and fully retained glass ionomer sealants, achieved under field conditions, underscores the effectiveness and resilience of the ART approach in diverse settings. [2,9]

V. ADAPTATION OF BPOC TO TACKLE COMMUNITY DENTAL NEEDS IN INDIA

To serve the oral health needs of India's varied population, the Basic Package for Oral Care (BPOC) must be integrated into the existing health-care system. The following measures may help adapt the BPOC framework to better suit the oral health requirements of the Indian population. [10]

5.1. Adaptation of BPOC to the Indian Context

To successfully implement BPOC in India, the components of the package must be included in existing primary healthcare services, allowing dental healthcare providers to provide essential oral healthcare along with other health services. In India, there are regional disparities in availability of affordable fluoride toothpaste. An affordable toothpaste should be priced to allow individuals with limited resources to purchase the product. The product's cost should be evaluated in comparison to the relative expenses of other daily necessities, such as the price of sugar. If the price of a single tube of toothpaste equals many kilos of sugar, those with limited income prioritize purchasing sugar, which serves as an essential source of calories, over the costly toothpaste. Governments should acknowledge fluoride toothpaste's oral health benefits and decrease or eliminate taxes on it. Instead of appealing marketing claims, toothpastes with demonstrated anti-caries effectiveness should receive preferential tax status. In certain areas, outreach campaigns may be essential to educate residents on the benefits of fluoride, while in other areas, partnerships with local companies might improve the distribution of fluoridated toothpaste. [10,11]

5.2. Role of Community Health Workers (CHWs)

Community health workers (CHWs), including Accredited Social Health Activists (ASHAs) and Anganwadi workers, are essential in providing healthcare services in India, especially in rural regions. These personnel can be instructed to deliver essential oral care services within the BPOC, including uncomplicated extractions and atraumatic restorative therapy. This would substantially enhance access to dental treatment in areas with little or no dental practitioners. Accredited Social Health Activists (ASHAs) and Anganwadi workers, with established relationships within the local population, might play a pivotal role in enhancing awareness through home visits and community outreach initiatives. They can inform families about the advantages of using fluoride toothpaste and receiving timely dental care. [12,13]

National health programs, like the National Health Mission (NHM) and the National Oral Health Program (NOHP), include established infrastructure that extends into rural and underserved regions. Utilizing these platforms to implement BPOC elements, such as the distribution of inexpensive fluoride toothpaste and ART, might enhance the accessibility of oral health treatments without necessitating significant additional expenditures on infrastructure. [14,15]

5.3. Mobile Dental Units

In light of the geographic constraints associated with reaching remote areas, mobile dental units that are equipped to provide OUT and ART might be a practical way to provide immediate emergency dental care to underprivileged people while reducing the need for long-distance travel. [16]

5.4. Collaborations with Local Governments and NGOs

Engaging with local governments and non-governmental organizations (NGOs) can enhance BPOC execution in resource-limited environments. NGOs with expertise in providing healthcare in isolated areas can offer important resources and ideas to help with CHW training and fluoride toothpaste distribution. Local government entities can also guarantee that BPOC activities are consistent with current public health initiatives, such as the National Oral Health Program (NOHP). [3]

5.5. School-Based Programs

Children constitute a key group for oral health interventions since early prevention can provide persistent benefits in oral health. School-based initiatives utilizing the BPOC framework may effectively mitigate the increased incidence of dental caries and periodontal diseases among school-aged children in India. These programs can administer fluoride treatments, provide oral health education, and identify children requiring immediate dental care. Partnering with school health initiatives and including oral health into the curriculum may serve as a cost-efficient method for executing BPOC at the community level. Furthermore, BPOC could be integrated with school health initiatives such as Rashtriya Bal SwasthyaKaryakram (RBSK), which emphasizes child health screening and early intervention services, and the School Health and Wellness Program (SHWP), an Ayushman Bharat initiative designed to improve health education and encourage healthy behaviors among schoolchildren. [14]

VI. CHALLENGES IN IMPLEMENTING BPOC IN INDIA

The Basic Package for Oral Care (BPOC) is a potential solution for oral health requirements in India; nevertheless, its implementation encounters several challenges. These obstacles must be addressed to ensure the success and sustainability of BPOC throughout the nation.

6.1. Inadequate Healthcare Infrastructure

A significant barrier to the implementation of BPOC in India is the insufficient healthcare infrastructure, especially in rural regions. Numerous primary care centers (PHCs) lack essential dental facilities. The lack of essential equipment, such as dental chairs and instruments, hinders the provision of even basic dental treatments. BPOC is intended to operate with less infrastructure; however, it is essential to ensure that health professionals have access to vital supplies, such as fluoride toothpaste and ART materials. Supply chain barriers, particularly in distant regions, must be resolved to ensure that communities maintain consistent and sufficient access to oral care resources. [17]

6.2. Training and capacity building

BPOC's effectiveness is largely dependent on community health workers' (CHWs') capacity to provide oral health services. Current training for ASHAs and other CHWs predominantly emphasizes general healthcare with insufficient focus on oral health. A comprehensive initiative is necessary to educate these workers in the provision of BPOC components, such as ART, fluoride application, and oral health education. Capacity-building programs are essential for equipping community health workers with the skills and knowledge required to effectively provide oral health services. Investment in training materials, workshops, and ongoing education is necessary to ensure health workers deliver high-quality care. [12,13]

6.3. Financial Constraints

Although BPOC is cost-effective, its first implementation may necessitate substantial financial expenditure, especially for training, material purchases, and the establishment of mobile units. Due to the current budgetary limitations in India's public health system, obtaining money for oral health projects may be challenging. Partnerships with companies, non-governmental organizations, and international bodies may yield the requisite funding to surmount these financial obstacles. Public-private partnerships may contribute to subsidising the expenses of fluoride toothpaste and ART materials, hence enhancing accessibility for low-income communities. [18,19]

6.4. Cultural and behavioural barriers

Cultural attitudes and traditional practices around oral health in India might occasionally hinder the acceptance of contemporary dental care methods. The use of natural remedies or home-based procedures for tooth pain remains prevalent in rural regions. Surmounting these cultural obstacles requires persistent community involvement and education on the advantages of evidence-based dental treatment. Additionally, behavioural changes, particularly around oral hygiene practices, may take time. Efforts to promote the use of fluoride toothpaste and regular brushing must be reinforced through continuous education and community-based campaigns. [20,21]

6.5. Monitoring and evaluation

Ensuring the long-term success of BPOC requires a robust system for monitoring and evaluation. Tracking the effectiveness of the program in reducing the prevalence of oral diseases, improving access to care, and increasing awareness about oral health is essential for making adjustments and improving outcomes. Currently, India’s public health system lacks a comprehensive framework for monitoring oral health at the community level. Developing indicators to measure the impact of BPOC and integrating them into existing health information systems will be crucial for evaluating the program’s success.[22]

VII. CONCLUSION

The Basic Package for Oral Care (BPOC) represents a revolutionary opportunity to address India’s oral health challenges, particularly in underserved populations in rural and urban areas. By providing a cost-effective and feasible model for delivering essential oral care services, BPOC can help bridge the gap in essential oral healthcare access and reduce the burden of oral diseases across the country. Through the implementation of Oral Urgent Treatment (OUT), Affordable Fluoride Toothpaste, and Atraumatic Restorative Treatment (ART), BPOC offers pragmatic solutions that can be integrated into India’s existing public health infrastructure. By empowering community health workers, enhancing access to preventive care, and promoting oral health education, BPOC has the potential to significantly improve the oral health outcomes of millions of Indians. However, overcoming challenges related to healthcare infrastructure, training, financial constraints, and cultural barriers will require coordinated efforts from government bodies, NGOs, and private stakeholders. With the suitable strategies and investment, BPOC could become a key tool in India’s journey toward improving oral health equity and reducing the prevalence of preventable dental diseases.

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